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## The Philadelphia Strike

The chief developments in the Philadelphia strike during the past week have been the continued failure of the strike leaders to make good their efforts to create a general sympathetic strike within the city, threats on their part of the establishment of a State-wide strike in sympathy with the ex-employees of the Philadelphia Rapid Transit Company, a material increase in the service given by the company under quieter conditions, and the failure of an attempt to end the strike by reconciling the diverse opinions of the management of the company and its former employees. A new element was introduced into strike campaigns by a call on all union men to withdraw their deposits from the banks because of the alleged reason that the banking interests were unduly favorable to the Philadelphia Transit Company, but as yet no financial institutions have been reported to be in an embarrassed condition because of this attack. The State-wide strike seems to be an even more desperate effort to create a diversion from the main issue than even the city sympathetic strike or the futile boycott of financial institutions. Like them, it furnishes a good example of the old adage that those whom the gods wish to destroy they first make mad.

## Equipment Standards in the South

In going over the electrical equipments of a considerable number of Southern railways, one is rather astonished to find how many of the older 25 hp to 35 hp motors are still in use and giving good service. An investigation of this matter brings to light the fact that the cities in which they are employed have few grades, so that high-powered motors with better qualities of acceleration really are not essential. Again motors of these sizes are usually of ample capacity for the single-truck cars which must be employed in small cities to give a short headway at lowest cost. The Southern railway managers generally are keenly watching the progress in the design of electrical equipment and rolling stock. If they appear backward in adopting the latest types of motors and cars on the market, the reason in most cases is that they do not yet require them or else cannot apply them to their conditions. Thus one large company would like very much to try prepayment cars but believes it cannot do so because the narrow streets and sharp curves over which it operates make it practically impossible to lengthen the car platforms as required to carry out this method of fare collection.

The Southern electric railways, however, are giving very close attention to high standards in permanent way construction, as indicated by their extensive use of tie and pole preservation. Again, while their power stations cannot boast very large units, there are many which have been successfully employing the steam turbine ever since it was brought before American power users.

### The Results of an Electric Railway Consolidation

The physical benefits of the consolidation of adjoining public utility systems are usually not difficult to demonstrate if the new management maintains a progressive policy after the properties are united. The public soon forgets the kind of service rendered by the old and formerly separated organizations, and for this reason it is an excellent policy to keep on file the schedules, photographs of the line, right-of-way, rolling stock, power house exteriors and interiors, showing the exact conditions before and after the merger. Such data may be worth their weight in bank notes at some future public hearing before a State commission in some sharply disputed accident suit, or in connection with the securing of new or repeated franchise rights.

An illustration of the benefits of a recent electric railway merger is afforded by two systems which up to two years ago had dragged out a comparatively unprofitable existence in adjacent territory. One paid no dividends, and the other disbursed insignificant returns to its stockholders. The tracks were not laid far enough into the country from each system's center to permit the establishment of through service, or even to allow a passenger to travel from one center to the other by trolley. A progressive electric railway manager and promoter saw the possibilities of the region, and about 14 months ago succeeded in uniting the two systems into one organization, now covering 140 miles of track and serving a population of 130,000 people. What have been the results?

The public has gained by the establishment of through service and by the institution of a liberal transfer privilege in the urban centers of the system, where practically no transfers obtained under the old conditions. The character of the rolling stock has been improved to a large degree. In place of the short and uncomfortable single-truck cars formerly run over the radial lines of each system, double-truck semi-convertible cars with high-speed motor equipments have been substituted; the track has been relaid in many districts and heavier rails installed; new lines have been built to tie the different communities together, and a parcels express service set in motion. Under the old conditions the larger of the companies had given no transfers and the smaller one but few. The average fare per passenger was 4.95 cents.

The establishment of the transfer privilege reduced the average fare per passenger to 4.6 cents. This was a gain to the public, but it cut the revenue of the company by some \$27,000, or 1 per cent of its entire capital stock. There was an increase in riding, due to the inauguration of the transfer facilities, amounting to a gain of over 887,000 passengers in a given period, or an increase of 13 per cent. To handle this business the car-mileage had to be increased 9.6 per cent, and the number of paying passengers in the period increased but 6 per cent.

The company met the situation by increasing the necessary car-mileage without any increase in car-hours. It ran 152,593 car-miles more under the new conditions with an actual decrease of 4,532 car-hours, or 2.6 per cent. The saving in labor cost was accomplished by running the cars at higher schedule speeds, covering more miles per day per car, and by rearranging the time-tables to avoid excessive lay-overs at the ends of the lines and at turn-outs. The result to the company was a gratifying increase in net earnings, and on this basis it plans to give the public increased facilities.

### Electric Railway Sleeping Car Service

The first sleeping cars were built for electric railway service about five years ago, but because of physical obstructions along the proposed route these cars never were operated on the line for which they were constructed. Later these cars were purchased by the Illinois Traction System and for nearly two years they have been operated over a 95-mile division of that road between Springfield and East St. Louis, Ill. The practicability of interurban sleeping-car service has been demonstrated with these equipments, even though in the light of present car-building and operating methods, the design of the older cars is not now considered entirely satisfactory. But they demonstrated the possibilities of sleeping car traffic for electric lines, and the Illinois Traction System has just had built according to designs of its officials, two new sleeping cars that include many innovations, all intended to increase the comfort and safety of the passengers. The new features comprise improvements in berth construction as well as a radical step forward in car body design. Elsewhere in this issue the constructional features of the new cars are described in detail. These cars are probably the first large interurban equipments to be built with turtle-back roofs. Viewed from both interior and exterior, although they are without monitor decks, the car bodies present a very good appearance. Certainly it is possible to build a car roof of this form more cheaply and make it stronger than when the upper structure is irregular in shape to permit the installation of deck lights in the customary position. The unbroken carlins spanning from side to side form a strong roof structure which is light in weight and easily protected from the weather. The questions of ventilation and illumination have been solved by adding a row of windows in the sides of the car above the gothics of the main windows. Additional ventilation is provided by exhaust hoods on the roof over each of the several compartments.

These new cars will no doubt attract attention to the railway company operating them. Sleeping car service at this time has a double value. A steady through traffic is obtained because under the conditions under which it is given the service is a great convenience to the traveling public and the railroad receives considerable advertising because of the novelty. The newly designed cars have easy riding M. C. B. four-wheel trucks and will be operated as trailers in connection with motor cars which will carry both express and passengers and will make fast through runs at night. By this combination of service the sleeping cars may be handled at a relatively low cost, for labor and power.

The field for sleeping car service on electric lines is usually as distinct from that on steam lines as is the passenger and freight service. The trunk railroads make up their train schedules, as a rule, to accommodate the traffic between the large terminal cities reached, and the times at which the trains arrive at or depart from intermediate points is often most inconvenient. For these shorter runs at night very rapid transit is no advantage. The average passenger would much prefer to travel more slowly if by doing so he can get a good night's rest, rather than to sit up until two or three o'clock in the morning to wait for his sleeper on a through train, or else be compelled to leave his berth at four or five o'clock in the morning because the train reaches his destination at that time. Here is where the electric line can give him the service which he desires. It can vary the length of its train

to the demands for accommodations, running but one car if necessary, and it can operate cars directly between cities which it would be impracticable to provide with such a service under steam railroad conditions. The absence of smoke and cinders during a ride at night on the electric line is an advantage which should also appeal strongly to the intending passenger, especially when it is combined with the other comforts, compared with a steam railroad sleeper, contained in the cars of the Illinois Traction Company. We look to an extension of sleeping car service by electric lines.

### A 10-Cent Fare Legal and Reasonable

After an inquiry extending over a period of two years, with the complete access to the books of the Brooklyn Rapid Transit Company which the law now permits, the New York Public Service Commission, First District, reaches the wise conclusion that "present conditions do not justify a reduction" in the fare of 10 cents charged to Coney Island by the constituent companies of this system. While the Commission was divided in its judgment and but three of the five members voted for dismissal of the complaints, it is plain that the conclusions of the majority were reached as a result of a most searching investigation and a careful consideration of all the facts obtainable respecting the entire business of the system and the Coney Island traffic, supplemented by a physical appraisal by Bion J. Arnold, consulting engineer for the Commission.

Unfortunately the majority did not unite in an opinion which makes it possible to show the reasons for the brief conclusion that conditions do not justify a reduction, but the Commissioner who presided at the hearings, Mr. McCarroll, filed an able review and discussion of the evidence, presenting the considerations which made him clearly of the opinion that the complaints should be dismissed. Commissioner Bassett, who voted with the majority, filed a separate opinion, in which he stated that if all existing elements of value other than franchise are added to the depreciated value of the property of the Brooklyn Union Elevated System, his belief is that the total figure will be found equal to or greater than that used by Commissioner McCarroll. Commissioner Eustis rendered no opinion in voting for dismissal of the complaints. Commissioner Maltbie filed a negative opinion and Commissioner Willcox, who also voted against the orders, declared himself in favor of dismissing the complaints so far as they affected the lines other than the Brighton Beach line operated by the Brooklyn Union Elevated Railroad. As the orders affected that line, he wished to be recorded against them.

In the absence of a decision reviewing the principles upon which the majority agreed in voting to dismiss the complaints it may be taken for granted that in the main the convincing and vital considerations upon which Commissioners McCarroll and Bassett lay weight, in their individual opinions, are those that determined the finding that the 10-cent rate of fare is legal and reasonable.

Early in the consideration of the case the Commission concluded that it could not reach a fair determination of the questions involved without a physical valuation of the property. Mr. Arnold's appraisal, reaching a total of \$76,000,000, as included in the opinion of Commissioner McCarroll, was confined in the determination of the case very largely to physical elements. This total is less than that to which Mr. Arnold testified during the hearings and the reduction in amount does

not indicate a reduction in appraised values, but simply an attempt to segregate carefully the property directly involved in the Coney Island service. The values used for real estate were the assessed values which, of course, are less than the values for operating purposes. Actual costs to reproduce were compiled with allowances "for reasonable expenses, for contractor's profit, surveying, planning and other engineering charges and various incidental items which, although intangible, are essential disbursements in the creation of any property such as a street railroad or elevated railroad." No allowances were made in this valuation for franchise values or for "a considerable amount of development expenses." No allowances are made for depreciation, although Mr. McCarroll refers to the testimony of Mr. Arnold that the properties were in excellent condition and that hence any allowance for depreciation would be the minimum usually made.

It appears from the statements of facts and from the discussion of Mr. McCarroll that the valuation of the property in this rate case disclosed so strong a position for the company that it was not considered necessary to do more than to make an incomplete appraisal. What the effect might be of a complete appraisal with absolute valuation of the physical elements and fair estimates for the intangible values is an interesting subject for conjecture.

Commissioner McCarroll admits that it is evident that the valuations are extremely conservative and that further study of the subject would have the effect of decreasing the percentages of income realized by the various properties during the fiscal year ended June 30, 1909. That is, it seems to have been accepted by the Commission as perfectly clear in this case that the income from the value of the physical elements alone was not unreasonable. In every enlightened valuation, allowances are made for other than purely physical elements.

As the Coney Island service affords accommodation during a brief period of hot summer weather and the traffic is therefore of a special character, the Commission evidently tried by every known method, with the figures available, to segregate the revenues and expenses from the other operations of the system. The opinions indicate that other attempts at analysis will be made. Of course, any complete segregation of the Coney Island business, without regard for the operation of the other parts of the system through the year, would undoubtedly show a failure of this traffic to meet expenses, charges, taxes and a fair return on the value of the property.

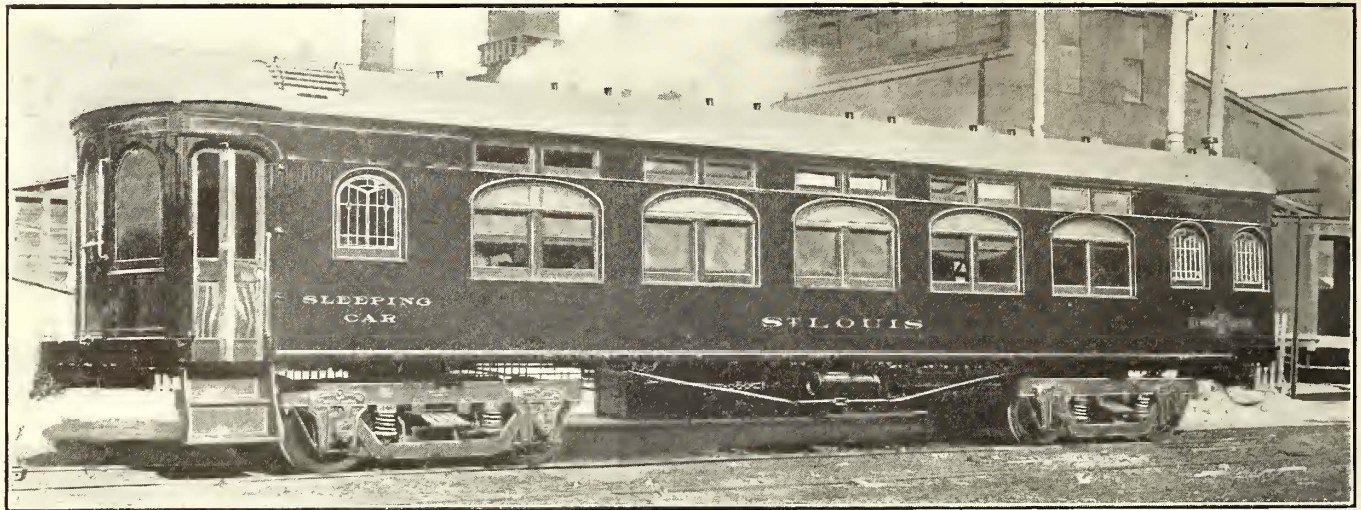
A suggestion in the negative opinion of Commissioner Maltbie that financial factors are not the only factors to be considered and that it would be an advantage to the community if dwellers in congested districts could reach the seashore at small expense is, of course, not worthy of consideration in a question that should be decided solely upon its merits as a business proposition. If charity is to be bestowed for worthy objects, it should be done voluntarily and not by a virtual assessment upon revenues that may be overcharged with proper and necessary expenses. It is commendable that the majority decision should have been based upon the admissible considerations that the 10-cent rate of fare is legal and not excessive in this case and that the earnings from the entire business are not unreasonable. It indicates the strong position of the company that these conclusions were reached without taking into account the non-earning years when the properties, undergoing development and improvement, yielded no adequate returns to their security-holders.

## SLEEPING CARS OF RADICALLY NEW DESIGN FOR THE ILLINOIS TRACTION SYSTEM

On April 1 the Illinois Traction System will inaugurate a new sleeping-car service between St. Louis and Peoria. This is a run of 172 miles. Two cars for this service have just been delivered from the St. Charles (Mo.) plant of the American Car & Foundry Company. These equipments include a number of innovations in car building, all designed to make sleeping-car service more comfortable and more safe. H. E. Chubbuck,

later. Passengers from St. Louis to Peoria will have ample time to reach the electric train after the closing of theaters.

The regular Pullman rate of \$1.50 a berth will be charged with the exception that the upper berths will be 25 cents less. One colored porter will act as attendant on each car. A third porter will relieve the regular men on every other trip. Each day the cars will be thoroughly cleaned and aired at the terminals. Every consistent means will be used to insure the comfort of the passengers. Hot coffee and rolls will be served each passenger from a portable fireless cooker provided for each



Illinois Traction System Sleeper—New Design of Car Body with Turtle-Back Roof

general manager, and J. M. Bosenbury, superintendent of motive power and equipment, Illinois Traction System, are joint inventors of many of the novel features. An underlying motive in the design of these cars was to offer a passenger means for passing a more comfortable night while en route over the electric line than could be had on the regulation sleepers of any competitive steam road. As a step in advance the sleeping car of this new design has upper berths into which daylight and air are readily admitted. An outside view is obtainable through two windows at the side of each upper berth. Other novel features which will appeal to the night traveler are mentioned below.

The new type of sleeping car has a turtle-back roof. The excellent appearance of this car should attract the especial attention of those railway men who long have held that the monitor deck was an heritage from horse-car days and of little value under present interurban operating conditions.

### SLEEPING-CAR SERVICE

The present sleeping-car service of the Illinois Traction System includes two motor-operated sleepers running between Springfield and East St. Louis. This service has given very satisfactory results, even though the cars operate under their own motive power and therefore are more noisy than will be the new trailer sleeping cars. The Springfield-St. Louis service will be continued with the cars now in operation.

The schedules for the new cars are as follows: One car will leave Peoria at 11:30 p. m. daily, arriving at East St. Louis at 6:30 the next morning. Another car will leave East St. Louis at 11:59 daily, arriving at Peoria at 7 a. m. The cars will be open for the reception of passengers at 9 p. m. The leaving time of the sleepers has been arranged so that connection may be made at Peoria with all the evening trains arriving on the steam roads. It is expected that substantial through traffic will be had from the Chicago, Rock Island & Pacific train which reaches Peoria at 10:20 p. m., and serves the cities of Ottawa, La Salle, Peru and Chillicothe, lying north of Peoria. The only other sleeper service between Peoria and St. Louis is over the Chicago & Alton, which has a branch line into Peoria with a train leaving two and one-half hours earlier than the electric sleeper and arriving at St. Louis one-half hour

car. No charge will be made for this service. In announcing the schedules of the new sleeping cars especial care has been taken to state plainly that the porters are well paid and the company expects them not to receive tips.

### CAR-BODY DESIGN

Ten upper and 10 lower berths, each 37 in. wide, are provided in each car. At one end of the car are a smoking-room and



End View of Sleeping Car

toilet facilities for the men, and at the other end are the women's toilet-room, a heater compartment and linen lockers. Reference to the accompanying engravings will show the substantial construction of the car body, the heavy underframing and the appearance of this type of car with its turtle-back roof.

The controlling dimensions of the body are as follows:

	Feet.	Inches.
Length over huffer plates.....	54	0
Length from huffer pulling face to coupler pulling face.....	55	9 <sup>7</sup> / <sub>8</sub>
Length over vestibules.....	51	4
Width over side sills.....	9	1 <sup>3</sup> / <sub>4</sub>
Width over siding.....	9	3
Height between sills and plates.....	7	3
Height over roof hoards.....	9	4 13/16
Height from rail to bottom sill.....	3	5
Height over all.....	12	9 13/16

INTERIOR ARRANGEMENTS

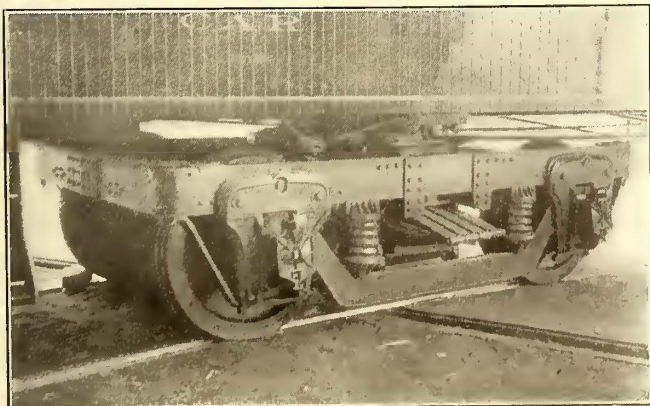
The general arrangement of the interior equipment of one of these interesting cars is designed to provide a convenient center passageway from one platform to the other. The men's smoking-room at one end of the car occupies the full width of the car body and is 5 ft. 3 in. long. A door from one corner of this room leads to a toilet-room approximately 4 ft. square, enclosing a Duner flush hopper with wall pull. The fittings in the smoking-room and men's toilet include a two-basin washstand with open plumbing and a water cooler, made of nickel-plated white metal, a large mirror, lockers for linen supply and a leather-upholstered seat 5 ft. long with lockers below. The water supply is carried in tanks above a false ceiling at the car sides. These tanks may be filled from the roof or from the bottom of the car. A view of one corner of the men's smoking-room is shown. Two doors lead out of this room, one to the car platform and the other to the sleeping section. All doors swing on hinges.

At the opposite end of the car is the women's toilet with similar fittings, occupying a space 6 ft. 3 in. long on one side of the center aisle. At the platform end of this room is a heater compartment about 3 ft. square lined with sheet steel. This compartment occupies part of the platform space and encloses a No. 1 C Peter Smith heater. A supply of coal is carried in a box cellar underneath the car framing. Radiation is effected with two rows of 2-in. pipe on each side of the car. At this end of the car and opposite the women's room are two linen lockers each 2 ft. 6 in. square and extending to the height of the deck rail. A tool locker opening onto the corridor is built above the linen lockers.

The car has a single-entrance door at either end with platforms about 4 ft. x 5<sup>1</sup>/<sub>2</sub> ft. in area. The step openings are protected by Edwards foot-lifting trap doors. The vestibule floors are covered with inlaid linoleum.

SLEEPING SECTIONS

Ten upper and 10 lower berths are provided in the middle division of the car. These berths all face a center aisle 26 in. wide. All berths are 37 in. wide and the top of the lower berth is 18 in. above the floor. The head room between the lower and upper berths is 36 in. Each pair of sections is set

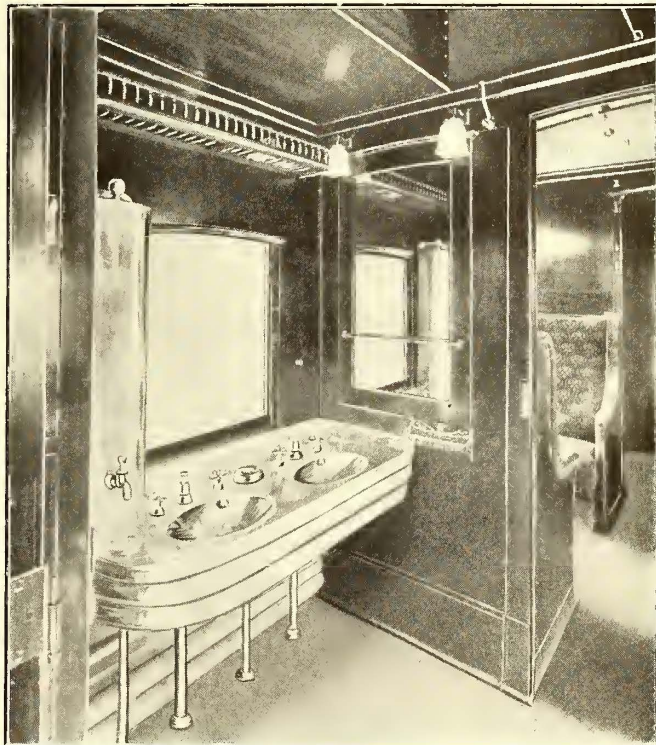


Illinois Traction System Sleeper—M.C.B. Four-Wheel Truck

off from its neighbor by a solid mahogany bulkhead pierced by a corridor opening 26 in. wide and 7 ft. high. The cross partitions which separate the sleeping sections serve to stiffen the car body and materially provide against accidents to passengers in event of a car overturning.

The two end compartments are each equipped with two Na-

tional Sleeping Car Company sections with upper and lower berths. In the daytime these sections are made up into seats similar in appearance to those in a Pullman car. At night the seat cushions slide together in conjunction with two auxiliary cushions stored during the daytime, to form a lower berth with deep springs. The seat backs are hinged at the top and swing upward to form the upper berth. Thus, one of these sections at night has the appearance of a Pullman section. The mattresses and pillows are stored during the daytime in boxes underneath the seat cushions. The National seats are up-



Illinois Traction System Sleeper—View in Smoking Room

holstered in green frieze plush and the mattresses and pillow have a green wool covering.

NEW TYPE BERTHS

The three compartments in the middle of the car are each equipped with two upper and two lower berths of the new design credited to Messrs. Chubbuck and Bosenbury. The construction is such that the berths can be swung and locked to the sides of the car. It is not intended that passengers shall be seated in these compartments except just before retiring and after arising. The two berths in each section occupy the full length of 6 ft. 5 in. between the cross partitions of the car. Each berth is hinged to the side framing of the car and its weight is balanced so that it may be folded up against the windows. The individual berths are removable so that they can be carried outside of the car for thorough cleaning and airing. The lower berth has removable spring frames and each berth is provided with two feather pillows, two Pullman blankets and duplicate sets of sheets and pillow cases.

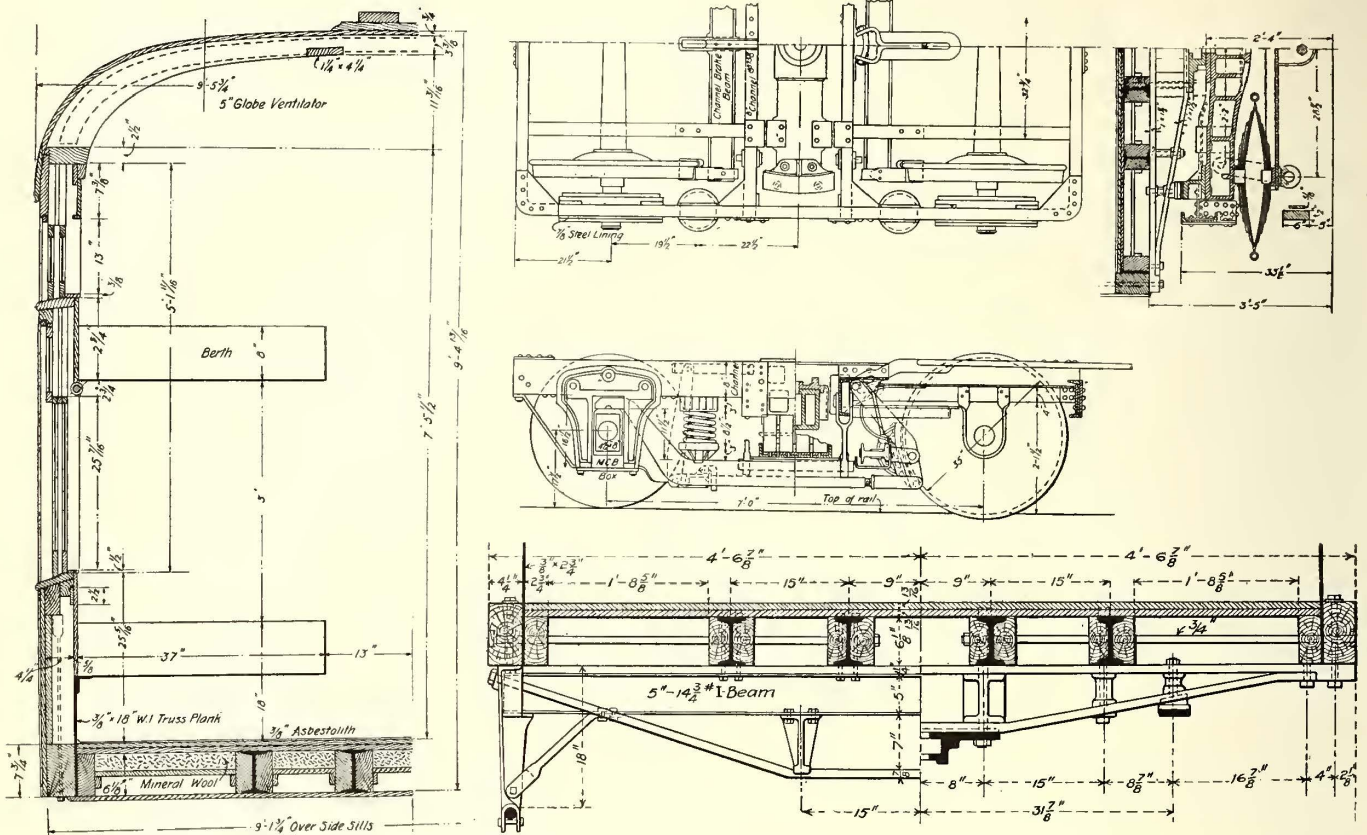
Some of the advantages that this new type of berth is said to have, as compared with Pullman construction, should claim the appreciation of the passengers. The features of cleanliness and sanitation are important. In addition to these a passenger sleeping in a lower berth when arising in the morning may fold his berth against the wall and have the entire floor space and room below the upper berth for dressing. A neat leather-seated folding chair is stored under each berth and available for use when the berth is lifted. The usual hammocks and head and foot baskets are provided for the reception of clothing at night. At night each section is shut off from the corridor by a pair of long goat-hair satin berth curtains carrying the berth numbers. These curtains are hung from bronze pipe rods

carried near the upper deck. A pair of short curtains also is available for each berth.

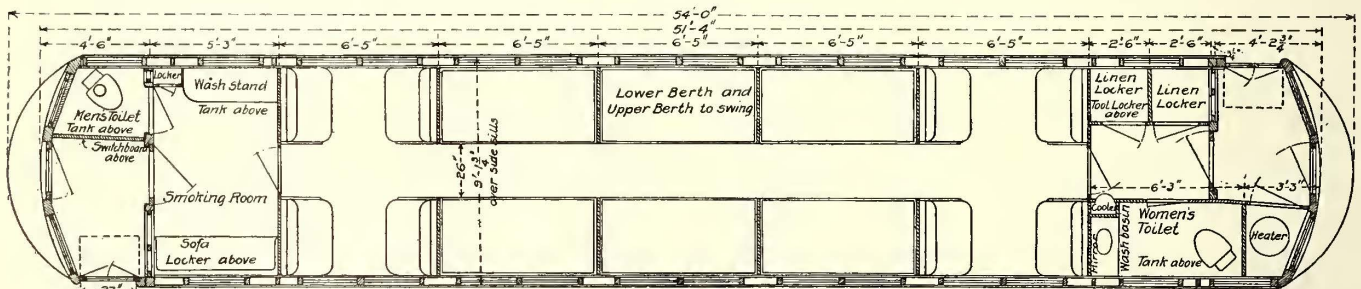
As a convenience to passengers this type of berth permits that the bed clothing can be arranged for the night during the day, and the berth folded out of the way against the wall so

bronze designed according to attractive patterns. The upholstery is all in green-colored stock.

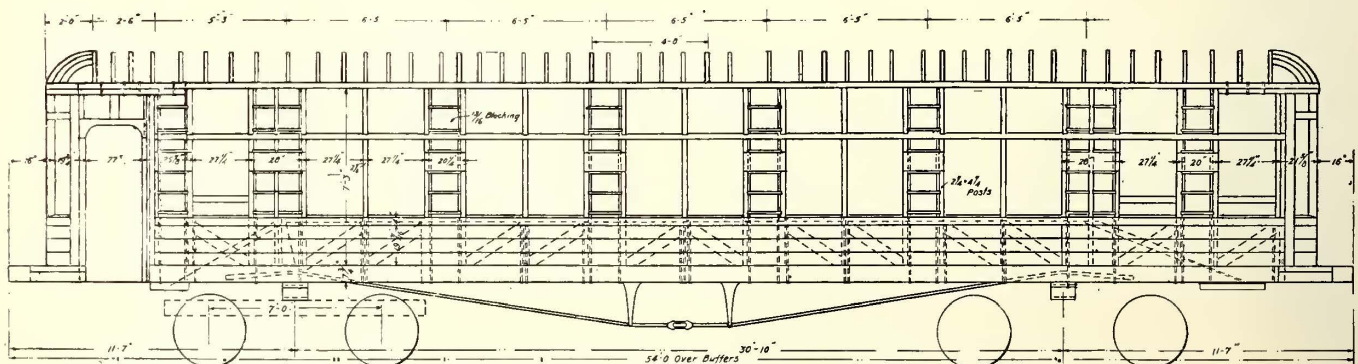
A novel feature for the convenience of passengers is the installation in the side wall at each berth of a push-lined steel locker provided with a Yale lock. The locks are so designed



Illinois Traction System Sleeper—Cross Section of Body, Steel Trailer Truck and Cross Section of Underframing



Illinois Traction System Sleeper—Floor Plan, Showing Arrangement of Berths and Toilet Rooms



Illinois Traction System Sleeper—Elevation of Side Framing

that at night when a passenger desires to retire it is only necessary to lower the berths and hang the curtains.

A 25-call annunciator system is installed with the indicating box in the smoking-room. There is a push-button in each upper and lower berth. All the berth fittings are made of statuary

brass designed according to attractive patterns. The upholstery is all in green-colored stock. A master key will be carried by the car conductor and each passenger will be provided with an individual key for the box in his berth. These keys will be attached to rubber rings so that they may be slipped over the wrist at night.

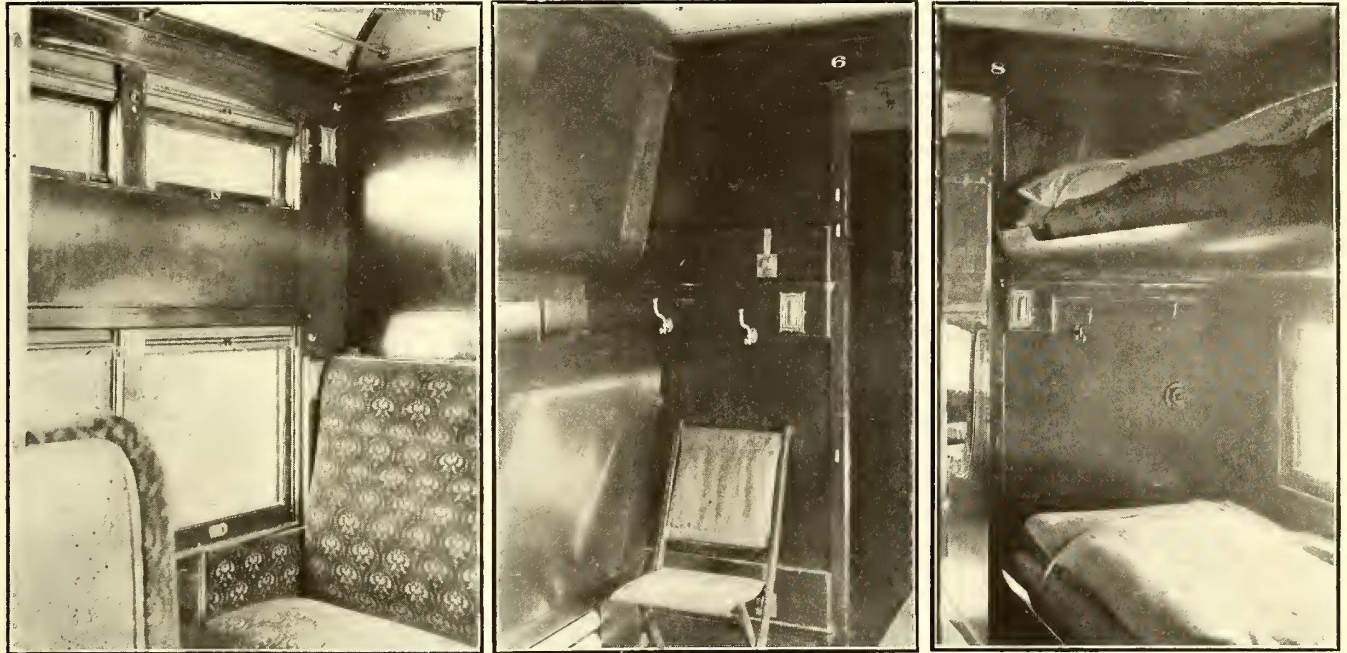
There are two windows in each berth. Those in the lower berth are of the usual type found in Pullman cars with double sash. The windows in the upper berths are 25 in. long and have a clear opening 10 in. high. Hardware for the windows was furnished by the O. M. Edwards Company. The inside sash on the upper windows is provided with a spring pin which passes through the sash and fits into a socket in the sash of the outside window. The passenger may adjust this pin so that the two sashes will or will not raise together.

The lower windows in the sleeping compartments are fitted with single outside one-piece gothics. The windows in the

arranged over the center line of the upper berth and similar ventilators are installed over the toilet and smoking-rooms.

ILLUMINATION

Illumination for the general body of the car and the berths is provided by means of a generous number of 8-cp, 32-volt spherical incandescent lamps fed from a Gould storage battery carried in a case under the car. The control board for the lighting circuits is installed against the toilet-room partition on one of the platforms. Trolley connections are provided for charging the battery from the line through resistance. General illumination is had from three lamps mounted against the ceil-



Illinois Traction System Sleeper—Double Row of Windows, Berths Folded Against Side Walls, Berths Lowered

smoking, toilet, linen locker and heater rooms have high single-arched sash with 3/16-in. clear leaded glass in hard metal frames. All window sash are made of mahogany. Metallic weather strips are provided on all windows and doors and during the summer screens will be fitted to the upper and lower berth windows. The window curtains in the sleeping compartment are made of silk-covered Pantasote and have Forsyth roller-tip ring fixtures. All of the curtain rollers are concealed behind the finish of the car. The swing doors along the corridor of the car are of solid mahogany, fitted with art glass in hard metal frames. The inside finish of the car is all in mahogany with five-plies. The arched ceiling is three-

ing of each sleeping section. Two individual lights are provided for each berth. The berth lamps are installed in statuary bronze pockets set flush with the woodwork. In each pocket is one lamp, mounted as a part of the swinging cover to the pocket. On pressing a button the pocket door is opened by a spring and the lamp automatically is cut into the circuit. These fixtures were manufactured by the Adams & Westlake Company.

TRUCKS

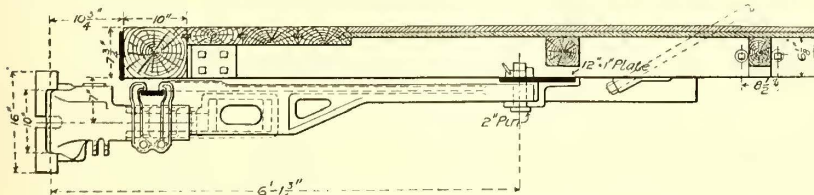
The car body is mounted on two trailer trucks of the M. C. B. all-steel four-wheeled type built by the American Car & Foundry Company. The dimensions of the truck are as follows:

Wheel base .....	7 ft.
Journal centers .....	6 ft. 3 in.
Truck frame .....	10 ft. 7 in. by 6 ft. 6 in.
Frame material—two pieces .....	8-in. channel
Bolster springs .....	36 in.
Equalizer springs, double coil .....	7 1/4 in.
Equalizer bars .....	6 in. by 2 in.
Wheels, Midvale, rolled steel .....	35 in.
Journal boxes—Symington .....	4 1/4 x 8 in. M. C. B.
Transoms .....	8-in. channels
Dust guards .....	Security
Brakebeams .....	Inside-Hung I-beams

The new sleeping cars are equipped with Westinghouse schedule AMS automatic air brakes having 12-in. cylinders.

UNDERFRAMING

The underframe main members are four 6-in. I-beam center and intermediate sills with 2 3/4-in. x 6 1/8-in. yellow pine sub-sills and side sills made up of 4 1/4-in. x 7 3/8-in. yellow pine pieces joined to 3/8-in. x 18-in. steel plates extending the full length of the car. The center and intermediate sills extend into the wooden bumper blocks and are anchored thereto with 5-in. x 1/2-in. angle plates fastened with 3/4-in. bolts. The overhang of the car is 11 ft. 7 in. from king pin to face of bumper. The body bolsters are of the built-up type made of top and bottom plates 12 in. x 1 1/8 in. in section. The truck



Illinois Traction System Sleeper—Longitudinal Section Ahead of Bolster, Showing Coupler Mounting

ply poplar with mahogany ceiling bands and is light yellow in color decorated with gold stenciling.

VENTILATION

A complete system of ventilation is provided in this type of car, even though it has a turtle-back roof without the customary deck sash. Five-inch ventilators with exhausters above are inserted in the roof over the full length of the car. Each ventilator terminates in a brass ring beneath the ceiling. This ring is provided with a shutter held in place by a spring so that a slight tension is necessary to adjust the ventilator opening. There are two such ventilators in each sleeping section

center distance is 30 ft. 10 in. and the car is 54 ft. long over buffers. The outside truss rods are 1½ in. in diameter with 1¾-in. ends. These rods are supported on the tops of the bolsters close to the side sills to which they are secured. The queen posts are of malleable iron 18 in. deep and braced to the cross ties, which are 5-in. I-beams. The underframing is given a camber of ¾ in. between bolsters and ½ in. between the bolsters and the ends of the cars.

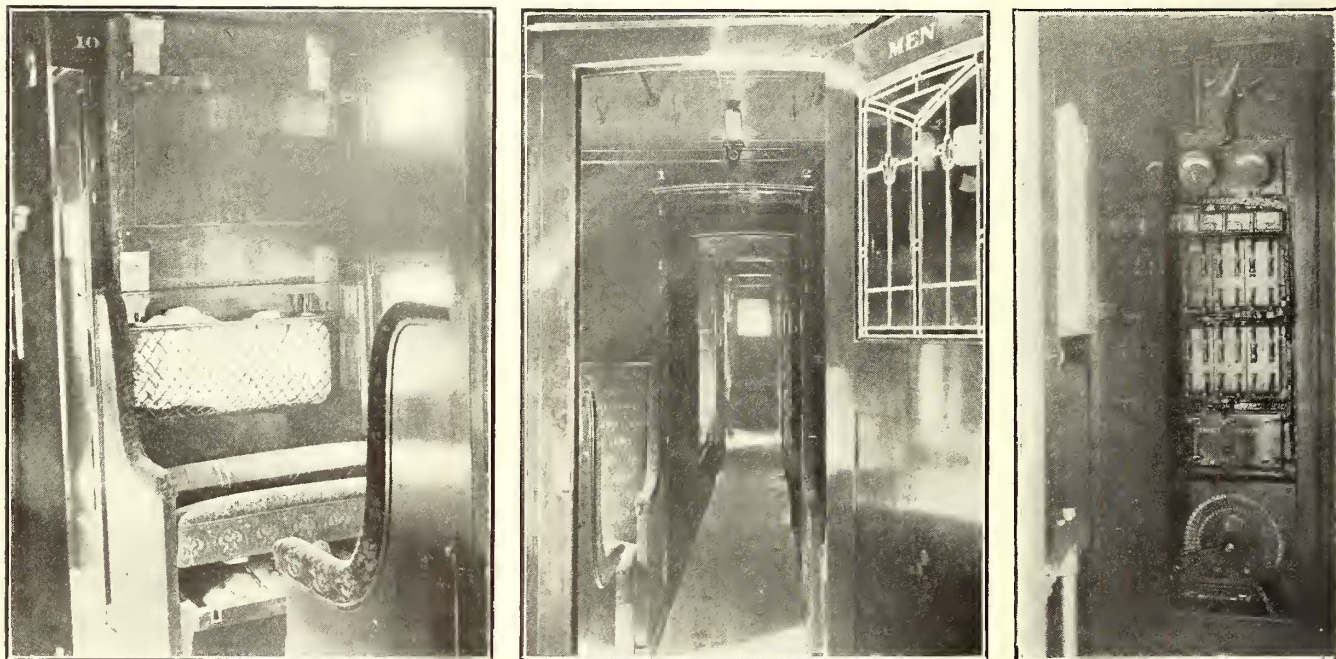
The cross framing is so arranged that a free space 12¾ in. wide is left between the center sills from end to end of the car, except where cast spacing blocks are placed. These blocks have an opening through their web and thus provision is made for a straight run of conduit under the middle of the car. The over-all width of the underframing is 9 ft. 1¾ in.

A wooden floor 13/16 in. thick is laid on top of the sills. Above this is a second wooden floor of the same thickness supporting a wearing surface of Asbestolith ¾ in. thick. This surface extends from side to side of the car and is given a fillet at the edges to prevent the collection of dirt. The space between the center and side sills is packed with a layer of mineral wool 2½ in. deep held in place by a false floor. The entire underframing also is ceiled smoothly underneath by a wooden

posts between the windows is 13/16 in. thick and is fitted between ½-in. rods which tie the deck rail to the side framing. A lateral member extends from end to end of the body between the upper and lower side windows tying the posts and window structure together against longitudinal movement. Steel roof carlins are placed on 4-ft. 8-in. centers and between each pair of these are four ash carlins. All wood carlins are 1½ in. thick and iron carlins are ½ x 1¾ in. in section. The iron carlins are anchored to the vertical tie rods which pass through the side framing and through the end framing of the car. The carlins are 14 13/16 in. high above the deck rail. The ends of the car have swinging doors for train operation filling openings 30¾ in. wide.

#### COUPLERS

These cars, which are for trailer service, are equipped with the Bosenbury type of M. C. B. coupler with radial anchorage. As shown in the illustration, this coupler has the same contour and couples with an M. C. B. coupler. The face of the knuckle is 16 in. deep, which permits great variation in the heights of the cars without danger of uncoupling. This type of coupler has been used several years on the Illinois Traction System with considerable success. The coupler shank is carried in a



Illinois Traction System Sleeper—Views Showing Parts of Berths, Corridor Along Center of Car, and Switchboard for Lighting System

covering. The underframing and floor have a depth of 7¾ in. This elaborate floor construction, including four wooden floors, one of composition, and a layer of deadening material is installed for the purpose of preventing the noise from the running gear from disturbing the passengers.

#### BODY CONSTRUCTION

The side framing of the car is of wooden construction and below the window rail has a continuous blocking 1⅞ in. thick. On the interior, the sides of the car are straight from the floor level to a height of 7 ft. 5½ in. The rise from this elevation to the ceiling is 11 13/16 in. The width of the cars over eaves is 9 ft. 5¾ in. and the height from bottom of sill to top of roof is 9 ft. 4 13/16 in. The windows are 25 7/16 in. above the floor and the lower window opening is 25 7/16 in. high. The upper windows have a clear opening 10 in. high. The distance between the top of the lower window and the lower sash of the upper window is 15 in.

The sides of the car above the window rail are made up of window sections 5 ft. 3½ in. wide enclosing two lower and two upper sash, and blocked posts 20¼ in. wide. A 2¼-in. mullion divides the window section vertically. The blocking in the

flexible radial carrier and is anchored by a 2-in. pin carrier in a 12 in. x 1 in. plate bolted between the center sills.

A hearing was held before Milo R. Maltbie, of the Public Service Commission of the First District of New York, on Feb. 23, 1910, to determine whether the resolution of the commission made on June 11, 1909, which approved a type of wheel guard known as the 1907 Parmenter wheel guard, in use in Manhattan, should not be rescinded and an order entered prescribing the substitution of what is now known as the 1909 Parmenter wheel guard.

Mr. Connette, transportation engineer of the commission, said that the 1909 Parmenter model was a decided improvement over the 1907 model. H. H. Adams, superintendent of rolling stock and shops of the Metropolitan Street Railway, said that the company had practically eliminated the 1907 type of Parmenter guard and that it was the intention of the company gradually to rebuild the 1907 wheel guard to the 1909 type, particularly when guards of the 1907 type were partially destroyed in service. The company had a special department in which the repairs to this equipment were carried out.



**CONSTRUCTION FEATURES OF WARSAW-PERU LINE**

The Winona Interurban Railway Company, as announced in this paper, recently inaugurated service over a new line from Warsaw to Peru, Ind. The completion of this line marks an important step in the growth of the interurban network of Indiana. Through electric travel from Chicago to Indianapolis is now possible. Already the railway companies interested are planning to put into service a through limited chair-car schedule between South Bend and Indianapolis, which probably will make the run of 160 miles in about six hours. At South Bend this service will connect with other electric service to St. Joseph, Mich., Michigan City, Ind., and Chicago. At Indianapolis connection can be made with limited electric cars for Terre Haute, Ind., Louisville, Ky., Dayton and other Ohio cities. On account of the possibilities of through freight as well as passenger service the new connecting link has been built according to high interurban railway track standards. Preparations are being made for handling carload freight and it is quite probable that the traffic department of the Winona Interurban Railway can obtain considerable freight traffic in handling grain and live stock from the country districts to the steam-railway shipping centers.

The northern division of the Winona Interurban Railway was opened for service in the fall of 1906. The route is 25 miles long, connecting Goshen and Warsaw, Ind. The contour of the country is such that a very fast line was easily built. The new southern extension is 44 miles long. Outside of the five cities and towns which it connects there are no curves in the track which will require slackening speed. Just west of Warsaw the line passes over the main line of the Pennsylvania Railroad on a steel viaduct with earth approaches. From this crossing the route is a tangent extending in a southwesterly direction through level farming country for 9 miles to Mentone. At Mentone the new interurban line passes under the New York, Chicago & St. Louis Railroad, and thence extends southward with a second 9-mile tangent to Akron, a town of about 1000 inhabitants located on the Erie Railroad. The interurban line passes through the main street of Akron and just south of town crosses over the main line of the Erie Railroad on a timber viaduct. This structure will be replaced with a steel one supported on concrete piers. Southward from this viaduct the new line is practically a tangent for 11 miles to a point just north of Chili, where the Vandalia Railroad is intersected. The grades of the two lines are separated and the new electric cars pass through a concrete subway under the Vandalia tracks.



**Interurban Crossing Over Pennsylvania Railroad at Warsaw, Ind.**

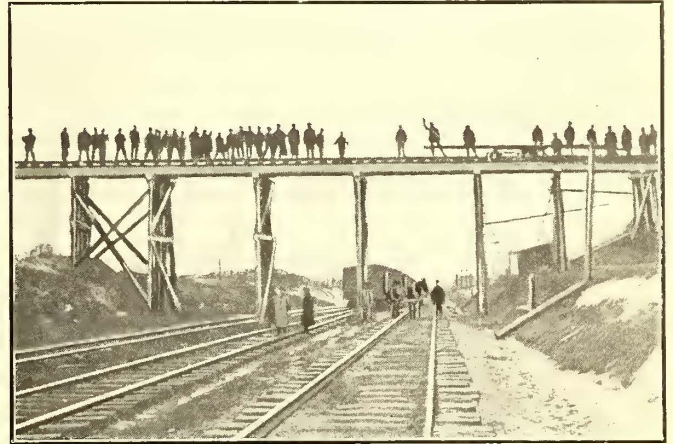
The right-of-way and roadbed from Chili, 9 miles, to North Peru was built by the Wabash Railroad from which the interurban company purchased it about two years ago. As this section of the route was formerly used for steam-train operation it is now in excellent shape for high-speed electric service. At North Peru track connection is made with the main line of the Wabash Railroad. The cars of the interurban company enter Peru over the city streets. As soon as track connection is made with the local company the Winona cars will jointly use a station of the Chicago, Cincinnati & Louisville steam railroad with the Indiana Union Traction Company.

The track standards according to which the northern division of the road was built have been followed in constructing

the southern extension. Seventy-pound rails are bonded with American Steel & Wire  $\frac{7}{8}$ -in. terminal, 8-in. pin-driven bonds. Sidings are placed about 4 four miles apart and the switches have the Pennsylvania Steel Company's standards with disappearing blades. Eight-day switch lamps of Adams & Westlake manufacture are used.

**POWER SUPPLY**

Power for the operation of the entire line is generated in a modern-type station located at Winona Lake, near Warsaw.



**Temporary Viaduct at Akron, Ind.**

The constructional features of this station were described in the STREET RAILWAY JOURNAL for Nov. 17, 1906, page 962. The station contains two 600-kw, 2300-volt, 25-cycle revolving-field Allis-Chalmers-Bullock generators driven by Allis-Chalmers Corliss engines. Current is stepped up to 33,000 volts for distribution to five rotary converter substations equipped with Allis-Chalmers apparatus. Three of these substations have recently been constructed for serving the new southern extension. The present converter capacity of each substation is one 300-kw unit. The power station contains a similar unit for supplying the local lines in Warsaw and Winona Lake.

Current is distributed to the new substations over a three-phase transmission line carried on the poles which support the trolley brackets. The transmission wires are of aluminum, with a capacity equivalent to No. 2 copper. Current is distributed to the cars by a bracket-supported No. 000 grooved-trolley wire and an aluminum supplementary feeder with a cross-section equivalent to 450,000 circ. mil copper. Garton-Daniels lightning arresters are spaced five to the mile for the protection of the d.c. conductors. The Blocki & Brennan Company, Inc., of Chicago, executed the contract for installing the high-tension and d.c. feeder lines. Telephone jack boxes are installed  $\frac{1}{2}$  mile apart along a single pair of wires which extends through the length of the road. Stromberg & Carlson instruments are used.

**SERVICE**

This interesting connecting interurban link was opened for service on Feb. 14, 1910. At the present time small interurban cars are operated between Warsaw and Peru awaiting the completion of the work of ballasting the roadbed. Five large interurban motor-cars are being built for use on this road. These cars will conform closely in design to the very satisfactory equipment purchased in 1906 for the northern division. The cars are 57 ft. 8 in. long and 9 ft. 4 in. wide over all, subdivided into three compartments.

As there is no steam line parallel with the new southern ex-

tension it is expected that considerable through passenger travel will be had. The passenger fares are based on a rate of 2 cents per mile with a 10 per cent reduction for round-trip tickets. All classes of freight traffic are solicited, and the company is especially well prepared to handle carload lots. It is expected that during the summer season the newly opened route can develop considerable traffic in fruit from southern Michigan to Indianapolis and points farther south.

### LETTER OF W. A. HOUSE REGARDING PROPOSED UTILITIES COMMISSION IN MARYLAND

William A. House, president United Railways & Electric Company of Baltimore, has published, with the approval of the board of directors, an open letter in the daily newspapers of Baltimore discussing the proposed Public Utilities Commission. The letter is addressed to the judiciary committee, the members of the Legislature and the public.

In the following paragraph Mr. House gives a brief history of the development of the property:

"This company is a consolidation of all the street railways of the city. Its constituent companies passed through the experiences common to all large city railways of bitter competition for business, for franchises, for capital and for favorable legislation. The competing lines thus merged also passed through the customary stages of costly experimentation, not only as to possible traffic, but as to equipment as well. They passed from horse to cable to electric motive power. Constant improvements in street railway equipment and methods made frequent and costly changes necessary. Millions of dollars went to the scrap-heap and to the profit and loss account of experience. Capital was hesitant and suspicious as to the future, and the struggles to obtain it were severe and expensive. All the companies were necessarily drawn more or less into the turmoil of politics, and the relations between the companies and the public were often ill-defined and inharmonious. Out of this welter of conflict and experimentation, with its failures and mistakes, no more peculiar to Baltimore, however, than to every other large city, emerged a few years ago the present company, and with it began a new era in street railway affairs in Baltimore."

As the company realized that its most valuable asset and its chief guaranty of success was the good-will of the public, it set about to acquire this. "It studied the public needs and the city's probable future," Mr. House says, "and although laboring under a burden of taxation amounting to about 10¼ per cent of its gross annual revenue, or 65 per cent of its net earnings, it borrowed millions of capital and incurred an enormous floating indebtedness to so equip itself that no city in the world might surpass it in service. Most of this involved a discount of the future, and has been done at the expense of its security holders. It was done, of course, not as a matter of sentiment, but because we believed it was good business policy to please the public."

Mr. House states that the company "has refused to permit itself to be drawn into any political affiliations or operations." He asks the following pertinent questions:

"Having set itself the ideal of serving the public fairly, and trusting the public fully, it now has a right to ask, What are its shortcomings? Why must its affairs be turned over to a commission? If there is anything which the public demands and which is practicable, commission or no commission, it is and has been our desire to supply it. Are there any complaints which the company has ignored? Is there any one who knows the facts who believes that we overcharge our patrons when we carry them at an average rate, after deducting the park tax, of 3.15 cents per person? Has any city a better equipment, or a prompter and wider service? Does the city or State want to investigate our finances, as provided for in this utilities bill? The city already does that through the park tax, and the State through its tax commissioner; and the corporation income tax law also compels us to give full publicity, even if we did not

already voluntarily give it. Are we in danger of issuing watered securities? The present corporation law, and the change of public sentiment in corporate financing, are safeguards against this. Do we need to be kept from 'merging or consolidating or absorbing'? Are we abusing our franchises? Are we retarding public development and growth? If we are doing any of these things, the Legislature can correct them."

The objections to the bill under consideration, as expressed by Mr. House, are in part as follows:

"Here is a bill pregnant with the greatest possibilities of danger, likely to do far more harm than good, more far-reaching in its provisions than any law on our statute books—and yet it threatens to become a law just because it embodies a more or less abstract idea which for the time is popular. Not one man in a thousand has read this voluminous measure or knows its full purport. Few members of the Legislature will find time to digest its provisions.

"To-day, government by commission is a fad. A few years ago it was 'Home Rule' and 'Municipal Ownership.' Regulation of public utilities has caught the popular fancy. Few stop to reason how or ask why. But it behooves the Legislature, at least, not to be swayed by every passing fancy, and not to mistake a popular phrase for a popular demand.

"The drastic character of this bill can hardly be overstated. It gives a commission of three men, appointed by the Governor, the most absolute and far-reaching power over the affairs of this company—its finances, construction, rates, equipment, operations, extensions, etc. It supersedes the board of directors and officers of the company in its internal affairs, and, in addition, has powers co-equal with the Legislature; and the only protection the company has is an appeal to the courts, and that is a protection only against abuse or misconstruction of the law, and not against ignorance or mistakes of judgment. If we deserved to have our rights and liberties thus taken from us, it might be different. But having done our full duty, our investments and our success should not be thus paralyzed, or at least jeopardized.

"A railway like ours is an extremely intricate and complicated proposition, involving many delicate adjustments of means to ends, and calling for the most expert and specialized kind of knowledge of all the multitudinous facts and conditions involved in its operation, having 4000 employees, operating 775 cars over 401 miles of track, and carried last year 202,632,546 passengers. An official of the road ignorant of his business might issue a seemingly harmless order, or recommend an apparently desirable innovation which could quickly produce disorganization and disaster. Every railway has learned this lesson at great cost. Isn't it evident that the best-intentioned commission might easily make serious blunders?

"If it be said that we are assuming that this proposed commission will abuse its broad powers, or not act thoroughly and honestly, let it also be said that to exercise great powers fairly involves not merely honesty, but knowledge. How can such a commission, having a comparatively small appropriation, act with full knowledge of the facts in the case of a large corporation?

"It costs the New York commission over \$1,000,000 a year to get expert service, and no other service is fair or even worth having; how much will it cost Maryland? The commission is likely to spend its estimated \$75,000 a year either in doing nothing of consequence because it is too conscientious to go at it blindly, or it will have to expend several hundred thousand dollars in doing intelligently what it will find, after it gets the facts, is already as well done as it can be done.

"Even if there were no other objections, it seems almost absurd for the taxpayers of Maryland to load themselves with this expensive commission to regulate its few utilities. If regulation is deemed to be necessary, there seems to us to be no good reason why the city should not regulate its own utilities, through its own functionaries.

"Not only does this company believe such a commission useless so far as actual needs are concerned in Maryland, but it is a positive menace to the prosperity of our city and State. The

counties of Maryland, above all things, need improved transportation and public service facilities. The State needs capital. We will need it to reach the rural sections. All these improvements are a matter of capital, and every one who has to do with obtaining capital, where public franchises or governmental interferences or uncertainties are concerned, knows how timid it is. It is unreasonable to suppose that men will embark in any enterprise over which such a commission has supreme power. This commission can willfully or unwittingly break any company within its jurisdiction. Will any capital take this chance? It might take it in New York or Massachusetts or Wisconsin, where the possibilities of profit are great; it will not take it here, where the chances of loss are still greater."

Mr. House refers to the danger that a commission would inevitably draw public service corporations more or less into politics, and suggests the appointment of a commission to study the question and report to the next Legislature.

Commenting on the advertisement of the company, the Baltimore Sun says editorially:

"While there is a widespread and, in our opinion, a just and enlightened demand for a commission in this State, the public will recognize the right of the United Railways Company to present its point of view with reference to legislation which vitally affects its interests.

"The attitude and methods of the street railway company are in striking contrast with those of the gas company. As the latter has been getting into politics the former has been getting out. Under the presidency of Mr. House the railway business, and not political campaigning and legislative trickery, has been the concern of the management. The result has been a steady growth in popular esteem and prosperity."

### CLEVELAND TRACTION SITUATION

At a meeting with officials of the Cleveland Railway on March 10, Street Railway Commissioner Dahl insisted that some registering device be placed on the pay-as-you-enter cars, so that the conductors may keep an account of the fares that are dropped into the box. He suggested that the register show both inside and outside the car. General Manager J. J. Stanley stated that he would see what could be done.

In reply to requests for extensions of service in Newburg Heights and Lindale, Commissioner Dahl has taken a stand against extensions of any kind at present. He says that the amount of money required for purchasing new cars and converting old cars is so large that the company is in no position to extend the service. Petitions had been sent from both places and Mr. Dahl communicated his answer to the officials by letter. Objections have been made to the proposed 10-cent fare to Euclid Beach by the Humphrey Company, which owns that resort, and claims that an existing contract with the railway company requires a fare of 5 cents. It is said that the Humphrey Company will test its contract in the courts if the city and company insist on operating on the present plan.

The receivers' report for February is as follows:

Gross earnings from operation.....	\$442,701.57
Operating expenses:	
Maintenance .....	\$97,093.60
Transportation .....	178,915.19
General .....	29,830.33
Net earnings .....	305,839.12
Neutral street railway rental.....	136,862.45
Taxes .....	936.68
Interest rental .....	25,601.94
Dividend rental .....	38,399.62
	73,378.00
Total .....	\$138,316.24
Deficit .....	1,453.79

Three causes probably conspired to make the first monthly deficit that has occurred in the operation of the lines for a year. The immense amount of snow that was handled entailed a heavy expense. The month was a short one and the receipts may not have been in proportion to the fixed expenses charged in the interest and rental accounts. The third cause was the operation of the entire system at 3-cent fare. This cause will have to be considered for the next seven months, at least.

The report of operations made by Receiver Warren Bicknell, while the property was in the hands of the court, follows:

Gross earnings .....	\$7,495,292.71
Operating expenses .....	4,912,609.27
Net earnings from operation.....	\$3,032,683.44
Neutral street railway company rental.....	14,612.36
Interest .....	605,551.02
Surplus .....	\$940,512.74
Balance, March 1,.....	\$196,172.52

In discharging the receiver Judge Taylor allowed him \$7,500 in addition to the salary of \$1,000 a month, as originally fixed. He also allowed Frank A. Scott an additional compensation for the time he served as co-receiver. The receivership covered the period from Nov. 13, 1908, to March 1, 1910. All debts of the Municipal Traction Company have been paid and the property turned over to the Cleveland Railway Company clear, although with no surplus to take care of immediate requirements and the conditions imposed by the new grant.

On the afternoon of March 10 the conductors and motormen who had been employed under the Johnson administration left their cars at the Holmden Avenue car house. The arrival of General Manager Stanley and Superintendent Radcliffe quieted the trouble, and the men continued at work. The report that the men would leave on the morning of March 12 also gained circulation. The company had plenty of extra men at the car houses to take out all cars and this had the effect of dissuading the men from causing trouble. Extra motormen were on many of the cars through the day. Some of the trainmen who held places during the Johnson administration have been dismissed, it is said, and their places have been given to men who struck to enforce the Municipal Traction Company, to carry out the terms of the contract made by the Cleveland Electric Railway.

It is said that many of the men employed by the Municipal Traction Company have arranged to go to Philadelphia as strike-breakers since they have lost places in Cleveland.

During a conference with the railway officials on March 11, Commissioner Dahl requested that the company surrender its grants in that portion of the city formerly embraced in the village of Collinwood and accept a new grant drawn in accordance with the Talyer ordinance. Mr. Stanley stated that this was a question for the directors of the company to decide. Councilman I. D. Laferty has prepared an ordinance providing for this extension and will probably introduce it at an early date. It will stipulate that the company must accept it within five days after its passage or not at all.

Plans and specifications for the new pay-as-you-enter cars have been placed in the hands of W. E. Davis of the Cleveland Construction Company, who will act as engineer for Commissioner Dahl for this special purpose. After he has passed upon the plans an order will probably be placed. Some of the new cars ordered by Receiver Bicknell have been placed in operation.

On March 12, before leaving for New York, former Mayor Johnson cancelled the lease made between the Municipal Traction Company and the Cleveland Railway Company and all the papers signed in the negotiations conducted by himself and F. H. Goff. Mr. Johnson will probably not return to Cleveland until May. His friends are said to be very much worried over his health.

### WESTINGHOUSE STORAGE BATTERY SOLD TO ELECTRIC STORAGE BATTERY

Announcement has been officially made that The Electric Storage Battery Company, of Philadelphia, has acquired all the patents and rights of the Westinghouse Storage Battery Company. The Westinghouse Storage Battery Company owned all the rights of the General Storage Battery Company, and the storage battery interests and patents of the Westinghouse Machine Company. From this time on The Electric Storage Battery Company will have the sole right to manufacture Westinghouse batteries.

## NEAR VS. FAR-SIDE STOPPING IN CHICAGO AND OTHER CITIES

It has been decided that beginning April 1, 1910, all cars of the Chicago street railway systems in the district north of Twelfth Street, east of Halsted Street and south of Chicago Avenue will stop for passengers only at the near side of street intersections and after rounding curves. Before this rule went into effect, the conditions governing near and far-side stops in other cities were carefully studied for the Chicago City Railway Company to assist in determining which of these methods was the most suitable for Chicago. The following abstract of the report made to the company as a result of this study shows how many factors enter into the different solutions of this ever-present problem:

### METHODS OF INFORMING THE PUBLIC AS TO CHANGES IN STOPPING PLACES

In cities where the far-side stop has been discontinued various means are used to indicate where cars stop. The following are some of the methods used:

- White bands on poles.
- Red band above white band to denote special stopping places.
- White and blue enameled signs suspended from span wires and reading: "South bound cars stop here," etc.
- Sign on pole at near side, reading: "Cars stop here," with hand pointing. Sign on far side, reading: "Cars stop next crossing," with hand pointing.
- Small iron standard or post set near curb at stopping point, bearing a red ball or sign.
- Heavy white mark on pavement to indicate where cars stop.
- Corrugated iron plate embedded in pavement at side of track and bearing the words, "Cars stop here." The plate is located at the point where the rear platforms of the cars ordinarily stop.
- Posters and signs in cars.
- Newspaper publicity.
- Uniformed inspectors stationed at the busy points to inform the public.
- Several roads issue instructions that if passengers are waiting to board the car on the far crossing, motormen must motion to them to come across the street and also point to the sign as the reason for their doing so.

### ANALYSIS AND SYMPOSIUM ON NEAR VS. FAR-SIDE STOPPING

The introductory summary of this chapter states that there were 15 affirmative and 21 negative answers to the question, "Is it expedient to stop only on the near side throughout all sections of the city?"

The analysis of this question and the one entitled "Is it feasible to eliminate the second or far stop in the congested area?" is presented separately under these sub-heads:

*Effect on passengers; effect of changing established stops; the time element; power consumption; accident hazards; effect on street traffic.* The analysis was based on a careful review of experience in other cities, an investigation of conditions in Chicago and an examination of opinions expressed by approximately 100 managers of electric railway properties in the United States.

The available testimony is so conflicting as to render it of little value in making a decision for any specific community. It appears that population, habits and customs of the people, arrangement of tracks, design of car, whether front platform is used for both entrance and exit, condition of pavement, width of streets, established direction and speed of car and vehicle traffic, relative location, with reference to street crossings, of traffic centers, *i.e.*, office buildings, department stores, theaters, depots etc., and other considerations are all important factors and will have a bearing on results obtained. The policies and methods followed in introducing the innovation will also influence the failure or success of the experiment. Therefore any attempt to forecast the results in any community can be little better than a guess. The effects of certain factors and combina-

tion of factors appear to be wholly different and sometimes at variance in different cities.

To illustrate: Detroit retains the far-side stop in the outlying districts but has eliminated the second or far stop in the downtown area. On the other hand, Salt Lake City has adopted the near-side stop in the outlying districts but insists on the second or far-side stop in the congested sections. Brooklyn and New York both tried changing to the hither stop, but the experiment was discontinued because of popular protest, though both John F. Calderwood, vice-president, and W. O. Wood, formerly general superintendent of the Brooklyn property, maintain that the "near stop only" is the correct principle and assert the experiments were not fair trials. Washington, D. C., has only the near-side stop at all streets, but the testimony of Mr. Todd, formerly associated with the Washington roads, is that the practice is more dangerous to pedestrians and vehicle traffic than the far stop.

### QUESTION NO. 1.—IS IT FEASIBLE TO ELIMINATE THE SECOND OR FAR STOP IN THE CONGESTED AREA?

*Conclusion.*—Where safety stops are made on the hither side of the street intersections it is feasible in the downtown sections to load and discharge passengers at this one stop and discontinue the far-side stop.

*Effect on Passengers.*—The most serious obstacle to the complete success of this plan is, it compels passengers to walk in the street at least a car length to reach the rear platform. This feature will very likely arouse protest, but the criticism will probably gradually disappear as the public recognizes the saving in time achieved by doing away with the double stops. As a matter of fact, at many downtown intersections passengers now have to walk at least a car length beyond the crossing, as cars frequently go well beyond the crossing before making the stop.

*Effect of Changing Established Stops.*—There will be, at least for a time, considerable confusion in the minds of the public, and especially of strangers, until the new order is generally known and understood. People will continue to wait at the far crosswalks and will think they have a grievance when cars pass them by. The intensity and duration of this confusion and protest can be greatly modified if a campaign of notification is started well in advance of the date set for instituting the change. The degree of publicity given in advance will have a direct bearing on the success or failure of the innovation. It may be found expedient to make exceptions and continue the second stop on the far side to meet traffic conditions at certain curves, or to accommodate department stores, theaters and office buildings.

*The Time Element.*—There should be a net saving in time schedules by reducing the number of stops. But part of the gain made by eliminating one stop will be offset in some degree by vehicles cutting in ahead of cars, by longer time required for prospective passengers to walk to the rear stop, and because of increased congestion at rear platform due to taking on a larger number of people at one stop, instead of dividing them between two stops as at present.

*Power Consumption.*—There will be economy in power consumption by reducing the number of stops, and a saving in brake shoes, wheels, track, etc.

*Accident Hazards.*—Opinions differ widely as to whether stopping only on the near side in the congested area increases or decreases accidents. One correspondent asserts that by eliminating the second stop, the hazard of boarding and alighting accidents will be reduced by half. Another manager testifies that boarding and alighting accidents have increased by discontinuing the second stop because passengers through habit, recklessness or ignorance attempt to board and leave cars in motion at the far crosswalk. The same conflict of opinion exists as to the hazard of collision with vehicles, pedestrians and cars. By stopping only on the near side there should be less accidents due to people running up from behind cars and grabbing the rear handle. Stopping at the near side would also have the tendency to make people face forward when

alighting, as they naturally face toward the crosswalk when leaving the car.

*Effect on Street Traffic.*—Eliminating the second stop will tend to expedite vehicular traffic because cars lining up behind a loading car will not block the intersecting street. On the other hand, it is quite possible car movements at busy intersections will not be so responsive to the signals of traffic police officers. For instance, if two cars approach at right angles simultaneously and both cars are required to wait to load and unload passengers at the near side stop, neither can respond immediately to the traffic officer's signals to come ahead and that intersection will be temporarily tied up until one or the other of the cars is free to proceed.

QUESTION NO. 2.—IS IT EXPEDIENT TO STOP ONLY ON THE NEAR SIDE THROUGHOUT ALL SECTIONS OF THE CITY?

*Conclusion.*—The conclusion is against adopting the near stop in outlying districts, based on a consideration of the type of cars now in use, prevailing condition of the paving and because of the general confusion that would follow. If a car could be designed having both entrance and exit at or near the front end, prospects would be better for successfully introducing the "near-side stop."

*Effect on Passengers.*—The necessity of passengers boarding and alighting in the mud applies with double force against the proposition of stopping only at the near side of all streets, because in the outlying sections streets are more apt to be badly paved, muddy and unsafe. There is a possibility that enforcement of the near side stop would give rise to popular demand for entrance at the front platform, and consequent nullification of the pay-as-you-enter idea.

*Effect of Changing Established Stops.*—The confusion in the minds of the public and especially of strangers caused by changing from the far-side to the near-side stop would be serious and could be justified only by very convincing arguments in favor of making the change. In the writer's judgment these arguments are lacking. The contention that if the far-side stop is abolished downtown it should, for the sake of uniformity, be abolished all over the system is not in itself conclusive.

*The Time Element.*—Changing from far-side to near-side stop in outlying districts would probably not affect the schedules materially either way. The tendency, if anything, would be to delay rather than to expedite, because of time lost at stops through teams and pedestrians cutting in ahead of cars and because of waiting for intending passengers to pick their way to the rear platform.

*Power Consumption.*—The effect on power consumption would be very slight, if any.

*Accident Hazards.*—Testimony conflicting. Some managers think the hither-side stop increases accidents and some believe it reduces the accident hazard. The probabilities are the net results would about balance, the increase in certain accidents offsetting the decrease in others.

*Effect on Street Traffic.*—Little, if any. Possibly the near-side stop would expedite vehicular traffic because it would give vehicles the right of way over cars at cross streets.

#### SUMMARY OF OPINIONS ARRANGED BY CITIES

*Cities where far-side stop has been eliminated in congested areas only.*—Boston (partially), Cincinnati, Cleveland, Detroit, Rochester, Savannah, Ga.; Seattle, Wash.; Toledo, Ohio.

*Cities where far-side stop has been successfully eliminated throughout entire city.*—Atlanta, Ga.; Charleroi, Pa.; Chattanooga, Tenn.; Columbus, Ohio; East Liverpool, Ohio; Ft. Wayne, Ind. (exceptions); Montreal, Canada; Norristown, Pa.; Philadelphia (exceptions); Pittsburgh (exceptions); Salt Lake City (exceptions); San Diego, Cal.; San Francisco; St. Louis, Ohio; Toronto, Ont.; Washington, D. C.

*Cities where unsuccessful attempts have been made to change to near-side stop.*—Baltimore, Brooklyn, Chicago, New York.

*Special opinions unfavorable to near-side stop received from Duluth, Minn.; Indianapolis, Ind.; Minneapolis, Minn.; Vancouver, B. C., and others.*

QUESTION NO. 1.—ELIMINATING SECOND STOP IN CONGESTED DISTRICTS WITH ABSTRACTS OF OPINIONS AND EXPERIENCE

*Boston.*—The general practice in this city is to stop on the far side of crossings. In some instances either as safety precautions or to accommodate the public the cars are stopped on the near side. When cars stop on the near side they do not also stop on the far side. A high Boston traction official in Boston believes it is safer to stop on the near side but thinks it is impracticable to adopt this as general practice because many of the streets are not suitably paved and are muddy in wet weather.

*Cincinnati, Ohio.*—Safety stop is made on near side at street intersections in congested districts. It is reported that passengers are becoming accustomed to the near-side stop and generally board cars at that side so that the second stop is not a frequent occurrence.

*Cleveland, Ohio.*—At a few extremely busy street intersections at which a traffic squad officer is stationed, and at all street intersections at which there is a crossing of another street railway line, cars stop at the near crossing only. It is reported that the result of this rule has been to expedite the railway service and it has not provoked public complaint. The effect as to increasing or decreasing accidents is believed to be very slight, if any. Eliminating the far-side stop has done away with the blockading of intersecting streets due to cars lining up behind a car that has stopped on the far side. In other words, with the near-side stop if the cars line up they do so without encroaching upon the intersecting crossing.

*Detroit.*—Police traffic regulations, adopted in July, 1909, provide that a compulsory stop be made at the near side of street railway crossings within the half-mile circle and the far stop has been eliminated at these points. In a few instances, where traffic requires, cars also stop at a distance of 100 ft. to 150 ft. beyond the crossing to accommodate passengers. The elimination of the stop on the far side has facilitated the movements of cars and reduced the chance of passengers getting on or off in front of approaching vehicles.

*Rochester, N. Y.*—The company has eliminated the second stop at principal intersections in the downtown district, but the company states it is too early to give results as to the effect on accidents, traffic, etc. However, the elimination of the second stop has lessened by about 45 per cent the time of movement of cars through the heavily congested streets.

*Savannah, Ga.*—The second stop has been eliminated in the congested area and the scheme is working satisfactorily. The company feels there is a decided gain both from the point of safety and in saving of power.

*Seattle, Wash.*—When safety stops are made on the near side of street intersections, the far-side stop is eliminated. Otherwise cars stop on far side. There is some confusion on the part of strangers, although sign-boards are posted conspicuously at the crossings, stating that cars stop on the near side only.

*Toledo, Ohio.*—In May, 1909, an ordinance was passed eliminating the stop on the far side in the downtown districts. In the outlying districts cars stop at the far side as formerly. The public seems better satisfied with the new arrangement and the company is enabled to give better schedules through the congested district. The management thinks the new rule does not affect the number of accidents one way or the other, nor that it either expedites or retards the movement of vehicle traffic.

QUESTION NO. 2.—CHANGING TO HITHER STOP IN ALL SECTIONS WITH ABSTRACTS OF AFFIRMATIVE OPINIONS AND EXPERIENCE

*Philadelphia.*—System seems somewhat mixed. Cars stop on the near side of all principal streets, i. e., streets that have car tracks on them or streets at which house numbering begins. Cars stop the second time on the far side of streets having double tracks and also at Broad Street; otherwise the far-side stop is eliminated. The company reports in effect: "The public for a while were confused but have at this time become thoroughly conversant with the methods and there is no trouble in controlling traffic. From the standpoint of the railway com-

pany it has saved us a great many collisions of cars, and a great many collisions with wagons. We consider it a very favorable method of operation. It expedites vehicular traffic. We can see no change in our schedules since we made the near-side stop from our former practice of far-side stop, hence it makes practically no change in the method of operation as regards speed."

As to the effect on strangers, this letter says: "The stranger does not concern us very much; he generally watches what the traveling public does and follows in its steps."

*Washington, D. C.*—This city has the near-side stop in accordance with legislation passed some eight years ago. There is, therefore, but one stop at all track and street intersections. The management says: "The near-side stop has been accepted practically without comment by the public and is therefore deemed to be satisfactory. We accept it because one stop is preferred to two and because we believe the number of car collisions and collisions with other vehicles and with pedestrians has been materially decreased. It seems to me that the practice expedites vehicle traffic because every driver on the intersecting street knows that at all track crossings and at all fire stops the cars will stop on the near side; therefore the drivers push ahead to take advantage of that stop. I believe the near-side practice expedites the movements of street cars because it renders unnecessary the passenger stop after making the necessary stop for intersecting line or fire runs."

However, in this same connection the testimony of a railway manager, formerly resident at Washington, is of interest. He states: "The experiment was tried in Washington and later in New York of stopping on the near side, and these trials seem to have demonstrated pretty conclusively the great advantage of stopping on the far side rather than on the near side of street intersections. From my own experience—especially while in Washington when the cars were stopped on the near side—I consider it very much more dangerous to pedestrians and vehicular traffic to stop on the near side rather than on the far side, except in the very congested downtown streets. It is possible to theorize to almost any extent in connection with this matter, but I think the actual results in New York give more data to base an opinion upon than any amount of theorizing would do. There can be no question that there are advantages in stopping on the near side of the street in thickly congested downtown districts, especially where there are intersections of different lines, but the disadvantages of the rule in parts of the city not thickly congested I believe more than offset the slight advantage there may be in stopping cars on the near side of street intersections in congested districts."

*San Francisco.*—Cars stop on the near side throughout the entire city and no second stop is made at the far side. The practice has been in vogue about five years. The management reports in effect: "No good reason exists why cars should not stop at near or first sidewalk, only, provided that weather or climatic conditions are such that rear end of car may be reached by passengers without wading through slush or snow. If pay-as-you-enter or pay-within cars are used, the above condition will undoubtedly cause serious inconvenience to patrons. The results from the standpoint of this company have been an appreciable saving in time required to make a round trip, due to the fact that San Francisco is gridironed with intersecting street railway tracks at which formerly it was necessary to come to a full stop before crossing and also after crossing, and passengers boarded and left cars at either stop to suit their convenience. It has also reduced the number of accidents due to the necessity of reducing speed of cars when approaching intersecting streets preparatory to stopping. Vehicular traffic is expedited by the near-side stop, particularly in the congested districts where police officers are stationed to regulate traffic—a standing car being more readily governed by the signal of officers than a moving car. We have found that one officer can render as efficient service in handling traffic as two could under the old conditions. Police regulations covering the movement of vehicles have been adopted to conform

to the near-side stopping of cars. Vehicles which desire to diverge from a street on which cars are operated are required to proceed to the far side of the intersecting street, before crossing track."

*Atlanta, Ga.*—Cars in this city have always stopped only on the near side of all street crossings. Evidently the company and the public are satisfied with the rule. The management writes: "We have never been able to conceive any possible reason or invent an excuse for stopping cars on the far side of crossings."

*Columbus, Ohio.*—Cars stop on the near side only, in all parts of the city. Pay-as-you-enter cars are operated. P. P. Burington, secretary, believes that accidents to vehicles and pedestrians have been reduced by this practice. He states the public is fully satisfied. E. K. Stewart, first vice-president, says:

"We have stopped on the near side only, for 15 years. We find this rule is beneficial in that it reduces crossing accidents with vehicles to practically nothing and it is a protection against collision with fire department and also with pedestrians. With pay-as-you-enter cars in use in this city the stop on the near side puts passengers directly on cross-walk if the front exit is used."

*Toronto, Ont.*—Cars stop only on the near side except at one or two intersections in the downtown district where cars make the second stop on the far side to accommodate the employees and patrons of large departmental stores whose doors open opposite these points. The management believes the near-side stop reduces accidents, especially those due to boarding and alighting, because the number of stops is reduced. It also believes the elimination of the second stop in congested areas greatly facilitates the handling of cars and vehicular traffic by the traffic officers. The company makes the point that with the far-side stop, a driver of a vehicle in turning from a cross street cuts directly into the group of people who may be boarding or alighting from a car. If the car stops only at the near side this interference is avoided.

*Salt Lake City.*—Cars stop at the near side only in outlying districts and on both sides in the congested districts. This rule is explained by the fact that the streets are very wide, the distance from curb to curb being 92 ft. in most instances. Passengers load and unload from both platforms.

*Montreal, Canada.*—Cars stop only on the near side. There is now a popular agitation in the city to compel the company to change to the far-side stop.

*Other Cities.*—Other cities in which cars stop only at the near side are as follows: Charleroi, Pa., Steubenville, Ohio; East Liverpool, Ohio; Ft. Wayne, Ind. (Near side in paved streets; far side in unpaved streets); Chattanooga, Tenn. (Near-side stopping in effect two years. Superintendent states plan has worked very satisfactorily. Expedites vehicular traffic. Does not retard movement of cars. Reduces number of accidents); Pittsburg, Pa. (An endeavor has been made to adopt the near side stop in Pittsburg, but it is often necessary to violate the rule and stop on the far-side also); Norristown, Pa. (Near-side stop throughout the city); San Diego, Cal. (Near-side stop throughout the city). A number of important cities report they now stop on the far side but are considering changing to the near-side stop.

#### QUESTION NO. 2.—CHANGING TO HITHER STOP IN ALL SECTIONS WITH ABSTRACTS OF NEGATIVE OPINIONS AND EXPERIENCE

*Minneapolis, Minn.*—All passenger stops are made at the far side and at right-angle track intersections passenger stops are made at both the near and far crossings. The company says: "Our experience with the near-side stop has been such as to convince us that considerable confusion would inevitably result if the near-side stop were adopted. While regular patrons of the line might soon accustom themselves to the change, outsiders would be at a loss to know where they were expected to board a car. As far as we are concerned and with our local conditions we believe that our present practice with regard to stops is by far the most satisfactory."

*Indianapolis, Ind.*—Stops are made only on the far side. The company writes: "In the outlying districts under the plan of stopping cars on the near side, drivers of carriages, wagons, etc., and pedestrians crossing the street will take the chance of crossing directly in front of a car when they see it coming knowing that the car will stop on the near side if it stops at all, and will assume that it is going to stop; whereas if the car stops on the far side of the street they will not take these chances."

*Duluth, Minn.*—Cars stop at the far side and make both stops in congested area. The company writes: "One serious objection to stopping on the near side of intersections in this and other Northern cities is that passengers when alighting from or boarding cars at the rear end would be taken on or received at a point about 40 ft. from the crosswalk where no especial effort is made to keep the street free from snow, slush and dirt. Our reason for continuing the second stop is that it would be almost impossible to teach residents of the city, to say nothing of transients, at what streets cars stop on the near side to receive and discharge passengers, and at such points there would always be a few passengers waiting to board the car at the usual place on the further side of the intersection."

*Vancouver, B. C.*—Early in 1909 this city passed a resolution requesting the company to stop cars on the near side of street crossings on all paved streets and to continue stopping on the far side on streets not paved. The management says: "From our standpoint we find with the near-side stop that considerable time is lost, due to the fact that passengers very often stand in line with the street crossing and have to walk back the length of a car to mount the rear steps. We have had no serious accidents due to this new method of stopping which was begun May 15, but in the long run we are unable to say whether it will reduce or increase the number of serious accidents. In regard to vehicle traffic we find that teamsters and others when they see the car stop at the near side, proceed to cross the tracks, sometimes very slowly in front of the standing cars, which makes it necessary to stop long enough to allow them to pass. This time would not be lost if the cars stopped on the far side. The practice of stopping at the near side, we think, slightly retards the movements of cars as above stated, by passengers having to walk back the length of a car at the crossing. With regard to the street cars themselves, with the exception of the above mentioned delays, we would say the safety element is probably increased."

#### UNSUCCESSFUL EXPERIMENTS WITH NEAR-SIDE STOPS

Definite attempts previously have been made in four of the larger cities, Chicago, New York, Brooklyn and Baltimore, to change from the "far-side stop" to the "near-side stop." All four of these attempts are reported as failures. A brief review of these experiments and the explanations for their non-success will be appropriate.

*Chicago.*—Near-side ordinance passed in November, 1895. Amended in December to permit both far and near stop. Repealed in February, 1896. In regard to the experiment made in Chicago with the near-side stop, the following extract from a letter from a general manager, who was then connected with the Chicago City Railway Company, is interesting: "The only experience I have had in connection with stopping cars at the near crosswalk was while located in Chicago in the year 1895. Council passed an order requiring the street railway lines to stop all cars at the near crosswalks. This change, however, made suddenly and without sufficient notice to the public, caused considerable inconvenience to the patrons of the road and as a consequence, Council was called in special session for the purpose of considering the matter further and at that meeting the order previously passed was revoked and the old order of stopping at the far crosswalk was re-established. As I recollect, our experience during the time the cars stopped at the near crosswalks showed that the accident hazard was somewhat increased, particularly in connection with wagon collisions. If cars stop at the near crosswalk drivers of vehicles on streets

intersecting with the traction line frequently take it for granted that an approaching car will stop at the near crosswalk and take chances on crossing the tracks that they would not take otherwise. In many cases the cars, failing to stop at the near crosswalk, collide with wagons. If it is not necessary at that particular point to stop to take on or let off passengers it becomes necessary to do so to avoid collisions with the wagons that would not have crossed the track had the driver not thought the car was to stop anyway. When the change in stopping was made in Chicago from the far side to the near side of the street intersections placards announcing the change were placed in all cars. Outside of this and the newspaper articles nothing was done. The trouble in having the public become accustomed to the change in the instance referred to was that not sufficient time was taken to educate the public to the practice before the same was put into effect. I believe the results might have been different had the practice not been changed on such short notice and more care taken to inform the public of the proposed change."

*New York City.*—An experiment with the near-side stopping was made in New York some years ago. It immediately aroused strong popular protest because passengers had to alight from cars at rear platforms and walk through the mud. The far-side stop was restored after a few days' trial with the near-side stop.

*Brooklyn.*—Concerning the results of the near-stop experiment in Brooklyn, the Brooklyn Rapid Transit Company writes as follows: "In 1903 an ordinance was passed changing stop to near side only. There were so many complaints from public (people having to alight in slush, etc., during bad weather account cars not stopping with step at crosswalk), that after a week's trial another ordinance was passed putting the stop back to the far side. There was a decrease in vehicle collisions but an increase in boarding and alighting cases account cars stopping with platform away from crosswalk. Streets, however, at this time were in poor condition. Stopping at near side expedites movement of traffic." A former Brooklyn official states that the experiment was ill-timed, as it began in slushy weather and failed for that reason. In his judgment the near side stop is practicable where paving is good. He thinks the experiments both in New York and in Brooklyn were not fair trials.

*Baltimore.*—In 1893 an ordinance was passed requiring all street cars in Baltimore to stop at the near side of street crossings and intersections. In 1905, in response to a general popular demand, the city council passed a rescinding ordinance requiring the company to stop on the far side of all streets. One of the arguments used at the time the change from the near stop to far stop was made was that passengers were obliged to alight in mud or snow when cars stopped on the near side. The company is opposed to the return to the near-side stop as it believes this would lead to popular agitation for an ordinance requiring the company to admit passengers by the front door. The company points out that if passengers are permitted to enter by the front door the very object of the pay-as-you-enter cars will be defeated. At crossings where safety stops have to be made on the near side the company is in favor of eliminating the second or far-side stop.

The report on the near and far-side stops was prepared for the officials of the Chicago City Railway Company by C. B. Fairchild, Jr.

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An American consul in England has forwarded the names of seven towns in his district which have an electric car system, together with the total authorized mileage; mileage under operation, and the money invested. He states that much of the equipment of these lines was purchased in the United States, and as the companies are from time to time extending their service, making repairs and renewals, and linking up existing tracks, it is suggested that American firms follow these developments and endeavor to secure further orders in that district. The address of the consul can be obtained upon application to the Bureau of Manufactures, Washington, No. 4616.

## ANNUAL CONVENTION OF MAINTENANCE OF WAY ASSOCIATION

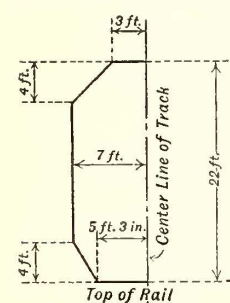
The eleventh annual convention of the American Railway Engineering & Maintenance of Way Association was held at Chicago on March 15, 16 and 17. The president of the association, William McNab, principal assistant engineer Grand Trunk Railway System, Montreal, Canada, was in the chair. During the week of the convention the Road & Track Supply Association held an exhibition of railway appliances and supplies at the Coliseum.

Those portions of the published committee reports presented before the Maintenance of Way Association which are of particular interest to electric railway officers are presented here in abstract.

### IRON AND STEEL STRUCTURES

The committee on iron and steel structures submitted a number of suggested changes in the manual of recommended practice. Regarding clearances the committee suggested the following:

"When alignment is on tangent, clearances shall not be less than shown on the diagram. The width shall be increased so as



Standard Clearances Recommended

to provide the same minimum clearances on curves for a car 80 ft. long, 14 ft. high, and 60 ft. center to center of trucks, allowance being made for curvature and superelevation of rails." Other recommended changes had to do with the character of materials and the manufacture of structural parts. This committee also suggested that a proper system of bridge inspection should generally include the following:

"(1) Inspection by the regular section forces, daily, or as often as they inspect the track under their supervision. The object of this inspection is to discover any damage to the structure from fire, flood, derailments or other accidents from traffic, or any displacement in the structure in whole or in part. This inspection, due to the lack of skill on the part of the section forces, must necessarily be superficial, and will rarely, if ever, do more than call attention to unsafe conditions arising from causes other than those of natural depreciation. No reports of such inspections need be made unless adverse conditions are discovered.

"(2) At periodic intervals of from one to six months there should be inspections by bridge foremen or others experienced in bridge repairs. These inspections should be more thorough than those of the section forces, and are intended to discover all the defects, arising from traffic, to which the bridge is subjected, and those due to natural depreciation or other causes. Reports of such inspections should be made to the one next in authority; preferably to the one most directly or primarily responsible for the safety of the structures.

"(3) Annual or semi-annual inspections are to be made by men experienced in the design and maintenance of bridges; preferably by those who are primarily responsible for their safe maintenance. The reports of these inspections should be filed, and in connection with an examination of office data will determine the safety of the structures, and be the basis for decisions as to repairs, reinforcements or renewals.

Regarding "Reinforced Concrete vs. Steel for Short Span Bridges," the committee held the opinion that reinforced concrete flat slabs or girders are not generally advisable for railway loads in spans exceeding 40 ft., but, as the great majority of structures carrying tracks over openings in the roadway are of spans less than 40 ft., the importance of these small structures is very great, and we believe the use of reinforced concrete for these small spans is desirable. The report of the committee included specifications for the erection of railroad bridges and a review of the development of metal bridge building in America.

### COMMITTEE ON ELECTRICITY

Because of its recent appointment the committee on electricity did not present definite recommendations. During the year sub-committees had studied the subjects of clearances, transmission lines and crossings, maintenance organization, and relation of electric to track structures. In the discussion of the subject of clearances, "the sense of the sub-committee was that the clearances between the limiting lines of equipment and the limiting lines of third rail structures, which are shown as 1½-in. in the report referred to, are insufficient and that a greater clearance should be established. In order to determine the limiting clearance that could be established it was decided to secure data showing limiting lines of clearances of third rail conductor structures, the limiting lines of rolling equipment and the limiting lines of third rail structures with respect to maintenance of way structures from various railways. The sub-committee is also collecting data from various railways electrified or partly electrified and also interurban lines with heavy traffic which may possibly interchange with steam lines electrified or not electrified. This sub-committee is communicating direct with the representatives of the various railways, and a circular has also been issued by the secretary of the association requesting data pertinent to the subjects outlined." Sub-committees on insulation and electrolysis are expected to make a report shortly.

### RAIL

During the year the committee on rail visited a number of rolling mills and observed tests on rail joints at the Watertown arsenal. The board of direction instructed this committee as follows:

"(1) Consider revision of Manual; if no changes are recommended, make statement accordingly.

"(2) Continue the investigation of the leakage and failure of rails and present summary of conclusions drawn from reports received.

"(3) Report on the results obtained from the use of open-hearth and special alloy steel rails, and chemical composition of such rails.

"(4) Present report showing diagrams or photographs of typical characteristic rail failures corresponding to the adopted classification of rail failures.

"(5) Report on any recommended changes in specifications for steel rails heretofore adopted, and prepare specifications for open-hearth steel rails.

"(6) Present recommendations on standard rail sections.

"(7) Consider the rail joint question and recommend design and specifications.

"(8) Reconsider and report any recommended change in standard drilling for rails as given in the Manual.

"The committee is arranging for a series of tests on rails of different sections and weights of both Bessemer and open-hearth steel, manufactured by different mills, with a uniform chemical composition for each kind of rail. The tests are to embrace drop tests, tests on revolving machine at Steelton, tests on reciprocating machine at Sparrows Point, and a service test in track, the work to be done under the supervision of a man working under the committee."

The rail committee offered a set of specifications for rail, both Bessemer and open hearth, for consideration and discussion.

### WOODEN BRIDGES AND TRESTLES

The committee on wooden bridges and trestles considered the revision of specifications for structural timbers and studied the principles and methods of pile driving. Specifications for Southern yellow pine timber, Douglas fir and Western hemlock timbers were submitted. The report of this committee included 40 printed pages devoted to wooden and concrete piles and pile-driving methods.

### OTHER COMMITTEES

Special committees reported on standard specifications for cement and on the question of co-operating with the national conservation committee.



The committee on rules and organization submitted typical rules for the government of employees of the maintenance of way department.

The ballast committee studied methods of making physical tests of stone ballast, proper thickness of ballast, methods of grading gravel ballast and treatment of foul ballast.

#### MASONRY AND BUILDINGS

The committee on masonry recommended changes in specifications for cement and presented new specifications for plain and reinforced concrete. It also presented a new "recommended practice" for designing reinforced concrete structures. A progress report on waterproofing masonry illustrated by a number of engravings showing ballasted floor bridges, was presented.

In the report of the committee on buildings specifications for five-ply tar and gravel or slag roofs over board or concrete were presented. Designs for tool houses were illustrated.

#### TRACK

The committee on track presented specifications for spring and rigid frogs, including requisites for switch stands.

#### RAILWAY LOCATION

A committee on the economics of railway location presented a report of 50 printed pages supplemented with tables and curves. The work of this committee, according to the report, "has been mostly toward presenting to the association a few conclusions which will give a practical base or foundation on which to establish a method of estimating the relative economic values of various locations. In some cases the committee's conclusions are radically different from accepted views of the past, but the conclusions are founded on practical tests and conditions as they exist, so far as possible.

"There are two fundamental points which must be considered in order to base deductions with reference to the various elements entering into the question of economic location, namely: Power and Resistance. In many different practical tests variations in results have occurred owing to differences in standards of maintenance of track and equipment, and differences in details of construction of equipment. Exact rules for determining the power and resistances, which will apply in all cases, cannot be deduced; but approximations can be made of sufficient practical value when applied for the purposes intended."

A report on the study of train and curve resistance was included. A part of the conclusions of this committee were as follows:

"Resistance of freight trains shows practically no change of resistance between 7 and 35 m.p.h.

"It is recommended that for freight train resistances between 7 and 35 miles per hour the formula  $R = 2.2T + 121.6C$ , be used for comparing freight train ratings on different lines and grades, in which  $R$  = total resistance on level tangent,  $T$  = total weight cars and contents in tons,  $C$  = total number of cars.

"In order to equalize resistance on curve and tangent, curves shall be compensated .035 per cent per degree of curvature. Effect of curve resistance is dispelled more slowly at slow speed than at high speed.

"Superelevation and depression should be equally divided between high and low rail of curve, in order to avoid shock in entering curve and exceeding maximum gradient on runoffs of curves.

"Condition of roadway maintenance has a great effect on train resistance.

"Condition of equipment has a great effect on train resistance.

"Train resistance is greater in cold weather than in warm. Per cent of rating on account of variation in temperature, as shown in body of report, is recommended for use.

"Resistance of individual cars of same weight but of different type shows considerable variation. Sufficient data are not yet available to determine just how much the difference is.

"Starting resistance varies from 10 to 40 lb. per ton, depend-

ing on loading, temperature and character of maintenance of roadway and equipment.

#### SIGNS, FENCES AND CROSSINGS

This committee reported on ways and means for securing a proper quality of fence wire to resist corrosion, continued an investigation of the use of concrete fence posts and investigated crossing flangeways. A proposed crossing specification included the following:

"At crossings where paving is required to conform to street specifications, treated ties should be used, laid on a bed of crushed rock, gravel or other suitable material not less than twelve (12) in. in depth, placed in three (3) in. layers, each thoroughly rammed to prevent settlement. Vitrified tile drains not less than six (6) in. in diameter, leading to nearest point from which efficient drainage may be obtained, should be laid on either side of and between tracks, parallel with ballast line and outside of ties. Where block paving of greater depth than the height of the rail is used, a substantial malleable iron or steel chair with base not less than 48 sq. in. should be provided, the rail to be fastened through the chair to the tie with screw-spikes. On long stretches of track, laid on streets paved with blocks, the use of a special rail section is advantageous to avoid the use of chairs. With such rail tie plates and screw-spikes should be used. Top of rail should be  $\frac{1}{4}$  in. above the paving. A suitable form of rolled metal shape should be fitted into the space between the head and base of the track rail to provide a flangeway of not less than 2 in."

The following observations were presented regarding concrete fence posts:

"1. Concrete fence posts will heave very little and in most cases, not at all; posts set from two to five years ago are still in almost perfect alignment.

"2. They appear sufficiently strong for all practical purposes after having been properly cured and set. A cedar post of dimensions identical with the average concrete post would weigh about one-fourth as much and is about four times as strong when new, but this only brings out the fact that the cedar post is stronger than necessary and that the concrete post with its lesser strength is yet strong enough to serve its purpose, and has a longer life.

"3. The claim that a concrete post reinforced with steel forms a lightning protector appears reasonable.

"4. They resist the action of fire and decay, and will not float and cannot be displaced as easily as wood.

"5. They must be handled carefully in loading and unloading, and be well cured before being set.

"6. They are much heavier than wood posts and the cost of distributing and setting is about 25 per cent greater."

#### TIES

The committee presented the replies to a circular letter, recommending that each railroad keep an accurate record of the life of its ties. Metal and composite ties were described and illustrated. The committee stated that: "The oldest steel ties in track (accessible to your committee), in any considerable quantity, are the inverted trough-section Carnegie ties. Seven hundred and fifty of these ties were put in during the latter part of 1900, and 350 additional the following spring. These ties were placed in the track near Osgood, Pa., and have been in the track eight years. The trough-shaped ties weighed 199 lb. each. Ten of these ties taken from the track during July, 1908, weighed 1,790 lb., or an average weight of 179 lb. per tie—a loss of 20 lb. after eight years' service. These ties showed no appreciable wear under the rail."

#### USE OF STEEL TIES IN INTERURBAN AND STREET RAILWAY TRACKS

Individual reports from the engineers of electric railway lines using steel ties included the following:

*Twin City Lines.*—Report through Geo. L. Wilson, the chief engineer, as follows:

"We have in use about 1,000 Carnegie steel ties. These were all laid on straight line, about one-half of them being used on a street which had a macadam surface and the balance on a street paved with brick, where the ties were embedded in con-

crete. This work was all located in St. Paul. They have been in use about one year, all on tangent. The street grade is approximately 1 per cent. In paved street we have had no difficulty in regard to the ties holding the track. On the macadam street the ties did not seem at first to hold the track rigidly, but seemed to work somewhat in the stone ballast. We have had no notice of trouble from this cause recently."

*Utica & Mohawk Valley Railway* is using the steel ties quite extensively and Mr. French, engineer of maintenance of way, makes the following report:

"I would say that to date we have used 100 Carnegie steel ties having top flange 4½ in., bottom flange 8 in., height 5½ in., length 7 ft. We have used 4572 Carnegie steel ties having top flange, 4 in., bottom flange 6 in., height 4¼ in., length 7 ft. Of this number, 625 were used under 7-in. T-rail having 6-in. base and 3-in. head and weighing 95 lb. per yard; 297 were used under 7-in. T-rail having 5½-in. base, 2⅝-in. head and weighing 70 lb. per yard; 1062 ties were used under 100-lb. standard A.S.C.E. open-hearth T-rail; 2706 were used under 95-lb. 9-in. tramhead girder rail. All of these ties were used in our standard concrete construction, paved with standard vitrified block grouted with Portland cement."

*Joliet & Southern Traction Company* advises through L. D. Fisher, chief engineer, "that we have 300 of these ties in our road in paved streets. These ties are used with 7-in., 80-lb. T-rail, and are spaced 5 ft. center to center. The tie and the base of the rail are all embedded in Portland cement concrete, with 6 in. underneath the tie. Under these conditions our track maintains good surface and gage."

*Boston Elevated Railway Company* states, through A. L. Plimpton, civil engineer, "that our use of this form of tie has been very limited, we having used it only on a short length of track on Washington Street, city proper, in connection with relaying the tracks last season on concrete base. These ties are particularly well adapted to such work, as track is bonded much better to the concrete than in the case of wooden ties."

*Syracuse Rapid Transit Company*, E. P. Roundey, engineer maintenance of way, reports, "that we have several thousand in use, but they are all in paved streets, with concrete ballast. We have not used any in open track construction."

*The Denver City Tramway Company*, John Evans, chief engineer, reports:

"We have used 2,500 such ties, all laid in May, 1908, all in conjunction with concrete paving; on Arapahoe Street, Sixteenth to Eighteenth Streets, and on Eighteenth Street and Larimer to Broadway; all in straight track. To date, track held to perfect surface, gage and line. Wherever the steel tie has been used together with a concrete pavement, we have experienced trouble from cracking of such pavement."

*Oklahoma Railway Company*, W. A. Haller, general manager, writes:

"We have about 4 miles of 6-in. base Carnegie steel ties in use in concrete street railway construction. We have none of these ties in use in ballasted roadbed. We have found that the one bolt clip used for attaching the rail to the tie is inadequate, even in a paved street, and we judge it would be still less reliable when used in open track construction. We have experienced some trouble with joint ties working loose in the concrete, the primary cause of this being that the attachments and rail joints first become loose, and the vibration and jar then causing the tie to work loose in the concrete. In our recent construction, however, we are using a continuous rail joint and exercising more care in placing the concrete."

*San Antonio Traction Company* reports that it laid 500 ft. of double-track with Carnegie steel ties in 1908, spaced 5 ft. The ties were laid in concrete and are holding perfectly to date.

#### WOOD PRESERVATION

The committee suggested revisions in the Manual and presented revised specifications for treatment and for analysis of coal-tar creosote. Several reports on the life of ties and the condition of treated timbers were given.

## STATEMENT OF J. F. CALDERWOOD REGARDING CONEY ISLAND FARE DECISION

J. T. Calderwood, vice-president and general manager of the Brooklyn Rapid Transit Company, has made the following statement in relation to the decision of the New York Public Service Commission, First District, upholding the 10-cent fare to Coney Island:

"A city transportation company is a business organization and as such it cannot afford to sell its service at a loss any more than a merchant can afford to sell his stock at a loss. It may attempt such a state of affairs, but sooner or later, and most generally sooner, it is confronted with a necessity of increase of fare, a decrease in facilities or an application for a receiver.

"A merchant sells woolen goods and after a time an additional tax is placed upon the wool. A loud cry goes up against the increased wool tax by the ultimate consumer, and who pays this tax—the consumer. But the ultimate consumer of street car service makes no outcry against taxes or burdens that are imposed upon the merchandizing of transportation when the disposition is to reduce the fare. Instead the consumer may enjoy the distress of the very concern upon which he must place dependence for reasonable and constant daily transportation.

"The receiverships of all the transportation evils that follow in their wake mean nothing to the consumer—not until they have arrived.

"The recent decision of the commission specifically called attention to the difference in character between the riding on the Interborough's subway and the riding to and from Coney Island. Throughout the greater part of the length of the subway there is a heavy and constant local traffic of short riding—a profitable business and almost unknown to the lines that run in Brooklyn to the ocean.

"The commission's decision called attention to the expense to the railroad company of this specific Coney Island traffic by reason of its extreme fluctuations in volume, that the business provides no steady income; on the contrary, it requires the company to be prepared to handle excessive numbers of passengers in a single day or within a few hours at irregular intervals and during a short period of the summer months, thus requiring a large amount of extra equipment and power capacity. This calls for an investment of an abnormal amount of capital upon which the fixed charges must be paid, and this additional capacity is idle a large part of the year.

"Street car traffic, to bring not necessarily an adequate income, but any net income to the operating company, should, in the first place, have consistency day in and day out, its volume varying but slightly, and in the second place, a fairly generous mixture of short-haul traffic. These conditions do not pertain in Brooklyn. On the contrary, we carry a large portion of our traffic to Manhattan in the morning and take it home at night.

"Conditions on the Coney Island lines have never been comparable with those in Manhattan, where a man may ride from the South Ferry to City Hall, another will take his place from City Hall to Union Square, and from Union Square to Central Park another, and still another take his place to Harlem. Thus the particular car seat will earn several times the regular fare where the Coney Island passenger from Manhattan pays one fare. Moreover, the cars in Manhattan returning in the opposite direction, do quite as well. Long trains in the reverse direction from Coney Island during rushes are practically empty.

"These Manhattan conditions are the conditions that must be approached in Brooklyn before any of the transportation companies can regard its Coney Island lines as other than a drag on its revenue.

"The sale of transportation is a plain and sane business proposition and is subject to the same analysis as any commercial business.

"When traffic conditions change on the routes to Coney Island with increased density and regularity of traffic sufficient to make the net rate per passenger profitable, then a less rate per passenger than is now charged will be considered by this company, but not until then is any reduction consistent with good business

principles. You cannot buy something for 5 cents and sell it for 3 cents with a transfer and make money."

Commissioner Maltbie is quoted as follows regarding the decision:

"For my own part I believe that the establishment of a differential rate, charging 5 cents on the surface lines and 10 cents on the rapid transit lines would equalize the traffic. It is a well-known principle of railroad economics that by charging different rates for what is substantially the same service from different points you equalize the traffic in a manner that is profitable alike to railroads and shippers. This principle could well be applied to the Coney Island traffic.

"Thousands of people who are not on the ragged edge, and to whom an extra 10 cents is no object, would continue to travel to Coney Island on the rapid transit lines despite having to pay a higher fare. Since the establishment of places like Luna Park and Dreamland that class of patrons at the island has largely increased. Thousands of bathers who go down every day during the summer would continue to patronize the more expensive lines. If, at the same time, there was a 5-cent fare on the surface cars, much of the overcrowding of these rapid transit lines would be done away with, and the poorer people would have a chance to reach the seashore at the lower fare.

"As to the commission's majority opinion, I cannot help feeling that it is something of a Scotch verdict. We did not have before us all the evidence necessary to enable us to come to a general conclusion as to the justice or injustice of the 10-cent fare."

#### HEARING ON ELEVATED SERVICE IN NEW YORK

A hearing was held before Commissioner Eustis, of the Public Service Commission of the First District of New York, on March 11, 1910, to inquire into the service on the elevated lines of the Interborough Rapid Transit Company. H. H. Whitman, of counsel for the commission, and T. L. Waugh, of counsel for the company, were present. Mr. Whitman filed for record the statement showing the number of cars owned, the number of revenue passengers carried, and the miles of track operated on the elevated and subway lines from 1906 to 1909, published in the *ELECTRIC RAILWAY JOURNAL* of Feb. 26, 1910, page 356.

D. L. Turner, chief of the bureau of transit inspection of the commission, presented a series of charts showing observations which he had made on March 1, 1910, in conjunction with representatives of the company. Observations made on the Second Avenue line at Thirty-fourth Street, from 7 a. m. to 9 a. m., showed that 21,580 passengers passed Thirty-fourth Street in trains bound south which provided 17,000 seats. From 4:30 p. m. to 10:30 p. m., 30,930 passengers passed Thirty-fourth Street in trains bound north which provided 26,300 seats. The period of greatest overload southbound was from 7:30 a. m. to 8 a. m. when the passengers numbered 6380 against 4750 seats. Northbound, the period of greatest overload was between 6 p. m. and 6:30 p. m. with 6690 passengers against 5100 seats.

Observations made on the Third Avenue line at Thirty-fourth Street from 7 a. m. to 9 a. m. showed that 42,610 passengers passed Thirty-fourth Street in trains bound south which provided 35,350 seats. The period of greatest overload was between 7:30 a. m. and 8 a. m. with 11,400 passengers against 7000 seats. During the period of two hours mentioned, 94 seven-car trains passed south. Northbound travel on the Third Avenue line, observed at Forty-second Street, showed that between 4:30 p. m. and 10 p. m. 67,980 passengers passed in trains which provided 55,800 seats. The period of heaviest overload was between 6:30 p. m. and 7 p. m. when 10,360 passengers passed the point of observation in trains which provided 8750 seats. Between 5 p. m. and 7 p. m., 88 seven-car trains passed Forty-second Street bound north.

On the Sixth Avenue line, observations were made at Fiftieth Street. From 7 a. m. to 9 a. m., 18,680 passengers passed the point of observation in trains bound south which provided

16,700 seats. The period of greatest overload was between 8 a. m. and 8:30 a. m. with 6840 passengers against 5250 seats. From 4:30 p. m. to 7 p. m., 25,790 passengers were transported in trains bound north which provided 21,700 seats. The period of greatest overload was from 6 p. m. to 6:30 p. m. with 8430 passengers against 4550 seats.

On the Ninth Avenue line observations were made at Fiftieth Street. From 7 a. m. to 9:30 a. m., 24,920 passengers passed that point of observation in trains bound south which provided 24,000 seats. The period of greatest overload was between 8:30 a. m. and 9 a. m. with 7440 passengers against 5950 seats. Between 4:30 p. m. and 7 p. m., 25,230 passengers passed in trains bound north which provided 22,850 seats. The period of greatest overload was between 5:30 p. m. and 6 p. m. with 7440 passengers against 5250 seats.

Frank Hedley, vice-president and general manager of the company, said that he had been furnished with copies of the charts showing the observations, but that he had not had time to consider them carefully. He explained that the company had recently ordered 100 cars for service on the elevated lines and that it was in the market for 100 more cars. Of the order of 100 cars which had been placed 70 had been received, and of these 40 were in service and 30 were being equipped in the shops of the company and would be placed in operation shortly.

The elevated cars were 47 ft. in length as compared with 51-ft. cars for the subway. The only reason for installing side doors was the excessive length of the subway cars. Side doors reduced the seating capacity by eliminating the side seats in the center of the cars. Mr. Hedley did not favor equipping elevated cars with side doors. The company had platform men at all the principal stations. In some cases, there were as many as 8 or 10 men at a station, and this number would be increased, if, in the judgment of the representatives of the company and the engineers of the commission, that would facilitate train movement.

Mr. Eustis suggested that it might be advantageous to attach an extra car to each train during the rush hours for the use of through passengers. This car would overhang the station platforms, but it could be labeled and through passengers would soon become accustomed to it.

Mr. Hedley said that this plan had been tried a few years ago, but that it was not the success which Mr. Eustis seemed to think it could be made. He had conferred recently with officers of his company who were familiar with the results of this experiment, and they did not feel that such a plan would work better now than it did before. Mr. Hedley thought that the type of folding gate in use on the elevated lines in Brooklyn was not more efficient than the rigid gate with which the elevated cars of the Interborough company were equipped.

The company was very busy preparing for the installation on March 14, 1910, of the new schedule which had been prepared for the subway, and Mr. Hedley felt that the new schedule could be made a success by the co-operation of the officers of the company and the engineers of the commission. It was difficult to prepare and introduce a schedule of this kind at short notice, but by the latter part of the week commencing March 14, 1910, after the necessary adjustment had been made, and the crews were more familiar with the runs, the schedule would be carried out in full. For this reason Mr. Hedley asked the commission for a postponement so that he and the engineers of the commission could consider the charts in conjunction and evolve a plan for the operation of trains which would work to the betterment of the elevated service, particularly the service between 7 p. m. and 10 p. m. The hearing was then postponed until March 18, 1910.

The total mileage of electric railways in Canada in 1908 was 989. The gross earnings for the year were \$14,828,936, and the net income was \$4,716,308. The return of accidents on electric railways shows 68 persons killed and 2139 injured. Of the fatalities 11 were passengers, seven employees and 50 other persons. Of the injured 133 were passengers, 213 were employees and 618 were other persons.

## THE PHILADELPHIA STRIKE

Monday, March 14, 1910, marked the tenth day of the general sympathetic strike in Philadelphia, and the twenty-fourth day of the strike of the motormen and conductors of the Philadelphia Rapid Transit Company. It was particularly significant because it was the beginning of a new week and showed many defections from the ranks of the strikers. It also showed that the leaders of the unions were hard pressed because the committee of 10 in charge of the strike as a last resort appealed to the organized drivers of milk, meat and grocery wagons in the city to refuse to take out their wagons on Tuesday morning, March 15. Moreover, a set of resolutions was adopted declaring a boycott against the banks and urging "the working men and women of America and their sympathetic friends to withdraw all the funds they have on deposit with banks, thereby teaching the bankers that without the money of the workers their institution of finance must be a failure."

The return of so many men to work in the various trades was undoubtedly hastened by the public announcement of a number of large employers of labor that they would close their plants indefinitely unless the men returned to work by March 14. The movement for a general sympathetic strike also was hurt by employees of the shoe trade, numbering 5000, and paper box makers, numbering 2000, who refused, through their representatives, to join in the sympathetic strike. These men said that they intended to abide by the contracts which they had with the firms by which they were employed.

On March 10, the Merchants' and Manufacturers' Association inaugurated its campaign to minimize the effect upon business of exaggerated reports sent broadcast from Philadelphia concerning conditions prevailing in the city. The association reprinted 50,000 copies of an editorial which appeared in the Philadelphia *Public Ledger* of March 7, 1910, entitled "Mendacious Journalism," and has distributed these reprints far and wide. On the same day the State Federation of Labor in session at New Castle, Pa., adopted resolutions endorsing a State-wide sympathetic strike if necessary. Mayor Reyburn displayed to the newspaper men many letters indorsing his action in maintaining law and order during the strike.

On March 10, Director of Public Safety Clay advised J. Burwood Daly, counsel for the men on strike, that the proposed mass meeting at the Philadelphia Ball Park would tend to result in the disturbance of the public peace and would not be permitted. Despite this, however, the strikers congregated at the park and formed for parade with the City Hall as their destination. The congestion which resulted grew so great as the march was continued toward the city that the police dispersed the marchers between Mount Vernon and Spring Garden Streets by turning the crowds into the side streets.

On March 12, Seth Low, president of the National Civic Federation, announced that that organization could act only upon the request of both parties to a dispute, since it was not invested with authority to enforce its decisions. On the same day the Philadelphia Rapid Transit Company granted an extension until Wednesday, March 16, for its former employees to apply for reinstatement. It had been stated that the families of some of the men suffered because of the lack of ready cash, and Mr. Kruger announced that the company would advance all those who returned to work such sums as they might need to rescue their families from want, and collect the amount advanced from the pay of the men by retaining a small sum weekly from their wages. At the same time, Mr. Kruger pointed out that the company was fast filling its ranks, and that the company could not be held responsible if delay and disappointment should follow the filing of applications. On March 14 the company announced that it had employed a total of 4350 men, and as conditions were practically normal on its system the necessity did not exist for making public daily the number of cars operated and the number of passengers carried.

A conference was held in the office of George H. Earle, Jr., one of the representatives of the city on the board of directors of the Philadelphia Rapid Transit Company, on March 14,

1910, between Mr. Earle and the representatives of the men on strike, at which the men demanded that the company take back all the old men. When this proposition was submitted to Mr. Kruger, he replied that the plan was impossible on account of promises made by the company to the men who remained loyal and to those who have been employed since the strike. In explanation of this conference Mr. Earle said that it was at the request of a friend who had asked him if it would not be possible to settle the strike by an interview with the representatives of the former employees.

## THE AUDITOR'S RELATION TO THE OPERATING EXECUTIVE\*

BY A. J. LAMB, TOLEDO RAILWAYS & LIGHT COMPANY

Within the last few years there has been a marked change in the relations of the auditor with other departments and with the executive officer. Many of us can remember when in most companies the auditor was looked upon as the man who kept the books of the company and who watched out that the company collected all the money due it, and did not over-pay any of its creditors. With the purchase and consolidation of electric railway properties into large systems it became necessary to have some basis for comparing the different properties controlled by one company, and also to contrast their operation with that of other companies. This necessitated the formation and adoption of a uniform system of accounts.

In many cases it was the auditor who analyzed his own reports and brought to the attention of the executive officer the contrasts shown. This work has continued until at the present time the collection, tabulation and analysis of the details in our business is considered of great importance; and in most companies the auditor is regarded not only as one of the officers of the company, but in many cases is employed directly by the board of directors. The independence which such an arrangement gives him is of supreme importance, since it not only enables him to present a true and accurate statement of the operations of the company without regard to the results shown, but places him in a position where he can command the respect of the heads of other departments, and where his requests for information will be complied with. This last condition is essential; many of us can recall times when the request for special information from which certain deductions were to be made was considered by some operating officials as of no importance, with the result that the auditor was furnished with estimates and not with the correct data.

Now that the value of our reports is appreciated and the necessity for accurate details is known, we should strive to make our relations with other officers most cordial and cooperative. This is especially true in many companies where the clerks in various departments devote most of their time to the work of the operating department, but also make reports to the auditor. Since in most cases the auditor is unable to investigate such reports and to some extent must depend for their correctness upon the interest of the clerk in the work, such relationship will tend to secure prompt and accurate reports. The auditor should avoid throwing too much work upon the other departments by asking for information which may not be necessary. In other words, it is of more assistance to the executive officer to have information of especial importance furnished at times and to have his attention called by a report of especial condition, rather than to place upon his desk a large volume of statistics which will require too much of his time to analyze properly.

The auditor should keep in touch with what is done outside of his own department, should make frequent inspection of the company's properties, and should have a general knowledge of its operation, as such an understanding will be of great assistance to him in checking the information furnished to his department. It will enable him to tell at a glance whether or not

\*Abstract of paper read before the Central Electric Accounting Conference, Fort Wayne, Ind., March 12, 1910.

large items of expenditure have been charged to the right accounts.

In very large companies the auditor should employ his own clerks in all departments; but in smaller companies this is not practicable, since one clerk can do the work for both the accounting and operating departments; but in all cases the auditor should have charge of the storeroom and should employ his own storekeeper. This is essential in order that a proper check may be had upon the storeroom and upon the proper distribution of supplies issued.

The auditor is keeping the history of the road for the benefit of those who own it, as well as for those who operate it. Therefore, he should be very careful that his reports show the true condition of the property, and his responsibility for the reports of the company, and particularly those furnished to the stockholders, is unquestionable. This is clearly recognized by the Interstate Commerce Commission, for the auditor is held personally responsible for the accuracy of the accounts.

In conclusion, I think that we should continue in the future what we have practiced in the past, which has been not to arrogate the importance of our position, but rather to make our position secure by the value of our services to those in control of our properties. Perhaps our greatest failing as a class is to study out a comprehensive form of monthly report and to rest content with furnishing this information month after month, depending upon the devotion of hours of the time of our executive in order that he may derive some benefit from the information. I think you will agree with me that if it is necessary to choose between the two the executive would much prefer that we should furnish fewer figures each month, but should study these figures ourselves with an intelligent knowledge of the condition and operations of the company, and call to his attention by a few pointed facts any unusual conditions. In other words, instead of being an accurate machine for the combination of figures we should place ourselves in the position of the one who is responsible for obtaining the best results, and then each month, after careful study of our own reports, ask ourselves what they contain of interest.

### 20,000-KW TURBO UNITS FOR CHICAGO

The Commonwealth Edison Company of Chicago, although working still on the second portion of the new Quarry Street generating station, which will have six 14,000-kw turbo-generators when completed, announces two entirely new generating stations. These are to have a rating of 120,000 kw each, are to be built in a new locality on the North Branch of the Chicago River near Roscoe Street and California Avenue about 6 miles northwest of the center of the downtown district. The present generating capacity of the Commonwealth Edison Company, including that portion of the Quarry Street station now under construction, is about 240,000 kw, divided as follows: Fisk Street, 120,000 kw; Quarry Street, 84,000 kw; miscellaneous plants and storage batteries, 36,000 kw. The addition will thus double the generating capacity of the company, making it 480,000 kw.

Only one of these 120,000-kw stations will be started at present. The salient feature of this power house will be an equipment of turbo-generator units of 20,000 kw rating. There will be six of these in each of the power houses, and the initial installation for the first station will be two units. These machines will be by far the largest electrical generating units ever built. When the Fisk Street station was designed about eight years ago, the company demanded from the manufacturers the largest electrical generating units made up to that time. These, which were also the first large power-house steam turbines, were 5000-kw machines. Later, with the rapid progress of the art, the Fisk Street station was rearranged, and again the company demanded machines of a greater rating than any previously existing, installing 12,000-kw units. When Quarry Street was designed the company made another step in advance, requiring 14,000-kw units. Now plans are well under way for a new generating station, and orders have been closed with the manu-

facturer—the General Electric Company in each case—for turbo-generators which will have a rating of 20,000 kw, for continuous service. The buildings will be designed by Messrs. Holabird & Roche, architects, while the general mechanical design is in the hands of Frederick Sargent, of Sargent & Lundy, consulting engineers. The electrical equipment is planned by the engineering staff of the Commonwealth Edison Company. The Curtis steam turbines and General Electric alternators will not differ greatly in appearance from the 14,000-kw units at the Quarry Street station. The generators will be 2300-volt, 25-cycle, three-phase, 750-r.p.m. machines. The dynamo potential will be raised in the transformer house to 9000 volts, 12,000 volts or 20,000 volts, as required. In the turbine room the units will be placed in a row and will be spaced 44 ft. between centers. This is only 3 ft. more than the corresponding distance in the Fisk Street station, with 12,000-kw units compared to the 20,000-kw machines in the new station under description. It is also noteworthy that the turbine room in the Northwest plant will be but 70 ft. wide, which is only 5 ft. greater than at Fisk Street. A rating of 120,000 kw is placed in the length of 276 ft.

It is extremely instructive to note the marked economy in boiler-room and engine-room area, particularly the latter, which is obtained by the 20,000-kw units of Northwest station compared with the 12,000-kw units of Fisk Street station. The comparison may be tabulated as follows:

COMPARATIVE BOILER-ROOM AND ENGINE-ROOM AREAS PER UNIT.

	12,000-kw Unit (Fisk St. Station), sq. ft.	20,000-kw Unit (Northwest Station), sq. ft.
Boiler-room area (per unit).....	5,740	8,800
Engine-room area (per unit).....	2,665	3,080
Total for both (per unit).....	8,405	11,880
Boiler-room area (per kilowatt of rating).....	0.478	0.440
Engine-room area (per kilowatt of rating).....	0.222	0.154
Total for both (per kilowatt of rating).....	0.700	0.594

These figures, it is to be remarked, include all auxiliaries, which are placed on the engine-room floor in each case. The net result is that at Fisk Street, with 12,000-kw units, a kilowatt of output is produced on 0.700 sq. ft. of area, while in the new Northwest station, with 20,000-kw units, a kilowatt of output will be produced on 0.594 sq. ft. of area. Naturally, the net saving of floor space is much more marked in the engine-room, where it is 30 per cent, but the net saving in the boiler-room and engine-room combined works out to the satisfactory figure of 15 per cent.

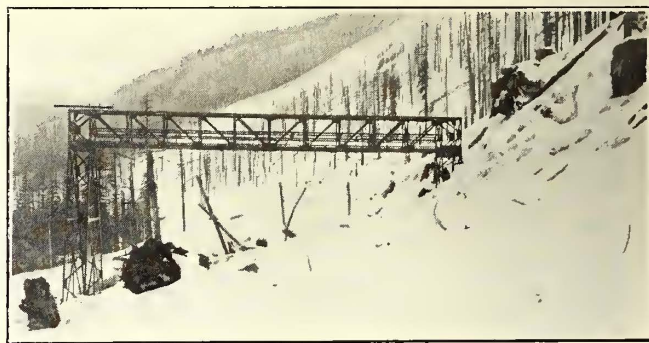
The 20,000-kw units stand 28 ft. above the floor line and are 15 ft. in diameter. The whole height of the unit above its condenser is 35 ft. 7 in. The condenser for each turbine is placed under it and extends out on either side. Each of these 20,000-kw units will take 260,000 lb. of steam an hour. The new plant is designed for a maximum boiler pressure of 250 lb. to the square inch. Heretofore the maximum pressure in stationary power-house practice has been from 200 lb. to 225 lb. The initial installation will consist of two generating units and about one-third of the ultimate boiler capacity, with two of the six stacks.

An international exposition of "Electricity as Applied to Railway Service" will be held in St. Petersburg during the month of August. It is stated that through this exposition the Russian Government desires to fix its ideas concerning the electrification of Russian railways. A special trial track has been provided, on which all exhibits of electric railway motor cars will be tested on the level and with varying grades and loads. The exhibitors will be permitted to sell an exhibit during the display or at the conclusion of the exposition. The president of the organizing committee is General Sitenko, 24 Sadovaja, St. Petersburg, to whom inquiries in English may be addressed by intending exhibitors.

### THE ACCIDENT ON THE GREAT NORTHERN

Further particulars are now available of the accident from an avalanche which occurred to the electrical equipment of the Great Northern Railroad at the Cascade Tunnel, Washington. The slide which caused the disaster occurred at Wellington at the western end of the tunnel at 1:45 a. m. on March 1 and carried into the gulch south of the tracks all four of the electric locomotives, with two trains, three steam locomotives and a steam rotary snow plow. One of the electric locomotives was in the inspection shed which was also swept off by the avalanche. A considerable part of the overhead equipment, including one anchor bridge, was also destroyed.

It is impossible as yet to determine the extent of the damage to the electric locomotive, but as the distance which they were carried was not very great, it is thought that the injuries will consist more of that caused by the effect of the snow on the insulation of the motors, contactors, etc., rather than any me-



Views Showing the Disaster to the Three-Phase Equipment of the Cascade Tunnel—Great Northern Railroad

chanical damage. If much of the apparatus has to be rewound, it will probably be some six months before electric service can be resumed, owing to the fact that the locomotives will probably have to be taken to Seattle or some other city for repair. The accompanying photographic views of the disaster were obtained by this paper through the courtesy of Dr. Cary T. Hutchinson, consulting engineer for the electrical equipment of the Cascade Tunnel.

W. C. Brown, president of the New York Central & Hudson River Railroad, makes the following reference to the electric railway interests of the company in his annual report for the year 1909: "In pursuance of the plan outlined in last year's report for the consolidation and merger of several electric railway companies into a corporation to be known as the New York State Railways, various exchanges of capital stock have been made with the result that this company's holdings in electric railway corporations now stand as follows: New York State Railways, 133,650 shares; Ontario Light & Traction Company, 600 shares; Rochester Electric Railway, 1043 shares, and Rochester & Suburban Railway, 2404 shares."

### DETROIT ORDINANCE

The Committee of Fifty appointed by Mayor Breitmeyer, of Detroit, a little over a year ago to study and prepare a solution of the street railway problem on the expiration of Detroit United Railway franchises, has completed its work and has submitted it to the Common Council in the form of an ordinance. The plan of settlement will be presented to the Detroit United Railway for its approval, if it may be secured, before submitting to the voters for approval in May, should the Council accept the plan of settlement proposed.

The ordinance follows in many respects the Talyer settlement adopted in Cleveland. It provides for an initial fare of eight tickets for a quarter for eight months after the acceptance of the franchise, but allows an increase or decrease of fares within prescribed limits, at stated intervals, to enable the company to pay a dividend of 6 per cent upon an appraised valuation of its property and upon the cost of future exten-

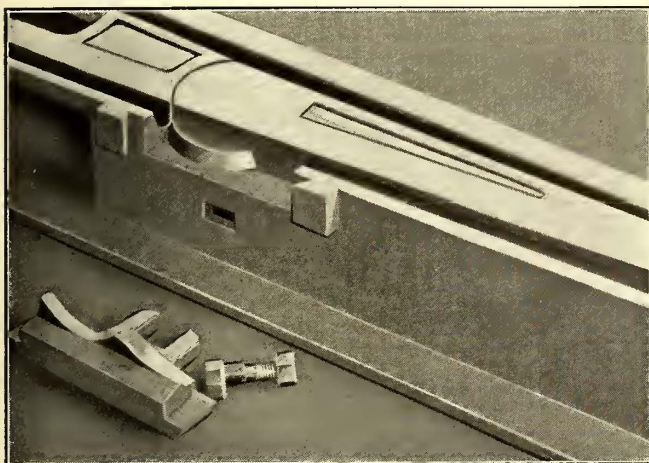
sions. The ordinance provides the way in which the appraisal shall be made. A maximum fare of eight tickets for a quarter between 5 a. m. and 8 a. m. and between 4:30 p. m. and 6:30 p. m. and six tickets for a quarter the rest of the day, with universal transfers, is permitted if necessary to pay the dividend mentioned above. The minimum that may be required is 10 tickets for a quarter. The cash fare in all cases is to be 5 cents. The present fare shall be maintained on the present low-fare lines.

The company shall establish a depreciation, replacement and renewal fund which is to be credited with 3 cents for each car-mile run. Provision is made for purchase by the city at any time on two years' notice. A non-salaried commission of five is given power of supervision of the details of operating the systems. The expenses of this commission shall be paid by the company, but are not to exceed 1 per cent of the company's operating expenses except during the construction period when they may be higher.

The Tokyo Electric Railway has completed an electric railway between Shinagawa and Akabane, a distance of 20 miles.

**PINLESS TONGUE SWITCH**

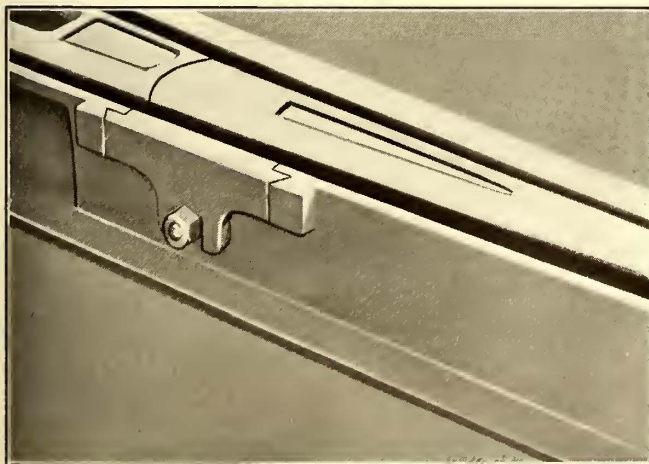
Hadfield's Steel Foundry Company, Ltd., the English manufacturers of special work at Sheffield, have recently brought out a type of tongue switch which eliminates the use of a pin at the heel of the switch. This is the point at which the tongues of switches, especially of trailing switches, receive a great deal of wear, and manufacturers contend that the rocking of the tongue on this point is due in large measure to the wear on the pin from the blow which it receives from the car wheel, and that the pin is necessarily subject to a great deal of wear



Switch with Check Piece Removed

because it is almost directly under the portion of the tongue which receives the blow of the wheel.

Of course, if no pin is used some method must be provided for preventing the heel from rising, and also to hold it on a center so that the tongue always has a radial movement. The former result is obtained by undercutting the body casting of the switch at the heel and giving a corresponding taper to the lower part of the heel of the tongue, as shown in the illustration. To prevent the tongue from creeping forward, the lower part of the heel has a projection on each side, so that it can be cast in circular form. A corresponding circular bearing is



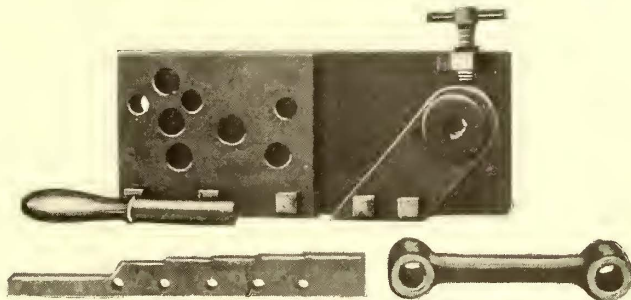
View of the Pinless Tongue Switch with the Check Piece Set in Position

arranged in the body casting to provide a bearing. This construction, of course, makes it necessary to have a removable piece on the check side of the body casting in order to place the tongue in position. This check piece is shown in place in one illustration and removed in another view. When in position it is held in place by a bolt and nut.

The switch is made of Era manganese steel, and all bearing parts of the body castings and tongues are ground carefully to provide a perfect surface.

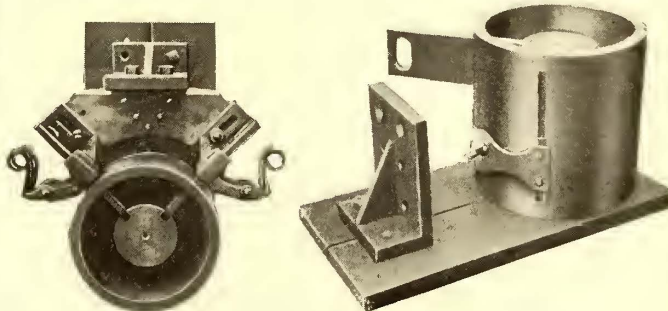
**PRECISION TOOLS IN A RAILWAY SHOP**

The accompanying cuts illustrate the details and the assemblies of a drilling jig for the accurate spacing of the holes in the brake hangers of various trucks; also a brush-holder



Details of Device for Accurate Drilling of Brake-Hanger Holes

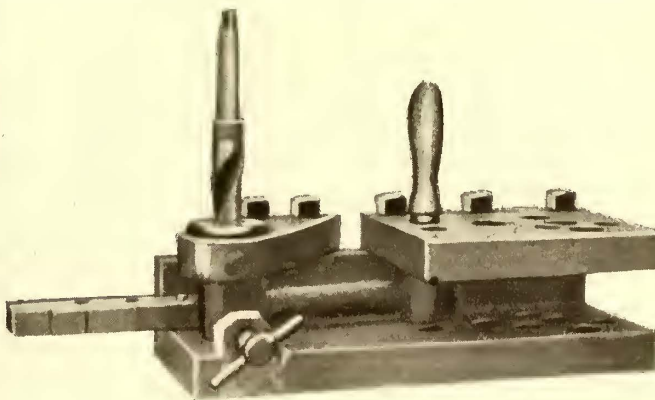
jig which avoids all necessity for counting the commutator bars to secure the correct mechanical and electrical assembly of the brush holder parts. These tools are of home design and have been found very useful in the shops of a large electric railway company. The brush holders when installed are set for a ten-



Assembly and Parts of Brush-Holder Jig

sion of 4 lb. per square inch on the brushes, and if one holder should break loose the entire yoke is returned to the shop to secure the most accurate adjustment.

The same company makes its armature bearing inspections twice a week and furnishes its inspectors with four knife-like



Brake Hanger Ready for Drilling—The Different Holes Correspond to the Various Hangers

gages about 12 in. long and, respectively  $\frac{1}{8}$  in.,  $\frac{3}{32}$  in.,  $\frac{1}{16}$  in. and  $\frac{1}{32}$  in. thick. The number of every motor which is found to have a pole clearance as low as  $\frac{1}{32}$  in. is placed on a list of "Danger" cars. This list is turned over to the day foreman, who orders in for new bearings all cars thus listed after he is through with the disabled cars of the day.

A new section, 11½ km long, of the Metropolitan Railway Company's subway system in Paris will soon be opened for traffic. It extends from the Porte Clignancourt to the Porte d'Orléans.

### STEEL BAGGAGE CARS FOR THE HUDSON & MANHATTAN RAILROAD

Two all-steel baggage cars have recently been built by The J. G. Brill Company for the Hudson & Manhattan Railroad Company. The main dimensions follow:

Length over platform end sills.....	49 ft. 7 in.
Length over anti-climbers.....	50 ft. 7 in.
Length between truck centers.....	34 ft. 6 in.
Width over side sills.....	8 ft. 6 3/4 in.
Width over side plates.....	8 ft. 7 1/2 in.
Height from top of rail to top of side sills.....	3 ft. 8 3/8 in.
Height from top of rail to top of flooring.....	3 ft. 9 7/8 in.
Height from top of rail to top of eaves.....	10 ft. 4 7/16 in.
Height from top of rail to top of roof.....	11 ft. 8 7/16 in.
Height clear from baggage tracks to side plates.....	6 ft. 3 in.
Height from top of rail to center of coupler.....	2 ft. 5 3/8 in.

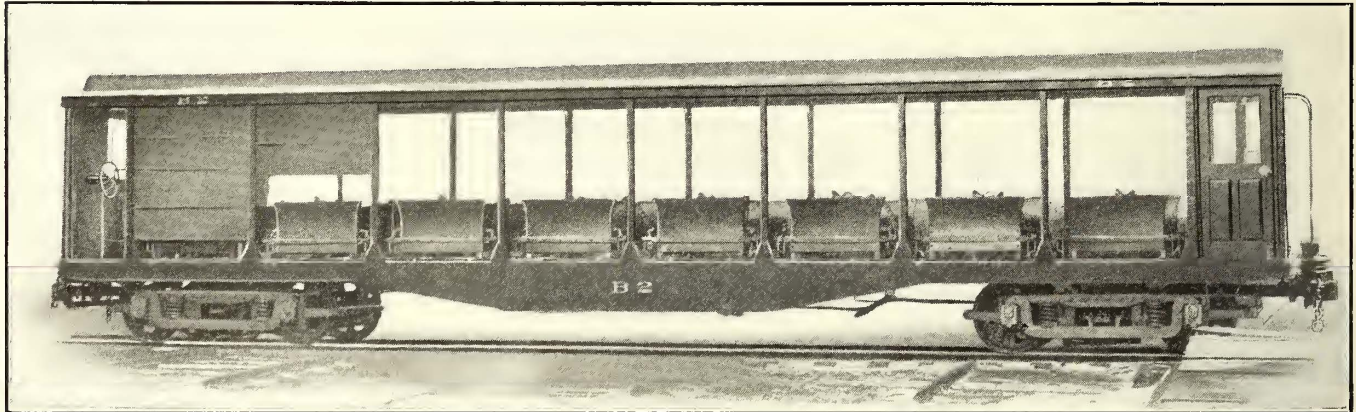
#### BAGGAGE OPENINGS

The special feature of these cars is the openings between the steel T side posts to permit the admission of baggage trucks. There are eight of these openings on each side of each car. Each opening is fitted with a pair of pressed channel guide tracks with flaring sides for the baggage trucks as well as an apron for bridging the distance between the car floor and the station platform. The baggage truck tracks are pressed out of 3/8-in. plate while the apron is pressed out of 3/16-in. plate. Each compartment is fitted with a holding device for locking the baggage trucks in position on the car as well as with a support to hold the apron in an upright position when the car is closed and loaded. Waterproof curtains close the upper part of each compartment. These curtains slide in guides provided for them

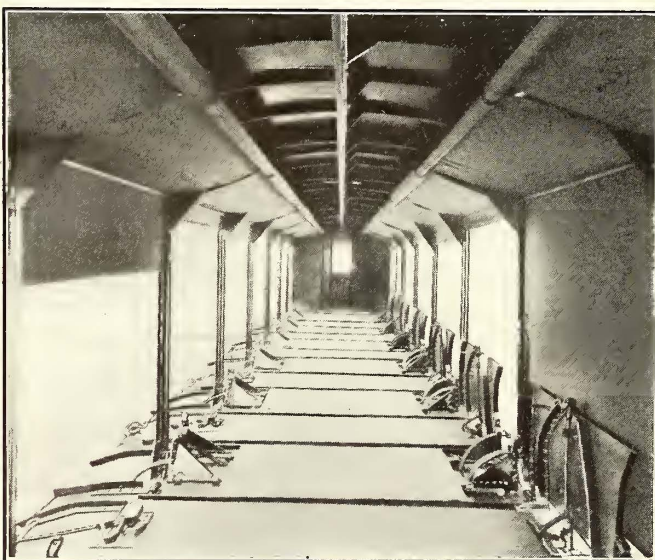
ends the curtains pass over spring rollers and when raised the lower part of the curtain is 6 ft. 3 in. above the baggage truck tracks.



Hudson & Manhattan Baggage Car—End View with Several Aprons Lowered



Hudson & Manhattan Baggage Car—Side View with Baggage Aprons Raised



Hudson & Manhattan Baggage Car—Interior View, Aprons Lowered on One Side, Raised on the Other

in the side posts and are fitted with horizontal steel channel batons at intervals to maintain them in place. At the upper

The locking device for holding the baggage trucks is ingenious and consists of the apron itself, two guide levers and two swinging hooks at each end of each truck compartment. These guide levers act upon the swinging hooks in such a manner that when the apron is raised the levers at either end force the swing hooks together and clamp the baggage trucks so as to secure them against any motion relative to the moving car. The locking device for the platform aprons consists of a central handle and bar, the latter extended to the flooring and having a foot and a hook so formed as to brace the apron in the vertical position when the handle is turned. The handle hooks over the top of the apron plate when in an upright position. The bottom ends of these bars interlock with the air brake system so as to exhaust the train line pressure and so keep brakes set unless all aprons are raised.

#### CAR CONSTRUCTION

The construction of the car itself is of interest. The load is carried on the side sills which are of the fish-belly type 22 in. deep at the center and 9 in. over the tracks. Each side sill is built up of 3 1/2-in. x 3-in. x 7/16-in. rolled steel angles for top and bottom members, united by a 5/16-in. plate. The center sills are of 8-in. rolled steel channels weighing 11 3/4 lb. per foot, and braced at intervals to insure their safety resisting the buffing strains. These sills are reinforced at the bolsters where the top flange is cut away by a 7-in. steel channel weighing 9 3/4 lb. per foot and are also reinforced beyond the bolsters. The



center sills are bent outward between the bolster and the end sill to allow of a movement of the drawbar.

The end sills are built up of 3½-in. x 3½-in. x 7/16-in. rolled steel angles, with a ½-in. front plate and are secured to a Hedley anti-telescoping buffer. The angles are then returned at the ends to meet the side sills to which they are securely spliced. The bottom part of the end sill is also reinforced by a ½-in. pressed plate, forming a guide and support for the drawbar, which is of the Van Dorn pattern. Each car has two cross-beams built up of two 6-in. steel channels 8 lb. per foot, and fastened to the side sills by knees and supporting and braced

rolled angle purlin extends throughout the length of the car and is secured to all carlines.

The flooring between baggage truck tracks is laid with 1¾-in. matched yellow pine.

### THE MABCO POWER BRAKE

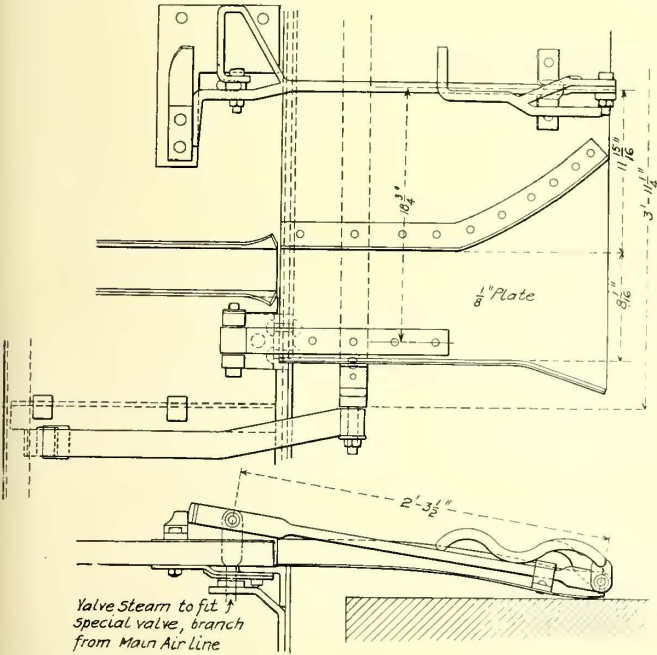
The Momentum Automatic Brake Company, New York, announces that it has made several important changes in the construction of its momentum brake, which was first described in the ELECTRIC RAILWAY JOURNAL of May 1, 1909, and which is now known as the Mabco power brake. The changes do not relate to the principle of the brake, but in the way of reducing the space required for the braking equipment. In part this result has been obtained by building most of the metal parts of the highest grade of crucible steel. A further saving in space has been made by redesigning the wooden clutch blocks whereby an increased friction surface is obtained in less than half the former dimensions. Experience has shown that the clutch blocks have an average life of 30,000 miles. The company claims that the new design makes use of 90 per cent of the total tractive effort of the car by converting it into braking power on the momentum principle when an application is made, and that braking the car in this manner gives the maximum braking efficiency without skidding the wheels.

The company has eliminated the old method of winding a chain or cable around the drum on the axle to apply the brake shoes. The drum is now direct-connected to any standard brake rigging which is in use on the car. One-sixth of a revolution of the drum is all that is necessary to apply the brake for the emergency stop and about one-tenth of a turn for ordinary stops. Several other improvements have been made on this brake.

### MEETING OF THE CENTRAL ELECTRIC TRAFFIC ASSOCIATION

The Central Electric Traffic Association met in the office of the chairman, A. L. Neereamer, at Indianapolis, on March 11.

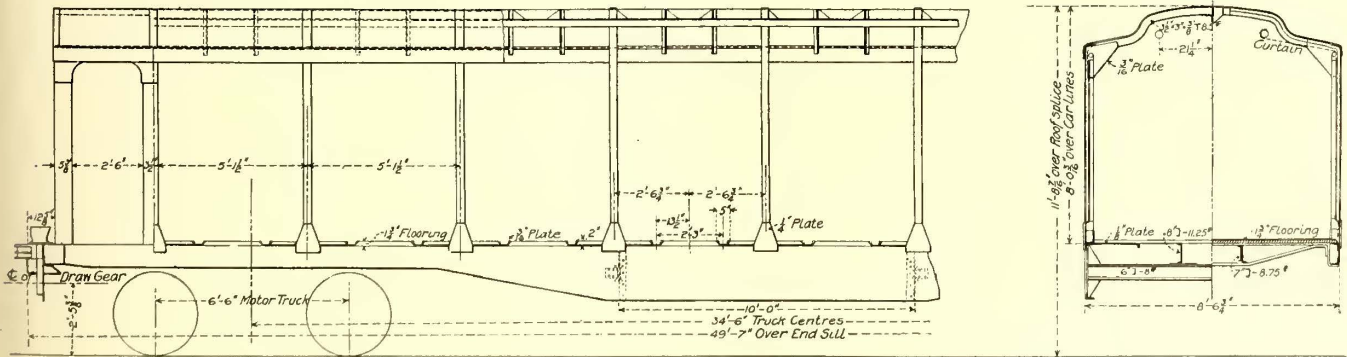
The greater part of the day was used in checking weights for a table of estimated weights on standard commodities which will be published later by the chairman. The question of issuing the proposed tariff on milk and cream was postponed in order to give the lines which are interested time to investigate the subject thoroughly. Consideration of the proposed Mer-



Hudson & Manhattan Baggage Car—Side Elevation and Plan of Aprons

ing the center sills by ¼-in. gusset plates. Both body bolsters consist of ¾-in. x 9-in. wrought-iron top members and 1-in. x 9-in. wrought-iron bottom members connected to the side sills through malleable iron fillers. The body bolster center filler is of cast steel.

The side posts consist of nine 3½-in. x 3-in. 8½-lb. rolled



Hudson & Manhattan Baggage Car—Side Elevation and Cross Sections Showing Framing

steel T-sections per side, fastened to the side sills by ¼-in. outside gussets and through the ⅛-in. floor plates by pressed pockets. The roof is built up of 1/16 leaded steel plates, riveted to roof framing and made water tight by soldering.

The side plates are of ¼-in. pressed angle section and to them are attached the side posts, carlines and roof sheets. The carlines in line with each pair of side posts are 3½-in. x 3-in. T-sections, 8½ lb. Between each of these carlines are two 1½-in. x 1½-in. x 3/16-in. rolled angle carlines which extend from side plate to side plate. The T-section carlines are braced to the T-posts by double gussets. A 2-in. x 3-in. x 3/16-in.

chants' Despatch Freight Tariff was also postponed for the purpose of allowing the roads interested an opportunity to prepare full data on the subject. There was some discussion on the subject of issuing a distance table for the association, but action was postponed for the present.

Owing to the fact that the Central Electric Accounting Conference had a meeting on March 12 at Ft. Wayne and several of the members of the Traffic Association desired to be present, the traffic meeting was shortened to one day. The next meeting of the Traffic Association will be held at Lima, Ohio, on April 16.

## EXHIBITS AT MAINTENANCE OF WAY CONVENTION IN CHICAGO

The following is a summary of the principal exhibits of electric railway interest at the Coliseum in Chicago this week, made in connection with the convention of the American Railway Maintenance of Way Association:

**American Steel & Wire Company, Chicago:** Right of way fencing, rail bonds, triangle mesh concrete reinforcement, nails and wire, electrical wires, W. & M. telephone wire. Represented by J. M. Holloway, L. P. Shanahan, H. A. Parks, B. H. Rider, H. S. Durant, R. C. Moeller, C. S. Knight.

**American Valve & Meter Company, Cincinnati, Ohio:** Water service supplies, float valves, Economy switch stands, Anderson's safety switch lock. Represented by J. T. McGarry, F. C. Anderson, Burton W. Mudge.

**American Vulcanized Fiber Company, Pittsburgh, Pa.:** Vulcanized fiber for general electrical insulating purposes. Represented by John Barron, manager railway department.

**Adams & Westlake Company, Chicago, Philadelphia, New York:** Signal lamps, lanterns, electric railway tail lamps, pressed steel street car headlights, railway specialties. Represented by W. H. Baldwin, assistant general manager; G. L. Walters, railway sales manager; H. G. Turney, A. S. Anderson, C. B. Carson, W. J. Pierson.

**Adreon Manufacturing Company, St. Louis and Chicago:** Clarke tension set tie plate, Security rail brace and tie plate. Represented by E. L. Adreon, Jr., president, and William Miller, vice-president.

**American Rail Joint Company, Toronto, Can.:** Reinforced angle bars. Represented by T. D. Beddoe.

**American Railway Signal Company, Cleveland, Ohio:** Electric automatic signals, electric switch locks, electric dwarf signals, power and switch indicators, relays and electric interlocking apparatus. Represented by G. L. Weiss, H. M. Abernethy, H. D. Abernethy, J. L. Burrows.

**American Rolling Mill Company, Middletown, Ohio:** American ingot iron corrugated culverts. Represented by G. H. Charls, Ray Frazer, Jos. De Frees, F. M. Beach, J. Aupperte, G. Ahlbrandt, A. B. Nilder, Howard O'Neal, C. C. Fouts.

**American Well Works, Chicago, Aurora, Ill.:** Deep well and centrifugal pumping machinery with any style of power, air compressors, well drilling and prospecting machinery. Represented by Geo. W. Igo, C. O. McLean and A. W. McLean.

**Barrett Manufacturing Company:** Roofing, bridge water proofing with bituminous binder protection, floor construction particularly adapted for repair shops and freight houses. Represented by W. S. Babcock, L. P. Sibley, H. B. Nichols, C. T. Bilyea.

**Bausch & Lomb Optical Company, Rochester, N. Y.:** Engineering and surveying instruments, transits, levels, etc. Represented by W. Louis Johnson and F. M. Storr.

**Beaver Dam Malleable Iron Company, Beaver Dam, Wis.:** Tie plates and rail braces. Represented by Lawrence Fitch, J. V. Cowling, F. S. McNamara, E. A. Hawks, W. L. Douglas and D. P. Lamoreux.

**J. A. & W. Bird & Company, Chicago, Ill.:** Rex Flinkota roofing, signal railroad roofing, Concrex roofing, Zolium tile roofing, Paradux canvas top roofing, Tunaloid waterproofing felt, insulating papers, roof and damp proof paints, Ripolin enamel paint. Represented by F. E. Cooper, H. W. Benedict, Howard Schofield, Paul L. Griffiths, C. E. Rahr, G. J. Gross.

**S. F. Bowser & Company, Inc., Fort Wayne, Ind.:** Oil storage systems, Bowser self-measuring pumps. Represented by C. A. Dunkleberg, W. T. Simpson.

**Buda Company, Chicago:** Railroad motor cars and velocipedes, track drills, drills, grinders, switch stands, ratchet jacks, ball-bearing jacks, adjustable switch rods, solid manganese crossing, replacers, electric crossing gates. Represented by H. K. Gilbert, vice-president; L. M. Viles, vice-president and treasurer of manufacturing; Wm. P. Hunt, Jr., vice-president and secretary of sales; C. H. Delano, assistant to vice-president and secretary of sales; and the following salesmen: W. B. Paulson, J. T. Harahan, Jr., Geo. B. Shaw, L. Hamill, A. R. Dyer, J. J. Gard, W. S. Weston and H. S. Evans.

**Card & McArdle, Waukegan, Ill.:** Zinc and creosote timber preservative processes according to Card patents for agitating zinc and creosote oils. Represented by Frank McArdle, J. B. Card.

**Philip Carey Company, Cincinnati, Ohio:** Roofing, asbestos and magnesia products, insulating materials. Represented by R. B. Murdock, E. S. Main, C. L. Cockrell.

**Carnegie Steel Company, Pittsburgh, Pa.:** Section of railroad track, constructed with steel cross ties, Duquesne joints and 100-lb. American Society rail, with various types of fastenings, including wedge fastenings illustrated in Bulletin No. 108, general assortment of Duquesne rail joints for principal sections of standard rails; Schoen steel wheels, including a wheel having been worn in service representing 301,374 miles; electric railway wheel, 34 in. dia., 2½-in. rim, nickel-plated samples, showing various types of U. S. and Friedstedt sheet piling. Represented by N. M. Hench, Edwin S. Mills, C. B. Friday and D. B. Coey, W. A. Bostwick, P. W. O'Brien, H. C. Griswold, Robert Coe, H. R. Archer.

**H. Channon Company, Chicago:** Shovels, pumps, blocks, wheelbarrows, Buckeye torches and other railway supplies. Represented by O. W. Youngquist, Harry Keegan and B. Berntsen.

**Chicago Steel Tape Company, Chicago, Ill.:** Steel tapes, leveling rods, lining poles, etc., for field use. Represented by L. A. Nichols and J. Levinson.

**Cleveland Frog & Crossing Company, Cleveland:** "Hard Service" manganese frogs and crossings, improved spring rail frogs, switches, switch stands, guard rail clamps, Prentice anti-rail creepers, electric railway special track work. Represented by G. C. Lucas, Geo. Stanton, Geo. A. Peabody, L. G. Parker, Geo. Arnold, Jr.

**James B. Clow & Sons, Chicago:** Plumbing, steam, water and foundry products. Represented by W. E. Clow, Jr., Yates A. Adams, W. T. Brace, J. L. Ponie, W. R. Plum, L. J. Elliott.

**Cook Standard Tool Company, Kalamazoo, Mich.:** Track drills, bits, tool grinders and chucks. Represented by E. Cook and E. Edelmann.

**The Coulter-Paxton Company, Hammond, Ind.:** Track wrench, rail drill and bonding rail drill. Represented by W. G. Paxton, J. W. Paxton, C. J. Coulter.

**Crerar, Adams & Company, Chicago:** Hercules angle steel warehouse trucks for handling freight packages, barrels, boxes, etc. Represented by C. A. Roberts, vice-president; F. R. Sheperd, secretary; G. D. Bassett, Russell Wallace, J. A. Martin, C. W. Gregory, T. W. Barratt, P. F. Ford.

**Detroit Graphite Company, Detroit, Mich.:** Paint for bridges, buildings, structural steel, etc. Represented by T. R. Wyles, L. D. Mitchell, Edwin Booth and A. H. Kuerst.

**Dilworth, Porter & Company, Ltd., Pittsburgh, Pa.:** Railroad spikes, tie plates. Represented by W. F. Schleiter, secretary.

**Joseph Dixon Crucible Company, Jersey City, N. J.:** Silica, graphite paint; lubricating graphite crucibles and plumbago. Represented by E. R. Smith, H. W. Chase.

**Dressel Railway Lamp Works, New York and Chicago:** Switch lamps, semaphore lamps, tower lamps, station lamps, engine lamps, tail marker lamps, caboose lamps, crossing gate lamps. Represented by F. W. Dressel, president; Robert Black, vice-president; E. W. Hodgkins, western sales manager; F. W. Edmunds, sales agent; A. P. Grenier, W. H. Dayton.

**G. Drouve Company, Bridgeport, Conn.:** Anti-Pluvius puttyless skylights and sash operators, "Lovell" and "Straight Push." Represented by William V. Dee, George J. Adam, R. S. Adam, A. H. Bates.

**Duntley Manufacturing Company, Chicago, Ill.:** Rockford gasoline section and inspection cars, Rockford track weeder and Duntley pneumatic cleaner. Represented by L. C. Thompson, H. F. Worden, J. G. Minert, E. J. Cornish, R. A. Paterson, B. L. Winchell, Jr., George M. Kenyon.

**Duplex Metals Company, New York:** Copper-clad steel, model of coating process and material in various stages of manufacture, samples of wire. Represented by Frank R. Chambers, Jr., vice-president; James F. Kinder, secretary; James A. Waugh, George B. Muldaur, George Wolf, W. T. Kyle, Wirt Tassin.

**Eastern Granite Roofing Company, Chicago:** Granite roofing, Everite crushed stone roofing, Tisbest smooth surface roofing. Represented by H. Henning, P. G. Kennett, A. W. Turner, C. F. Barstow.

**Economy Separable Switch Point Company, Inc., Louisville, Ky.:** Mitchell and Palmer types separable switch points, Economy separable claw bars, tie plates and rail anchors. Represented by W. M. Mitchell, W. M. Mitchell, Jr., and B. B. Betts.

**O. M. Edwards Company, Syracuse, N. Y.:** Railroad padlocks, self-lifting step traps, window and sash fixtures and railway devices. Represented by C. H. Rockwell, Russell Hotchkiss.

**Electric Storage Battery Company, Philadelphia, Pa.:** Chloride accumulator batteries for drawbridge operation, and Chloride, Tudor and Exide types for car lighting, signal, interlocking and automatic block signal work. ET couple types for small lighting plants and telegraph service. Represented by G. H. Atkin, manager; T. Milton, district engineer; R. I. Baird and T. A. Cressey, salesmen.

**Fairbanks, Morse & Company, Chicago, Ill.:** Motor cars, standpipes, pumping machinery, dynamos, drills, scales, gasoline engine-driven hand car, etc. Represented by A. A. Taylor, C. W. Kelly, R. E. Derby, L. H. Matthews, F. M. Condit, F. H. Clarke, C. D. Walworth, R. D. Head, F. F. French, F. E. Church, H. C. McClary, S. F. Forbes, F. Hibbs, J. G. Jones, J. A. Steele, E. M. Fisher, L. Norvell, F. B. Roy, A. F. Young, H. D. Smith, A. C. Dodge and F. H. Douglas.

**Ford & Johnson Company, Chicago, Ill.:** Perfection railroad seats and chairs for parlor and buffet cars. Also rattan seating. Represented by Benjamin H. Forsyth, Walter J. Bennet, Clarence A. Van Derveer.

**Frank M. Foster, Columbus, Ohio:** Foster interlocking switch stands, with independent facing point lock and distant signal operated with one movement of one lever. Represented by Frank M. Foster, George E. Kalb.

**General Railway Signal Company, Rochester, N. Y.:** Eight signal mechanisms, one of which is operated on a.c. including towers, with both visible and audible indication. Also relays, indicators, battery charging switch, interlocking machine and descriptive matter. Represented by W. W. Salmon, president; Geo. D. Morgan, vice-president and treasurer; M. Wuerpel, assistant general manager; H. M. Sperry, sales manager; L. Thomas, resident manager, Chicago; F. H. Jones, assistant resident manager, Chicago; M. R. Briney, resident manager, New York; W. K. Howe, chief engineer; F. L. Dodgson, consulting engineer; C. C. Poor, general superintendent; W. R. Young, J. B. Evans and J. L. Langdon.

**Goheen Manufacturing Company, Canton, Ohio:** Preservative coatings for iron and steel. Represented by A. W. Price, G. L. Clapper.

**Peter Gray & Sons, Inc., Boston and Chicago:** Railroad lamps and lanterns. Represented by Geo. M. Gray, J. M. Brown.

**Grip Nut Company, Chicago and New York:** Grip nuts, special grip holding nuts and patented windows and window fixtures. Represented by E. R. Hibbard, Herbert Green, B. L. McClellan, W. G. Wilcoxson, B. C. Wilt, R. A. Flum, B. J. Bernhard, J. W. Hibbard.

**Handlan-Buck Manufacturing Company, St. Louis, Mo.:** Lamps, lanterns, long-time burners, Cairncross train indicators, track tools, McPartland rail clutches, metallic slow flags and metallic train flags. Represented by A. H. Handlan, Jr., and R. L. Cairncross.

**Hart Steel Company, Elyria, Ohio:** Railroad tie plates and standard spikes. Represented by W. S. Miller, W. T. Bentz, Willis McKee, G. S. Wood, A. W. DeRocher, H. W. Davis, J. M. Van Harlingen.

**Hayes Track Appliance Company, Geneva, N. Y.:** Hayes derails and attachments. Represented by S. W. Hayes, G. E. Ellis, W. Harding Davis, Wellington B. Lee and Arthur Gemunder.

**Heath & Milligan Manufacturing Company, Chicago, Ill.:** Siding finished with way and station paint and panels decorated with "Duroware," a new and unique paint which dries flat, with a soft finish, which is sanitary and waterproof, and possesses unusual wearing qualities. Also a brine-proof paint and rust inhibitive; paints and finishes for all

railway purposes. Represented by A. M. Heath, B. H. Pinkerton, J. H. Vance, C. R. Arnold, J. B. Campbell.

**Hobart-Allfree Company, Chicago, Ill.:** Smyth and Free-lard derailleurs, Newton car replacers. Represented by E. H. Allfree, W. H. England, Frank P. Smith.

**Indianapolis Switch & Frog Company, Springfield, Ohio:** Manganese frogs, crossings, switches, etc. A special showing of I. Sw. & F. Co. Model R-N-R manganese frogs and tests. Represented by E. C. Price, secretary and treasurer; W. H. Thomas, chief engineer; W. L. Walker, assistant engineer; T. D. Hanley, engineer manganese department; G. S. Shaw, superintendent; J. A. Foulks, Eastern representative.

**H. W. Johns-Manville Company, New York and Chicago:** Asbestos and magnesia materials, electrical supplies, roofings, smoke jacks. Represented by J. E. Meek, manager railroad department; J. C. Younglove, assistant manager; F. M. Gilmore, C. E. Murphy, H. A. Waldron, J. H. Trent, P. C. Jacobs, G. W. Ristine, Jr., R. A. Hamaker, H. G. Newman.

**Joyce-Cridland Company, Dayton, Ohio:** Hydraulic and all other types of jacks. Represented by F. I. Joyce, George W. Lewellyn, N. Kohl, Chas. F. Palmer and Edwin Ro-meiser.

**Kalamazoo Railway Supply Company, Kalamazoo, Mich.:** Manufacturers of hand, push and velocipede cars, improved track drills, jacks, pressed steel wheels, crossing gates and other track appliances. Represented by John McKinnon, Chas. B. Hays, Frank B. Lay, C. A. Wallace, Donald A. Stewart, Geo. W. Mingsus, W. I. Clock, H. C. Wilson.

**W. K. Kenly Company, Chicago, Ill.:** Security anchor tie plate, Gump car replacer, Latimer switch point lock, Universal carrier base, Arctic water box, Manhattan compromise joint, Moore track drills, Kalamazoo velocipedes. Represented by A. P. Van Schaick, W. J. Fauth, Gerard Van Schaick.

**Kennicott Water Softener Company, Chicago Heights, Ill.:** Water softening machinery. Represented by Cass L. Kennicott, Edwin J. Flemming, Frank S. Dunham and T. G. Windes.

**Kerite Insulated Wire & Cable Company, New York City:** Kerite insulated wires and cables. Represented by R. D. Brixey, president; Azel Ames, P. W. Miller and J. A. Renton. Western representatives: Watson Insulated Wire Company, Chicago, Ill.; J. V. Watson, B. L. Winchell, Jr., R. A. Paterson and E. B. Price.

**Kerlin Automatic Post Machine Company, Delphi, Ind.:** Cement post machine, reinforcement for concrete post and concrete railroad tie. Represented by Wm. F. Kerlin, E. W. Bowen, E. R. Smock, Rega Porter, Wm. Donlin, Wm. M. May, N. Schrader, C. M. Thomson, R. C. O'Connor.

**Kueffel & Esser Company, New York and Chicago:** Drawing materials, surveying instruments, drawing instruments, measuring tapes, etc. Represented by Rudolph Link.

**Lackawanna Steel Company, New York:** Rails, rail joints, structural and bridge material, reinforced concrete bars, steel sheet piling and track supplies. Represented by C. R. Robinson, G. A. Hagar, Blythe Harper and C. H. Hobbs.

**Lufkin Rule Company, Saginaw, Mich.:** Measuring tapes of all descriptions, steel rules, etc. Represented by Theo. Huss, S. B. McGee, B. F. Gould and F. G. Brown.

**David Lupton's Sons Company, Philadelphia, Pa.:** Lupton steel sash, Lupton rolled steel skylight, Pond operating device, Pond continuous sash. Represented by Clarke P. Pond, sales manager, and George P. Heinz, Western selling agent.

**Manganese Steel Rail Company, New York:** Rolled rails, perforated screens, conveyor buckets, shovels, forgings. Represented by W. S. Potter, Fred W. Snow, O. W. Cook, Payson Cook, S. T. McCall, A. A. Aigeltinger.

**W. N. Matthews & Brother, St. Louis:** Matthews guy anchors, telephone jack boxes and plugs for dispatching systems, cable clamps, cable splicing joints, lamp guards, and other specialties. Represented by Claude L. Matthews, W. N. Matthews, Victor L. Crawford and Walter E. Bissell.

**Miracle Pressed Stone Company, Minneapolis, Minn.:** Collapsible steel forms for concrete culvert and sewer construction. Represented by O. U. Miracle, president.

**Morden Frog & Crossing Works, Chicago:** Unity switch stand operating distant signal and facing point switch with

positive point lock, manganese rigid frog, automatic and rigid manganese steel frogs, guard rail clamps, switch adjustments, rail braces, slide plates, track jack, compromise joints, etc. Represented by Arthur C. Smith, H. M. Macke and D. H. Cusic.

**Burton W. Mudge & Company, Chicago:** Adams motor car, safety mail crane. Represented by Burton W. Mudge, C. M. Mudge, Geo. E. Simmons, Otto P. Hennig, W. E. Adams.

**Municipal Engineering & Contracting Company, Chicago, Ill.:** Chicago improved cube concrete mixer. Represented by C. E. Bathrick.

**National Lock Washer Company, Newark, N. J., and Chicago, Ill.:** Nut locks. Represented by F. B. Archibald, G. E. Bake, F. B. Buss and John B. Seymour.

**National Malleable Castings Company, Chicago:** Malleable track specialties. Represented by F. R. Angell, H. I. Hiatt and J. J. Byers.

**National Roofing Company, Tonawanda, N. Y.:** Mineral asphalt roofing, gravel and feldspar surfaced, asphalt roof coating, asphalt paints, graphite paints, stack paint and metal protecting paints. Represented by O. H. Dean, manager railroad and paint departments; A. E. Arbuckle and D. A. Bonitz, railroad department.

**Okonite Company, The, New York:** Central Electric Company, Western agent. Rubber insulated wires and cables, Candee potheads, Okonite & Manson tapes. Represented by Lewis G. Marten, F. J. White, J. M. Lorenz, M. Cox, W. D. Dunsmore and D. M. Ayers.

**Pacific Timber Preservative Company, Spokane, Wash.:** Treated cross ties, telephone and telegraph poles and fence posts. Comparison of results in actual track service. Represented by Robert E. Allen.

**W. W. Patterson Company, Pittsburg, Pa.:** Double extra heavy wood tackle blocks for manila rope, double extra heavy steel tackle blocks for wire cable. Represented by W. W. Patterson, Jr., secretary and treasurer.

**Pennsylvania Steel Company, Steelton, Pa., and Maryland Steel Company, Sparrows Point, Md.:** Solid Manard crossing, No. 10, Manard anvil face frog, design 160, section No. 235, No. 10 solid Manard frog, design 164, section No. 235, No. 10 Manard anvil face spring rail frog, design 278, section No. 235, sample Never-Turn split bolt, Never-Slip switch plate, intermediate main line safety switch stand, Model 56-B, low New Century switch stand, Model 51-A, low Steelton positive switch stand, Model 52-A, Manard switch point and housed stock rail, intermediate New Century switch stand, Model 50-E, with semaphore attachment, rolled Manard (improved manganese) rails. Represented by C. W. Reinoehl, superintendent frog and switch department; B. L. Weaver, assistant to superintendent, F. & S. department; H. F. Martin, general manager of sales; G. S. Vickery, Wm. H. Henderson, N. E. Salsich, Robert E. Belknap, W. H. Allen, Drew Allen, H. G. Barbee, M. W. Long, Jno. C. Jay, Jr., Chas. S. Clark.

**Pittsburg Steel Company, Pittsburg, Pa.:** "Pittsburg Perfect" fencing for railroad right-of-way. Represented by W. R. Marsh, F. D. Findlay, E. Steytler, manager wire fence department.

**D. & A. Post Mold Company, Three Rivers, Mich.:** "D. & A." concrete post machinery and molds, specimens of reinforced cement posts, also sections of same showing construction, materials used, also different methods of reinforcement, as applied to the farm, vineyard and railway use. Represented by G. H. Dougherty, secretary and treasurer.

**Q. & C. Company, New York and Chicago, Ill.:** Bonzano joints, steel joints, insulated joints, anti-rail creepers, rail saws, rail benders, guard rail clamps, guard rail braces, rail braces, castings, bolts and nuts, cement and metal ties. Represented by C. F. Quincy, G. C. Isbester, Geo. L. Hall, T. B. Bowman, J. V. Wescott, H. E. McCormick, J. A. Bodkin, C. C. Rossire, Jr.

**Railroad Fence Works:** Railroad fencing. Represented by E. G. Fisher.

**Railway & Traction Supply Company, Chicago:** Hercules bumping posts, manufactured by J. M. Scott & Sons, Racine, Wis., automatic lock nuts, manufactured by Automatic Lock Nut Company, Rockford, Ill. Represented by J. M. Scott, E. E. Scott, Chas. Rystrom, and Cortlandt F. Ames, vice-president and general manager.

**Railway Specialty & Supply Company, Chicago, Ill.:** P. &

M. rail anchors, arc damp lightning arresters; photographs showing effect of rail creeping, signal accessories. Represented by Philip W. Moore, L. W. Kent, A. G. Rockwell, F. A. Preston.

**Rail Joint Company, New York, N. Y.:** Continuous, Weber & Wollhaupter types, base supporting rail joints. Represented by V. C. Armstrong, L. F. Braine, W. E. Clark, J. A. Greer, Percy Holbrook, H. C. Holloway, J. G. Miller, F. A. Poor, E. L. VanDresar, B. Wolhaupter, F. C. Webb, E. A. Condit, Jr.

**Ramapo Iron Works, Hillburn, N. Y.:** Automatic safety switch stands; manganese pointed switches; manganese center frogs; rolled manganese steel rail; guard rail clamps; special switch slide plates, etc. Represented by F. W. Snow, Arthur Gemunder, W. B. Lee, W. C. Kidd, F. C. Stowell, Jas. B. Strong.

**Scherzer Rolling Lift Bridge Company, Chicago, Ill.:** Models, photographs, designs, plans, drawings and literature. Represented by A. H. Scherzer, C. L. Keller, J. I. Vincent, J. T. Dickerson, W. F. Martin, H. D. Harting, R. W. Flowers.

**Sellers Manufacturing Company, Chicago:** Tie plates, angle bars, "Sellers' Anchor Bottom Tie Plate." Represented by J. M. Sellers, J. T. Markham and L. S. Gordon.

**Spencer Otis Company, Chicago:** Economy railway tie plates. Represented by W. L. DeRemer, H. H. Hart and Carter Blatchford.

**St. Louis Steel Foundry, St. Louis, Mo.:** Solid manganese steel frogs, crossings and inserts for steam and electric railways. Represented by J. H. Steedman and J. N. Maher.

**The Strauss Bascule & Concrete Bridge Company:** Drawings and models of Strauss trunnion bascule bridges, self-balancing window. Represented by J. B. Strauss, president and chief engineer; G. Jeppsen, P. Orum, J. R. Hall.

**Streeter-Amet Weighing & Recording Company, Chicago, Ill.:** Automatic weight recording machine for railroad track scales for weighing carload shipments, and automatic quick-weighing dial attachment for freight warehouse and baggage scales for weighing L. C. L. freight. Represented by Fred Cruikshank, H. A. Streeter, R. C. Burkholder, George Goetz, George A. Man, C. M. Gordon, A. L. McLaren, F. Nemitz.

**Templeton, Kenly & Company, Chicago:** Simplex track and car jacks. Represented by A. E. Barron, J. H. Hummel and W. B. Templeton.

**Union Switch & Signal Company, Swissvale, Pa.; Chicago, Ill.; New York, N. Y.; Montreal, Can.:** Interlocking and signaling apparatus for steam and electric railways, including electro-pneumatic and electric interlockings in operation; signals; relays and other apparatus for a. c. or d. c. automatic block signaling; staff system and other controlled manual apparatus; electric crossing gates and bells; Keystone insulated rail joints; mechanical interlocking details, etc. Represented by H. G. Prout, J. G. Schreuder, J. S. Hobson, S. G. Johnson, J. P. Coleman, M. D. Hanlon, L. F. Howard, T. H. Patenall, W. H. Cadwallader, J. D. Taylor, H. McCready, W. E. Foster, George Blackmore, H. S. Beaker, E. T. Barnes, W. M. Vandersluis, C. C. White.

**U. S. Metal & Manufacturing Company, New York City:** "Diamond" square-tapered steel trolley and transmission poles; Wolfe automatic rail joint lock; Columbia lock nuts. Represented by F. C. Dunham, H. A. Hegeman and Arthur Masters.

**U. S. Wind Engine & Pump Company, Batavia, Ill.:** Water columns, tanks, tank fixtures, steel substructures (all in model); switch stands. Represented by L. E. Wolcott, A. J. Anderson and C. E. Ward.

**William Wharton, Jr., & Company, Inc., Philadelphia and Jenkintown, Pa.:** Manganese steel switches, frogs, crossings and movable points; switch stands, guard rail clamps, anti-creepers, models, photographs, etc. Represented by V. Angerer, vice-president; L. R. Ashhurst, Jr., manager of Philadelphia works; R. C. McCloy, sales agent; W. B. Cooke, manager Jenkintown works; W. McLain, sales agent, and Arthur S. Partridge, sales agent.

**Winans Improved Patent Rail Joint Company, Portland, Ore.:** A base-supported rail joint. Represented by Audubon Winans.

**Winters-Coleman Scale Company, Springfield, Ohio:** Automatic weighing machinery; Osgood Sonander systems.

Represented by Randolph Coleman, H. B. Osgood and C. F. Byerly.

**Yale & Towne Manufacturing Company, Stamford, Conn., and Chicago:** Triplex block, electric hoists, padlocks, door checks. Represented by D. A. Wright, C. H. Van Winkle, R. E. Gedney and H. R. Butler.

**EMPLOYEES' WELFARE WORK IN COLUMBUS, OHIO**

A number of novel features of employees' welfare work has been introduced and fostered by the management of the Columbus (Ohio) Railway & Light Company, which believes its policy in this respect to be of mutual advantage both to the employees and the company. Some of these are the paying of "dividends" on wages, opening of savings accounts by Christmas present deposits, allowances to old men for uniforms, establishment of savings clubs and an annual employees' outing.

For several years past, in addition to their regular wages, the company has paid to its employees a bonus in the form of the same percentage on their wages as is paid by the company in dividends upon each of its various issues of stock. The Columbus Railway & Light Company is a holding or leasing company and has taken over the properties of the Columbus Railway Company. The latter company has outstanding issues of preferred and common stock, on each of which the leasing company guarantees dividends at the rate of 5 per cent per annum, payable quarterly. The preferred stock dividends are payable on the first days of February, May, August and November. Dividends on the common stock are payable on the first days of March, June, September and December. The leasing company has also been paying dividends for the past four years on its own stock, which is all common stock, and pays these dividends on the first days of January, April, July and October. In this way dividends on some one of the three classes of stock are paid every month. The bonus payments to the employees are also made monthly, and are calculated upon the amount of wages each received for the past three months' work. For example, if an employee received \$50 per month for the previous three months, his wages would aggregate \$150. If, then, a dividend on one of the three issues of stock should be declared at the rate of 5 per cent per annum, the employee receives as his bonus 5 per cent of his wages of \$150, or \$7.50. As dividends are paid on each class of stock at the rate of 5 per cent per annum, quarterly, each employee earning \$50 per month receives as his bonus each month of the year 15 per cent of his wages during the same time, or \$7.50; that is, he receives \$90 during the 12 months. In the year ending Dec. 31, 1909, the company paid out a total of \$75,877 in dividends on wages to its 1100 employees, an average of nearly \$70 to each man.

For a number of years the company at Christmas time distributed to its married employees a turkey, and to the single employees a silver dollar. For the past three years, however, on account of having so much trouble in securing a sufficient number of turkeys and their proper distribution, the company has substituted a plan of depositing \$2 to the credit of each of the married men and \$1 to the credit of each single man in one of the local savings banks. This plan has proved very satisfactory, and it has been surprising to the management to what extent these savings accounts have increased by subsequent deposits made by the employees. The plan has started many of the men in keeping a savings account. The system of opening savings accounts was started in December, 1906, and one of the trust companies with which accounts were opened for about three-fourths of the company's employees reported Jan. 1, 1909, as follows:

Total number of accounts opened up to Jan. 1, 1909. . . . .	1,581
Total deposits made by company for employees. . . . .	\$2,809
Number of accounts remaining on books Jan. 1, 1909. . . . .	315
Total balance, Jan. 1, 1909, to credit of accounts. . . . .	\$13,816.87

This shows that the employees have added a considerable sum to the original deposits.

Through the efforts of E. K. Stewart, vice-president and

general manager of the Columbus Railway & Light Company, who conceived the details of the plan, about 50 of the company's employees some time ago organized themselves into a group of ten savings clubs, each composed of five members. Each member paid in \$10 as an entrance fee and signed an agreement designating one of the local banks to act as treasurer of the savings fund. With the \$50 of entrance fees as a margin the bank purchased for each club 10 shares of the Columbus Railway Company's preferred stock, paying 5 per cent dividends, at a price of about 68. The five members of each club executed in favor of the bank a joint note of \$630, payable in six months and bearing 6 per cent interest, and deposited the 10 shares of stock as collateral on the note. Each member had two shares of the club's stock transferred to his own name, and was entitled to receive the dividends on these two shares as paid. At the end of every month each member paid in to the savings fund \$5, so that at the end of six months when the original note came due the club had \$150 to its credit, against which was an interest charge of \$18.90. The net assets of \$131.10 were applied to the face of the original note and a new note made for \$498.90, which extended the loan for another six months. At the end of about two years and four months the entire purchase loan was paid off and two shares of stock were owned outright by each of the members of the ten clubs. The formation of these clubs was experimental and while the result was gratifying to the management of the company and very satisfactory to the members no effort has been made to extend the plan generally among the men.

The company furnishes conductors and motormen who have been in its employ for five years one uniform suit each year, and to those having been in its employ 10 years or longer two uniform suits each year. In some instances the men have taken good care of their uniforms and instead of drawing the second uniform, have had paid to them in cash the cost of a uniform. This has been done only where the men made a satisfactory showing that they had plenty of good uniforms on hand.

Each year the company is the host at an employees' picnic, and at this time it furnishes the employees and their families free transportation over the lines of the company and an outing for themselves and their families. This generally takes place in one of the pleasure parks of the city, to which the company's lines run, but the management of the park, which is not owned by the railway, generously admits the employees and their families free to the park and the amusements therein.

**CONGRESS OF THE TRAMWAYS & LIGHT RAILWAYS ASSOCIATION**

The annual congress of the Tramways & Light Railways Association will be held at Dublin, Ireland, on May 12 and 13, 1910. Members and their friends will be officially received by W. M. Murphy, chairman, and Wm. Anderson, managing director of the Dublin United Tramways, at 10 a. m. on May 12. The morning will be devoted to reading papers, discussions, etc. Members will be the guests of the Dublin United Tramways at a dinner to be given on the evening of May 12. On May 13, weather permitting, members and their friends will be conveyed to Dalkey, round Killincy, and lunch will be served at the Marine Hotel, Kingstown. After lunch they will return to Dublin and be conveyed to Howth and Hill of Howth by the Great Northern Tramway to the Claremont Hotel for tea and thence back to Dublin. Should the weather be unfavorable, it is proposed to devote the morning of May 13 to reading papers, etc., and to confine the trip to Dalkey to the afternoon. Arrangements will be made with the Imperial Hotel, Dublin, for special terms for members and their friends.

The President of the Republic of Ecuador has submitted a bill to the National Congress providing for the construction of an electric railway 106 miles long to connect Quito and Ibarra. The cost of construction of the track is estimated at \$10,000 per km, and the rolling stock will cost approximately \$900,000.

## ELECTRIC RAILWAY LEGAL DECISIONS

### CHARTERS, ORDINANCES AND FRANCHISES

#### New York.—Eminent Domain—Power of Elevated Roads.

The term "railroad corporation," as used in General Railroad Act, Laws 1890, p. 1083, c. 565, sec. 4, includes elevated railroads; and such railroads have power to acquire land necessary for their maintenance and accommodation.—(Manhattan Ry. Co. v. Astor et al., 107 N. Y. Sup., 666.)

#### New York.—Street Railroads—Operation—Right of Way.

A driver of a wagon, rightfully driving on car tracks in the street, owes the street railway company the duty to leave the track, on the approach of a car, as soon as he reasonably can; but where he is prevented from leaving the track, on one side, by deep snow and on the other side by the approach of a car from the opposite direction, the right of way of the car on the same track coming in his rear is not paramount.—(Dietrich v. Brooklyn Heights R. Co., 108 N. Y. Sup. 158.)

#### New York.—Street Railroads—Easements—Prescription—Interruption—Acquiescence.

A user of an elevated railroad with two tracks, one on each side of the street, with an open space between them, for 17 years, is interrupted where a third track is constructed between the original tracks, where the original user began under legislative authority to maintain two original tracks, and the third track was so built that the original tracks helped to support it, and it enabled the company to run more trains and carry more passengers than was possible before the third track was constructed, whereby the burden on the servient estate was increased before the expiration of 20 years.

Where an owner of property acquiesced in the use of two original tracks of an elevated road for 17 years, it did not affect his right to object where a third track was built which increased the traffic capacity of the road.—(Roosevelt et al. v. New York Elevated R. Co. et al., 111 N. Y. Sup., 440.)

#### New York.—Carriers—Street Railways—Transfers—Route—Statutory Provisions—Construction—"Continuous" Trip—"Intersection"—Rights of Carriers—Reasonable Rules—Ejection of Passengers—Civil Liability—Actions for Assault.

Under Railroad Law, Laws 1892, p. 1406, c. 676, sec. 104, requiring every surface street railroad corporation entering into a contract for the use of another road to give each passenger paying a single fare a transfer entitling him without extra charge to one continuous trip to any point or portion of such other railroad, etc., to the end that the public convenience may be promoted, etc., a passenger has a right to take the nearest and most convenient route; hence, where a passenger on a street car passing along a certain street called for and received a transfer to a second line, he had a right to take a car on that line at the point where it started from the street along which the first line continued, when by so doing he could reach his destination more conveniently than by continuing on the first line to a point where it crossed the second line, and it was unlawful to refuse him passage without the payment of a second fare.

The word "continuous," as used in the statute, must be construed to mean direct, whenever it can be so applied.

A provision of the transfer directing that it be tendered "at the intersection of the issuing line" means any point on the issuing line where a passenger can continue his direct journey by taking another car, and the fact that the point is at an intersection of tracks merely, and not an intersection of lines, is immaterial.

Though a street railway company has a right to make and enforce such rules as are reasonable for the conduct of its business, a rule which is contrary to law or whose enforcement would invalidate the provisions of a statute cannot be upheld.

Where a street car passenger, having a transfer entitling him to ride on the car, is ejected therefrom by employees of the company for failure to pay another fare, they commit an unlawful assault, for which he may maintain an action.

That a penalty is imposed by statute on the carrier for violation of the law requiring the giving of transfers does

not deprive a passenger, presenting a transfer valid on its face, who is summarily ejected, of a remedy by action for damages.—(Charbonneau v. Nassau Electric R. Co., 108 N. Y. Sup. 105.)

#### New York.—Carriers—Transportation of Passengers—Continuous Ride—Transfers—Fares—Regulation.

Railroad Law (Laws 1890, p. 1113, c. 565) § 101, provides that no corporation operating a street surface railroad under such act, or under Laws 1884, p. 309, c. 252, shall charge more than five cents for one continuous ride from any point on its road, or on any line or branch operated by it or under its control, to any other point thereof or any connecting branch thereof, within the limits of any incorporated village or city. Held, that such section does not provide for a change by a passenger from one line to another, but only for a continuous ride on the same car.

Railroad Law (Laws 1890, p. 1114) c. 565, § 104, provides that any street surface railroad corporation which acquires the use of the roads of other companies by a contract shall carry between any two points on the railroads, or portions thereof, embraced in such contract, any passenger desiring to make one continuous trip between any such points for a single fare, and on demand, without extra fare, shall give to each passenger paying a fare a transfer entitling him to one continuous trip to any point or portion of any railroad embraced in such contract, etc. Held, that the section relates only to a continuous trip made by change from the line of one of such companies to that of another, both lines being operated by one company under a lease or other contract, and does not apply to different lines owned by the same company.

A street railway company, which voluntarily gives a passenger a transfer from one line to another, when legally entitled to the payment of another fare on the second line, is not, because of the exaction of another fare on the second line, liable to the penalty provided by Railroad Law (Laws 1890, p. 1096, c. 565) § 39, declaring that any railroad which shall ask or receive more than the lawful rate of fare, unless by inadvertence or mistake not amounting to gross negligence, shall forfeit \$50 to the party aggrieved.—(King v. Nassau Electric R. Co., 112 N. Y. Sup., 589.)

#### New York.—Street Railroads—Establishment—Determination as to Location—Authority of Municipality—Notice to Occupants—Eminent Domain—Title Acquired—Easement—Compensation.

Where the certificate of the rapid transit commissioners authorized a rapid transit railroad to construct and operate a double-track road on a certain route, and also authorized it to acquire private property for a terminal and station, and to occupy for said terminal and station any of the underground portions of D. street, etc., contiguous to the terminal station, and to operate therein such tracks and connections as may be convenient for the operation of the road, the authority to acquire and maintain a terminal and station was in addition to that to construct and operate a double-track road, and it could occupy the ground under D. street for its terminal as well as for its tracks.

Under the Rapid Transit Act (Laws 1891, p. 14, c. 4) § 23, as amended by Laws 1902, p. 1610, c. 584, the rapid transit railroad commissioners, now the board of public service commissions, fixed the route and location of tunnel roads, and the provisions of the act relating to the location of the route are independent of the railroad law, so that section 6 thereof, requiring written notice of filing a map profile of the route designated to be given to the actual occupants of the land included within such route, has not application to proceedings to establish a tunnel road.

The Railroad Law (Laws 1890, p. 1083, c. 565), art. 1, § 4, gives every railroad corporation power to acquire by condemnation such property as may be necessary for the construction and maintenance of its road, but the property so acquired shall be held and used only for corporate purposes during the continuance of the corporate existence. The Rapid Transit Act (Laws 1891, p. 14, c. 4) § 23, as amended by Laws 1902, p. 1610, c. 584, gives a corporation organized thereunder the right to acquire such real property, or easement, or other interest therein, as may be necessary to enable it to construct its road, stations, etc., and, in case it cannot agree with the owner, it may acquire title pursuant to the condemnation law; and section 24,

as amended by Laws 1892, p. 1089, c. 556, gives such corporation power to take and hold voluntary grants to aid in the construction, etc., of its road, but such real estate shall be held only for the purposes of the grant; and to purchase, lease, and hold all real estate necessary for the construction of its roads, stations, etc., necessary to accomplish the objects of its incorporation. Plaintiff tunnel railroad company was organized under the general railroad law by obtaining a certificate from the board of rapid transit railroad commissioners, so as to give it all the powers of the corporations organized under the rapid transit act. Held that, construing the rapid transit act and the general railroad law, real property condemned under the former act is held only during the continuance of the corporate existence, in the nature of a permanent easement; a fee not being expressly granted, and not being necessary to accomplish the purposes of the corporation in acquiring the land.

A possible reverter of the land taken by railroad corporations by eminent domain is not contemplated in the assessment of compensation therefor, even though only an easement passes, the appropriation being regarded as permanent, and the damages being awarded on that basis.

An unqualified fee in land cannot be taken by condemnation by a private corporation without express authority to take such an estate.—(Hudson & M. R. Co. v. Wendel et al., 85 N. E. Rep., 1020.)

**New York.**—Statutes—Construction—Special Acts—Subject and Title—Constitutional Law—Presumption of Validity—Discretion of Legislature—Constitutional Provisions—Subjects and Titles—General and Special Franchises—Municipal Corporations—Streets—Title of Municipality—Eminent Domain—Fee in Abutting Owner—Power of City to Prevent Interference with Rights—Injunction—Decree—Terms Imposed.

An act to incorporate the Economic Power & Construction Company (Laws 1893, p. 949, c. 459), creating a corporation and giving it power to transmit and utilize power between any points in the State, is a private bill within Const. art. 3, § 16, providing that no private or local bill passed by the Legislature shall embrace more than one subject, which shall be expressed in the title, though the bill specifically states that the powers thereby conferred are expressly declared to be a public purpose, and their use by the corporation a public use.

Every presumption is in favor of the validity of legislative acts which are to be upheld, unless there is a substantial departure from the organic law, and their propriety and wisdom are matters with which the courts have no concern.

Const. art. 8, § 1, providing that corporations shall not be created by special act, except in cases where in the judgment of the Legislature the object of the incorporation cannot be attained by general laws, vests in the absolute discretion of the Legislature the determination whether a special act of incorporation in a given case is necessary, and its decision is not reviewable by the courts.

The subject of a special act to create a corporation is the creation of the corporation for the purposes and with the powers stated in the act, and all the details as to its powers and authority are objects of the corporation, and not subjects of the act; and hence "An act to incorporate the Economic Power & Construction Company" (Laws 1893, p. 949, c. 459), which provides in detail for the organization of the corporation, enumerates the objects for which it is formed, the amount of capital stock, location of principal office, and describes certain powers and privileges granted, etc., which relate directly to the particular corporation created, and its organization, purposes, and powers, embraces only one subject, and is not violative of Const. art. 3, § 16, providing that no private or local bill shall embrace more than one subject, which shall be expressed in the title.

The fact that a special act of incorporation includes both a general franchise to exist as a corporation, and also among the powers which it may possess a special franchise to occupy the streets and highways of the State which is not mentioned in the title does not render the act violative of Const. art. 3, § 16, providing that no private or local bill shall embrace more than one subject, which shall be expressed in the title, since the special franchise is simply a power granted by the act.

The power to use and regulate the use of city streets is vested absolutely in the Legislature, and may not be delegated to the municipality, and, even where it holds the fee to its streets, it holds them as the State's agent for the public use of the people of the State, and not as corporate property.

Where additional burdens have been imposed upon streets the fee of which remains in abutting owners, the owners themselves may seek redress if they choose, but the city is not a trustee for them as regards the enforcement of their private rights, and has no power to interfere.

Where injunctive relief is sought against a city by a company entitled to use its streets, the court in giving relief may in its discretion impose terms for the protection of the city.—(Economic Power & Construction Co. v. City of Buffalo et al., 111 N. Y. Sup., 443.)

**Texas.**—Street Railroads—Franchises—Construction.

A street railroad company, having a franchise which requires the consent of the city council with reference to the construction of "switches" generally, but expressly confers "or any portion thereof," without limitation upon their use, the right to construct "double tracks" on a particular street may construct double tracks on such street without the council's consent, though they are to be used as passing tracks in connection with the single track thereon.—(Denison & S. Ry. Co. v. City of Denison, 119 S. W. Rep., 115.)

**Wisconsin.**—Eminent Domain—Compensation—Special Benefits—Appropriation to Additional Use.

Where a franchise to place street railway tracks, poles, wires and appliances in a street, and binding the railway company to maintain the same until the expiration of the franchise, was granted prior to a taking for interurban purposes, the operation of the street railway was not a special benefit, within St. 1898, sec. 1848, to be offset against damages for the taking for interurban purposes, since a special benefit within that section must be such as is due to the construction of a public work for the installation of which it is sought to condemn.

In estimating damages in proceedings to condemn a right of way for an interurban railway, the existence of a street railway, with its roadbed, poles, wires and appliances in the street wherein it is sought to condemn, and the fact that the street is subject to that burden without compensation to the lot owner, and to other like burdens which the municipal authorities may in their discretion impose, are to be considered as conditions existing at the time of the taking by the interurban railway of the street railway tracks, poles, wires and appliances for interurban tracks, poles, wires and appliances.

In proceedings to condemn a right of way for an interurban railway, the fact that the obligation to continue the street railway service established in the street under a franchise previously granted will remain for some years to come may be considered in mitigation of damages; but, on the other hand, the perpetual nature of the right acquired by the condemnation extending beyond the expiration of the railway franchise is also to be considered.—(Gosa v. Milwaukee Light, Heat & Traction Co., 114 N. W. Rep., 815.)

#### LIABILITY FOR NEGLIGENCE

**Massachusetts.**—Carriers—Electric Railroad—Injury to Passenger—Stopping Places—Action—Proof of Negligent Operation of Car.

Unless an electric railway company has by its practice waived its established rule that passengers shall alight only at the designated stopping places the slowing up of a car before crossing another track, at a place not designated as a stopping place, is not an invitation to passengers to alight, and evidence that passengers have been in the habit of taking advantage of such slowing up or stopping to alight there does not establish such waiver.

Evidence in an action by a passenger on a street car who was thrown from the car by a sudden increase of speed while preparing to alight held not sufficient to show that the motorman was negligent in the manner of starting up.—(Stevens v. Boston Elevated Ry. Co., 85 N. E. Rep., 571.)

**Missouri.**—Damages—Personal Injuries.

A \$6,500 verdict for personal injuries to a woman 75 years old was excessive by \$1,500, where, at the time of the injury, she was not very strong, and none of her bones

were broken, though for some months after the accident she suffered from pain in the left leg, which was in a dropsical condition, and she suffered from mental fear or further injury, and was painfully bruised and hurt, and confined to her bed about two weeks, and her face so swollen that the left eye could not be seen the day following the accident, and about five weeks afterward she was able to use crutches for a time, but afterward grew worse, and again became bedridden.—(Waddell v. Metropolitan St. Ry. Co., 111 S. W. Rep., 542.)

**Missouri.—Personal Injuries—Degree of Care—Wilful Injuries.**

Where a child six years old is injured by being struck by a street car while crossing the track, it is not necessary that the acts of the company's servants should have been wanton or wilful to hold it liable for injuries.

In an action for injuries to plaintiff while crossing defendant's street car track, the only issues of negligence submitted to the jury were: First, negligence in failing to discover plaintiff approaching and going upon defendant's track in time to have checked the speed of its cars; second, in failing to keep a vigilant and reasonable lookout for children upon the track or approaching the same, and whether the motorman could have discovered plaintiff in the act of approaching its tracks; and, third, in failing to approach said crossing with said car under reasonable control. Held, that each of said acts was consistent with the others, as each might have contributed to the injury of the plaintiff, and therefore an objection that the various acts of negligence alleged in the petition are contradictory of each other is untenable.—(Heinzle v. Metropolitan St. Ry. Co., 111 S. W. Rep., 536.)

**Missouri.—Street Railroads—Maintenance—Personal Injuries—Actions for—Pleading—Evidence Admissible—Evidence—Materiality—Instructions—Trial—Cure of Error by Other Instruction—Appeal and Error—Review—Harmless Error—Operation—Sufficiency.**

Where, in an action against a street railroad company for injuries received by tripping over a rail, alleged to have extended several inches above the surface of the street, the petition alleged that the defendant was a corporation, organized and existing under the laws of the State, and was a common carrier of passengers, and that it maintained tracks upon the streets, at the intersection of which the accident was alleged to have occurred, but did not allege that the street railway was a trespasser upon such streets, or that it was occupying them without authority from the city, evidence that it had no license or authority from the city to maintain its car tracks at the place where the accident occurred was inadmissible.

In an action against a street railroad company for injuries received by tripping over a rail, alleged to have extended several inches above the surface of a street, an instruction that defendant was not required to keep its tracks in a reasonably safe condition, and was not required to keep the space between the rails filled with "dirt, cinders, or any other materials," so that the surface between the rails would be flush with the top of the rails, but that it was only required to use ordinary care to keep the space between the rails in a reasonably safe condition, was misleading and erroneous, since the law requires that the track be kept flush with the street, or so nearly level as not to materially interfere with travel, and it would by a physical impossibility to fulfill this requirement without filling the spaces between the tracks with dirt, cinders, or other materials.

In an action against a city and a street railway company for injuries caused by tripping over a rail, alleged to have extended several inches above the surface of a street, there was evidence that the track extended about a foot above the surface of the street outside of the rails, and from three to four inches between them, and that while plaintiff was rushing across the track to avoid a runaway team, her foot slipped under one of the rails, in consequence of which she was thrown down and seriously injured. Held, that the evidence made out a prima facie case of negligence against both the city and the railway company. (Huff vs. St. Joseph Ry., Light, Heat & Power Co. et al., 111 S. W. Rep., 1145.)

**Missouri.—Street Railroads—Establishment—Right in Bridge—Operation—Duty to Public—Warning to Pedestrian—Duty to Keep Lookout—Negligence—Duty to Pedestrians—Contributory Negligence—"Due Care"—Care Required—Degree of Care—Injuries—Last Chance—Injury Actions—Weight of Evidence—Demonstrative Evidence—Experiments—Burden of Proof—Similarity of Demonstrative Evidence—Admissions—Admissions by Employee—Sufficiency.**

A bridge over which a street car track ran, being a continuation of the street, the primary user in it, as in the street, is in the public, the easement of street railways in the streets being somewhat servient to the public user.

That a street railway placed slats similar to railroad cattle guards across its track on a public bridge did not constitute a warning to pedestrians of the railroad's exclusive use of that part of the bridge so as to relieve it of the duty of keeping a lookout.

A street railroad was bound to keep a lookout for pedestrians on a bridge, which was a part of the public street, over which its track ran, even in the nighttime, and though there were slats similar to cattle guards across its tracks, and iron columns and railings to show the railroad section of the bridge.

The right of a street railway to use a street must be exercised with due care to prevent accident.

Pedestrians, as well as a street railroad, have the right to use a street, but they must use due care to prevent injury in doing so.

Due care is care according to time and circumstances, and the degree of care required increases as the danger increases.

That the place where plaintiff was injured was darkened either by the absence of sunlight or shadows of the bridge columns, and a curve in the street prevented the headlight from illuminating plaintiff's position, did not obviate the company's duty to keep a lookout, but would rather increase that duty.

Whether plaintiff was drunk on a street car track when he was injured or had negligently crossed the track so close to a car that he was knocked unconscious and run over by another car, in either event the company would be liable if it afterward negligently ran over him.

In an injury action against a street car company, evidence held to show that defendant's motorman did not testify that the dummy figures in pictures introduced to illustrate plaintiff's position when injured were a true representation of his position at that time.

While the admissions of a motorman made before trial as to details of an accident might discredit him as a witness if they contradicted his testimony at trial, such admissions would not prove the fact admitted or bind the company.

Where a witness stated generally that a picture clearly represented the scene of the accident, but stated specifically that the position of the person in the picture was different from that of the person injured, his general answer must be construed with reference to his specific denial of its correctness in important details.

Where photographs of a street car accident showed the person injured as sitting upright close to the rails at a place where the headlight could be thrown on him in time to stop, but at the time of the injury the person injured was in the shadow of a bridge column and lying down so that he could not be as easily seen, the difference between the photograph and the actual conditions rendered it inadmissible as evidence.

In an action for injuries to one lying on a street car track on a bridge by being run over by a car, evidence held to show that the motorman acted with due diligence in stopping the car when he saw plaintiff's danger.—(Riggs v. Metropolitan St. Ry. Co., 115 S. W. Rep., 969.)

**New York.—Carriers—Injury to Passenger—Proximate Cause.**

Where, in an action for injuries to a passenger, the only allegation of negligence submitted was defendant's failure to have the guard chains in place across the edge of the platforms of the cars, between which plaintiff's foot was caught and crushed, and there was no evidence as to the purpose of the chains nor how they could have prevented the accident had they been in place, such negligence was not shown to be the proximate cause of the injury. (Coady vs. Brooklyn Heights R. Co., 113 N. Y. Sup., 100.)



# News of Electric Railways

## Program for Meeting of the Central Electric Railway Association

The following program has been announced for the regular meeting of the Central Electric Railway Association, to be held at the Hotel Oliver, South Bend, Ind., on March 24, 1910:

### MORNING SESSION

Business session and reports of committees.

Address by Geo. Whysall, president of the Central Electric Railway Association.

"Soliciting Business," by C. O. Warfel, general agent of the traffic department of the Indianapolis & Cincinnati Traction Company.

### AFTERNOON SESSION

"Prevention of Accidents," by E. F. Schneider, general manager of the Cleveland Southwestern & Columbus Railway, Cleveland, Ohio. Discussion.

"Permanent City Construction for Interurbans," by H. L. Weber, chief engineer of the Columbus, Marion & Bucyrus Railroad, Marion, Ohio.

Discussion: "Public Utilities and Their Relations to the Public in General."

A meeting of the executive committee of the association has been called for 7:30 p. m. on March 23, 1910, at the Hotel Oliver, to discuss the business of the association.

## Strike in Trenton Settled Quickly

The motormen and conductors in the employ of the Trenton (N. J.) Street Railway went on strike on March 9, 1910, but returned to work on March 12, 1910. They claimed that a number of the employees had been discharged because of their activity in trying to organize a union among the men and demanded a flat rate of pay of 23 cents an hour. A committee of citizens immediately intervened, and the company, through P. E. Hurley, general manager, agreed to meet a committee of the men to adjust differences, provided the men returned to work. As an increase in wages had been voluntarily granted by the American Railways to the employees of systems which it controls in other cities, the Trenton Street Railway agreed to increase wages to 23 cents an hour. The men were willing to return to work under these conditions, and a committee representing the employees agreed to the following conditions stipulated by the company in its communication to the committee of citizens:

"The Trenton Street Railway, with a view to settling the strike now pending in Trenton, and in consideration of the employees of said company now on strike returning to work, agrees with reference to what is known as 'swing runs' that that matter will be taken up by the employees and the manager of the company.

"Second. That the wages of the motormen and conductors shall be 23 cents per hour.

"Third. That the company will treat with its employees with reference to all grievances arising between the company and the men at any time.

"Fourth. That all employees and those who have recently been discharged will be reinstated in their proper places."

## New Schedule in New York Subway

The new schedule for the New York subway which it was agreed between the Interborough Rapid Transit Company and the Public Service Commission of the First District of New York should be substituted for the order of the Commission dated Feb. 18, 1910, and published in the *ELECTRIC RAILWAY JOURNAL* of Feb. 26, 1910, page 356, was placed in effect on March 14, 1910. It added 128 express and local trains, and provides briefly the following headway for express trains:

From 7 a. m. to 10 a. m., 1 min. and 48 sec.; from 10 a. m. to 10:30 a. m., 2 min.; from 10:30 a. m. to 2:53 p. m.,

2½ min.; from 2:56 p. m. to 3:40 p. m., 2 min.; from 3:40 p. m. to 6:10 p. m., 1 min and 48 sec.; from 6:10 p. m. to 6:40 p. m., 2 min.; from 6:40 p. m. to 12 o'clock midnight, 3 min. Between 10:30 a. m. and 2:56 p. m., under the 2½-min. headway, the company proposes to run eight-car trains on the Lenox Avenue branch and five or six-car trains on the Broadway branch.

In a statement which he made public regarding the new service, Frank Hedley, vice-president and general manager of the company, said:

"The estimates prepared by the engineers prior to the subway being placed in operation stated its capacity for handling per day about 450,000 people. However, since the subway was placed in operation the people have shown their appreciation of this much-desired system of transportation until the passenger business has grown in numbers far in excess of any estimate that was prepared. The passengers now using the subway several days in each week have exceeded 800,000, and on some days have exceeded 1,000,000 per day.

"The Public Service Commission and the Interborough Rapid Transit Company have from time to time caused improvements to be made to the car equipment, to the signal system and to the operation of trains. A recent joint inspection was made by the Public Service Commission and the company, and an estimate made at several station points of the number of passengers riding in each car. This joint observation indicated that still further improvements could be made and the number of cars operated increased. The latter is possible because new cars are now being received by the company and placed in operation.

"This unparalleled frequent operation of heavy electric trains can only be accomplished by careful attention to the duties of each one of the company's employees, and their troubles would be very largely relieved if the passengers during the rush-hour periods would refrain from crowding into the trains and uncomfortably loading them. The passengers would receive a better character of transportation, and faster, if they would not crowd into the trains in such numbers that they become indecently loaded.

"During the middle of the day the West Farms express trains will carry eight cars and the Broadway express trains will carry five and six cars. Passengers will usually find seats in the car in the rear or forward end of the express trains during the non-rush hours."

**Addresses at Mid-Year A. S. & I. R. A. Conference Reprinted.**—The American Street & Interurban Railway Association has reprinted in pamphlet form the addresses presented at the mid-year conference, held at the headquarters of the association in New York on Jan. 26, 27 and 28, 1910. These addresses were published in the *ELECTRIC RAILWAY JOURNAL* of Feb. 12, 1910. As H. C. Donecker, secretary of the association, says in a short introduction, the subjects are all of vital importance. The addresses in the order of their presentation follow: "The Association, Public Opinion and General Conditions," by J. F. Shaw; "Public Service Commissions," by P. F. Sullivan; "The Fare Question," by Wm. J. Clark; "A Fair Return Upon the Investment," by C. S. Sergeant; "The Treatment of Depreciation," by Frank R. Ford.

**Meeting of Electrical Engineers at Charlotte, N. C.**—A meeting of the American Institute of Electrical Engineers will be held at Charlotte, N. C., on March 31 and April 1, 1910. The official headquarters of the Institute will be at the Selwyn Hotel, and the sessions of the association will be held at the hotel. Among the papers of interest to those connected with electric railways to be presented before the Institute are "Gas Engines in City Railway and Light Service," by E. D. Latta, Jr.; "Economics of Hydroelectric Plants," by W. S. Lee, and "Method of Protecting Insulators from Lightning and Power Arc Effects, with Results of Its Installation on the Lines of the Niagara & Lockport Power Company," by L. C. Nicholson. Members of the Institute who propose to attend the meeting are requested

to arrange with the Selwyn Hotel, the Stonewall Hotel, the Burford Hotel or the Central Hotel at Charlotte for their own hotel accommodations. Those in attendance at the meeting will be afforded an opportunity on April 1 to inspect the Southern Power Company's stations at Great Falls and Rocky Creek and the company's substations. A barbecue will be held at Great Falls.

**Sixth Annual Electrical Night of the New York Railroad Club.**—For the past five years the New York Railroad Club has devoted one of its winter meetings to a discussion of the subject of the application of electricity to steam railroad conditions. This meeting is known as "electrical night." The sixth annual meeting of this kind occurred on March 18, at 29 West Thirty-ninth Street, New York. The topic was introduced by a report of the committee on electrification of the club which was appointed about a year ago. This committee consists of W. J. Harahan, assistant to the president, Erie Railroad, chairman; L. C. Fritch, consulting engineer, Illinois Central Railroad, Chicago; H. M. Warren, electrical engineer, Delaware, Lackawanna & Western Railroad, Scranton, Pa.; H. H. Vaughan, assistant to the vice-president, Canadian Pacific Railway, Montreal, Can.; J. H. Davis, electrical engineer, Baltimore & Ohio Railroad, Baltimore, Md.; George W. Wildin, mechanical superintendent, New York, New Haven & Hartford Railroad, New Haven, Conn.; William McClellan, consulting engineer, New York; C. O. Mailloux, consulting engineer, New York, and E. B. Katte, chief engineer of electric traction, New York Central & Hudson River Railroad, New York.

**Supreme Court Decision in Coney Island Fare Case.**—Judges Burr, Jenks, Thomas, Woodward and Rich, of the Appellate Division of the Supreme Court, have concurred in affirming, with costs, the decision of the Municipal Court dismissing the suit brought by Louis B. Enton to recover \$50 penalty because he was forced to pay a 10-cent fare over the Coney Island & Brooklyn Railroad to Coney Island in June, 1909. The opinion was written by Justice Burr who, in recommending the dismissal of the suit, said: "When the road had been constructed and operated for a long period of years, a presumption will arise that such construction and operation was in accordance with some lawful consent. When, as in this case, there are two acts or ordinances under which the defendant may operate within the city limits, one of which imposes no restrictions as to the rate of fare, and the other of which contains no such restrictions, if an action is brought to recover penalty for excessive fare charged the burden of proof rests on the plaintiff, who asserts the charge to be illegal to establish by a fair preponderance of evidence under which authority the defendant is operating. This case is barren of such evidence. The judgment appealed from should therefore be affirmed with costs."

**Brooklyn Employees' Entertainment.**—The employees of the Brooklyn (N. Y.) Rapid Transit Company were entertained by the Brooklyn Rapid Transit Employees' Benefit Association on the evening of March 10, 1910, in the theater of the association at its main building on Jamaica Avenue. The program for the evening included a number of vaudeville acts, several selections by the band composed of employees of the company, and an illustrated lecture by Edward Hungerford, of the company, entitled "A Day with the B. R. T.," which was delivered in two short parts. As Mr. Hungerford concluded his remarks he had thrown on the screen a likeness of Geo. W. Edwards, secretary of the association, and a group picture of about 30 of the oldest employees of the company, taken at the bottom of the steps leading to the club house. The lantern slides shown by Mr. Hungerford covered all departments of the company's activities, and will be used by him later in a series of public lectures which he proposes to give before various civic bodies to show the magnitude of the problems which confront street railway managers. In this way Mr. Hungerford will start his audience out with the men in the morning as they report for duty, and carry them by easy, progressive stages through the offices, shops and power houses, and show them a thousand and one details. Mr. Hungerford contrasted the reciprocating engine with the new turbines of the company, and explained briefly the care and attention that are required in painting and varnishing cars and in completely overhauling the equipment from time to time so as to discover the weak link in the chain. The

trying work of handling snow was illustrated by means of a number of particularly striking views taken in the city proper and on the lines of the company in outlying sections.

#### LEGISLATION AFFECTING ELECTRIC RAILWAYS

**Maryland.**—The Democratic floor leader of the Maryland House of Delegates has announced that the committee would in all probability report the utilities act to the House during the latter part of the week ended on March 19, 1910. Chairman Benson said that he was in favor of the passage of a public utilities act applicable to all public service corporations, but it is not known whether or not he will support the bill which is pending before the committee, of which he is a member. After a number of conferences with Attorney-General Straus, the act which he drew was reported favorably, with about 40 amendments. The bill for a utilities act favored by the Republicans is also before the ways and means committee. This bill leaves the commission free to treat conditions as they arise. It provides that the members of the commission shall be elected by the people. On March 11 Mr. Main, Baltimore, introduced a public utility measure drafted by the Reform League. This bill was referred to the judiciary committee.

**Massachusetts.**—The bill to provide a free transfer station at Massachusetts and Huntington Avenues, Boston, on the Boston Elevated Railway, has been referred to the next Legislature by the committee on street railways so the petitioners can bring the matter before the Railroad Commission. The Senate has accepted the adverse report of the committee on street railways upon the bill to provide for State and city ownership of street railways. The bill increasing the salaries of the Railroad Commissioners and railroad and railway inspectors has been referred to the next Legislature. Permission has been granted to withdraw the bill prohibiting the granting of street railway locations at the side of a highway within one mile of the center of any town of more than 5000 inhabitants or within one-half mile of the center of any smaller community. The bills taking away the enforcement of the existing car-heating statute from the district police and providing that any municipality may direct a street railway using its streets to establish as many waiting stations as it deemed the public convenience required have been reported adversely. An adverse report has also been presented upon the bill to substitute two public service commissions for Boston and the rest of the State for the present utility commissions. The bill prohibiting further construction of elevated railways in Boston was heard by the committee on metropolitan affairs on March 14.

**New York.**—A bill prepared by the Public Service Commission of the First District has been introduced which proposes to amend the Rapid Transit Act of New York City, particularly in regard to the operations of subways. It permits moving platforms in subways and operators of rapid transit routes to secure their motive power by purchase instead of by building power houses, provided the contract for the purchase of the power is approved by the Public Service Commission. It will be recalled that the New York Edison Company several months ago addressed a communication to the commission in which it offered to furnish power for operating subway extensions. The Public Service Commission has prepared for introduction a bill which will give the commission power to compel the New York Central & Hudson River Railroad to change the grade of its tracks in Eleventh Avenue.

**Ohio.**—Senator Duval has introduced a bill which provides that street railway conductors who unlawfully give away transfers and passengers who misuse transfers shall be fined \$50 and imprisoned for 30 days. The Langdon bill, which provides for a tax commission to assess public utility corporations, has been reported to the House by the tax committee with recommendation for its passage as amended by the author. The amendments provide a more definite means of distributing the assessed values of public service corporations among the townships and municipalities in which the companies operate and a closer supervision by the proposed commission of the local taxing authorities. The requirement that the names of the stockholders be listed has been omitted. The Woods public utilities bill was taken up on March 14.

# Financial and Corporate

## New York Stock and Money Markets

MARCH 15, 1910.

After several weeks of improvement in tone, accompanied by considerable advance in price, the Wall Street stock market has shown a tendency for the last two days to sell off sharply. The immediate reason assigned is the threatening attitude assumed by Western railroad firemen. The recession has, however, done little to lessen the general sentiment of optimism.

During the past fortnight there has been a distinct improvement in the bond market. Many important bond issues, especially of public utility corporations, have been advertised, and the vendors declare that the investing public has responded liberally. The money market continues easy. Quotations to-day were: Call, 2<sup>3</sup>/<sub>4</sub>@3<sup>1</sup>/<sub>4</sub> per cent; 90 days, 3<sup>7</sup>/<sub>8</sub>@4 per cent.

### Other Markets

In spite of the strong financial support accorded it the Philadelphia market for traction shares has continued to weaken. Rapid Transit and Philadelphia Traction have been weaker than Union Traction. The trading in Rapid Transit has been quite heavy.

In the Chicago market there has been practically no trading in tractions. A few shares of Chicago Railways, Series 1, have been sold at slightly better prices and there has been some Subway stock in the market at about 3.

In Boston there has been a limited amount of dealing during the past week in the issues of Massachusetts Electric and in Boston Elevated, but prices have not been changed.

Only the bonds of the United Railways Company have been in evidence in the Baltimore market. In these transactions have been liberal at former prices.

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

	Mar. 8.	Mar. 15.
American Railways Company.....	455 <sup>3</sup> / <sub>4</sub>	45 <sup>1</sup> / <sub>4</sub>
Aurora, Elgin & Chicago Railroad (common).....	457 <sup>3</sup> / <sub>4</sub>	*57 <sup>3</sup> / <sub>4</sub>
Aurora, Elgin & Chicago Railroad (preferred).....	494 <sup>3</sup> / <sub>4</sub>	*94 <sup>3</sup> / <sub>4</sub>
Boston Elevated Railway.....	130 <sup>3</sup> / <sub>4</sub>	130 <sup>3</sup> / <sub>4</sub>
Boston & Suburban Electric Companies.....	116 <sup>1</sup> / <sub>2</sub>	116 <sup>1</sup> / <sub>2</sub>
Boston & Suburban Electric Companies (preferred).....	116	116
Boston & Worcester Electric Companies (common).....	111	110 <sup>1</sup> / <sub>2</sub>
Boston & Worcester Electric Companies (preferred).....	111	110
Brooklyn Rapid Transit Company.....	77 <sup>3</sup> / <sub>4</sub>	76
Brooklyn Rapid Transit Company, 1st pref. conv. 4s.....	84	84
Capital Traction Company, Washington.....	1133 <sup>1</sup> / <sub>2</sub>	1133
Chicago City Railway.....	1195	1195
Chicago & Oak Park Elevated Railroad (common).....	*2	*3 <sup>1</sup> / <sub>2</sub>
Chicago & Oak Park Elevated Railroad (preferred).....	*10	*7 <sup>1</sup> / <sub>2</sub>
Chicago Railways, pteptg., ctf. 1.....	1106	1106
Chicago Railways, pteptg., ctf. 2.....	1133	1133
Chicago Railways, pteptg., ctf. 3.....	1118	1118
Chicago Railways, pteptg., ctf. 4s.....	1109 <sup>1</sup> / <sub>2</sub>	1109 <sup>1</sup> / <sub>2</sub>
Cleveland Railways.....	*91 <sup>1</sup> / <sub>2</sub>	*91 <sup>1</sup> / <sub>2</sub>
Consolidated Traction of New Jersey.....	1176 <sup>1</sup> / <sub>2</sub>	1176
Consolidated Traction of New Jersey, 5 per cent bonds.....	1105 <sup>1</sup> / <sub>2</sub>	1105 <sup>1</sup> / <sub>2</sub>
Detroit United Railway.....	*62	*62
General Electric Company.....	157	154
Georgia Railway & Electric Company (common).....	1107 <sup>1</sup> / <sub>2</sub>	1106 <sup>1</sup> / <sub>2</sub>
Georgia Railway & Electric Company (preferred).....	1188	1188
Interborough-Metropolitan Company (common).....	23 <sup>1</sup> / <sub>2</sub>	22
Interborough-Metropolitan Company (preferred).....	58 <sup>1</sup> / <sub>2</sub>	55 <sup>3</sup> / <sub>4</sub>
Interborough-Metropolitan Company (4 <sup>1</sup> / <sub>2</sub> s).....	82 <sup>1</sup> / <sub>2</sub>	81 <sup>5</sup> / <sub>8</sub>
Kansas City Railway & Light Company (common).....	1130	1130
Kansas City Railway & Light Company (preferred).....	1171	1175
Manhattan Railway.....	*139	*139
Massachusetts Electric Companies (common).....	1118 <sup>1</sup> / <sub>2</sub>	1118
Massachusetts Electric Companies (preferred).....	1184 <sup>1</sup> / <sub>2</sub>	1184
Metropolitan West Side, Chicago (common).....	1116	1116
Metropolitan West Side, Chicago (preferred).....	1155	1155
Metropolitan Street Railway.....	1115	*115
Milwaukee Electric Railway & Light (preferred).....	*110	*110
North American Company.....	1181 <sup>1</sup> / <sub>4</sub>	*81 <sup>1</sup> / <sub>4</sub>
Northwestern Elevated Railroad (common).....	1117	1116
Northwestern Elevated Railroad (preferred).....	1170	1168
Philadelphia Company, Pittsburg (common).....	1151 <sup>1</sup> / <sub>4</sub>	1151
Philadelphia Company, Pittsburg (preferred).....	1144 <sup>1</sup> / <sub>2</sub>	1141 <sup>1</sup> / <sub>2</sub>
Philadelphia Rapid Transit Company.....	1123 <sup>3</sup> / <sub>4</sub>	1121 <sup>1</sup> / <sub>2</sub>
Philadelphia Traction Company.....	*89	*86
Public Service Corporation, 5 per cent col. notes.....	*100 <sup>1</sup> / <sub>2</sub>	*100 <sup>1</sup> / <sub>2</sub>
Public Service Corporation, ctf.....	1105	1105 <sup>1</sup> / <sub>2</sub>
Seattle Electric Company (common).....	1115	1115
Seattle Electric Company (preferred).....	1106	1102
South Side Elevated Railroad (Chicago).....	1154	1153 <sup>3</sup> / <sub>4</sub>
Third Avenue Railroad, New York.....	1183 <sup>1</sup> / <sub>2</sub>	*83 <sup>1</sup> / <sub>2</sub>
Toledo Railways & Light Company.....	*113 <sup>1</sup> / <sub>4</sub>	*113 <sup>1</sup> / <sub>4</sub>
Twin City Rapid Transit, Minneapolis (common).....	1114	*114
Union Traction Company, Philadelphia.....	1150 <sup>1</sup> / <sub>2</sub>	1148 <sup>3</sup> / <sub>4</sub>
United Rys. & Electric Company, Baltimore.....	*14	*14
United Rys. Ltv. Co. (common).....	*37	*37
United Rys. Inv. Co. (preferred).....	*67	*67
Washington Ry. & Electric Company (common).....	1138	1138
Washington Ry. & Electric Company (preferred).....	1180 <sup>3</sup> / <sub>8</sub>	1180 <sup>5</sup> / <sub>8</sub>
West End Street Railway, Boston (common).....	1195	1195
West End Street Railway, Boston (preferred).....	1195	1195 <sup>1</sup> / <sub>2</sub>
Westinghouse Elec. & Mfg. Company.....	1175 <sup>3</sup> / <sub>4</sub>	1168 <sup>1</sup> / <sub>2</sub>
Westinghouse Elec. & Mfg. Company (1st pref.).....	1125	*125

## Annual Report of London Street Railway

Gross earnings of the London (Ont.) Street Railway in the year ended December 31, 1909, were \$243,359 as compared with \$235,032 in 1908. Operating expenses and taxes were \$169,830 or 69.8 per cent of gross earnings. Maintenance expenditures aggregated \$46,479 of the total operating expense. The sum of \$21,736 was expended on maintenance of way and structures and \$24,743 on maintenance of equipment. These amounts are, respectively, 8.9 per cent and 10.2 per cent of gross earnings, a total of 19.1 per cent. Earnings for three years compare as follows:

	1909.	1908.	1907.
<b>Earnings:</b>			
Passengers.....	\$238,267	\$230,866	\$226,510
Miscellaneous.....	5,092	4,166	5,867
<b>Gross earnings.....</b>	<b>\$243,359</b>	<b>\$235,032</b>	<b>\$232,377</b>
<b>Expenses:</b>			
<b>Maintenance:</b>			
Way and structures.....	\$21,736	\$13,574	\$17,295
Equipment.....	24,743	28,128	24,279
<b>Transportation:</b>			
Power plant.....	\$27,796	\$30,125	\$32,883
Car service.....	67,866	68,845	65,865
General.....	27,689	26,894	27,793
<b>Total operating expense.....</b>	<b>\$169,830</b>	<b>\$167,566</b>	<b>\$168,025</b>
<b>Net earnings.....</b>	<b>\$73,529</b>	<b>\$67,466</b>	<b>\$64,352</b>
<b>Deductions:</b>			
Interest on bonds.....	\$28,346	\$25,006	\$25,000
Interest on overdrafts.....	542	3,449	2,229
<b>Total deductions.....</b>	<b>\$28,888</b>	<b>\$28,455</b>	<b>\$27,229</b>
<b>Net Income.....</b>	<b>\$44,641</b>	<b>\$39,011</b>	<b>\$37,123</b>

President Henry A. Everett says in his statement to shareholders:

"The expenditure for track purposes and the general maintenance of the entire system was noticeably increased and considerable reconstruction was accomplished at a minimum cost, owing to favorable conditions affecting both material and labor.

"The general adoption of the pay-enter system throughout the country has caused us to make some changes along these lines, but owing to local conditions, a pay-leave system was considered more desirable; consequently a number of cars were adapted to this plan and are being tried out at the present time.

"As a result of the favorable vote on Sunday cars this matter was referred to the Legislature, which passed an act requiring a population of 50,000, but as the committee could not give a satisfactory return, the matter was laid over until this year.

"The new stock authorized at the last meeting is entirely subscribed and 50 shares have been paid in full, although no calls have yet been made. Your directors have seen fit to dispose of \$25,000 of bonds at a fraction over par, the proceeds being used to pay our overdraft and to provide for other requirements, so that our present condition is excellent.

"It is with pleasure that we draw your attention to the increases in the gross earnings and surplus for the past year, which under the existing conditions were very good, and we confidently expect the coming year will also prove satisfactory.

"No suits of consequence are pending against the company. There were 64 shareholders of record on Dec. 31, 1909."

A statistical statement compiled by George H. Bentson, secretary and treasurer, includes the following:

Year ended Dec. 31.	1909.	1908.	1907.
Gross earnings.....	\$243,359.39	\$235,032.40	\$232,376.59
Operating expenses.....	169,830.44	167,566.72	168,024.88
Expenses, p. ct. of earnings.....	69.8	71.3	72.3
Net earnings.....	75,528.95	67,465.68	64,351.71
Net income, p. ct. of capital.....	8.08	7.10	6.88
Passengers carried.....	6,673,799	6,442,998	6,321,994
Car earnings, per rev. pass.....	3.62c	3.64c	3.63c
Transfers.....	1,915,164	1,062,306	1,039,362
Total passengers.....	7,688,873	7,505,304	7,361,356
Car earnings per passenger.....	3.09c	3.07c	3.07c
Car mileage.....	1,422,223	1,127,353	1,435,993
Gross earnings per car-mile.....	17.11c	16.47c	16.18c
Operating exp. per car-mile.....	11.91c	11.74c	11.70c
Net earnings per car-mile.....	5.17c	4.73c	4.48c
Number of miles of track.....	33.25	33.25	33.25
Gross earnings per mile of track.....	7,319.07	7,068.64	6,988.77
Population (city estimate).....	10,507	10,431	10,479

Ardmore (Okla.) Traction Company.—C. L. Byrne, receiver of the Ardmore Traction Company, will sell at private sale to the highest bidder on May 2, 1910, the property of the

a Asked. \* Last Sale.

Ardmore Traction Company, including 4.7 miles of railroad in operation, two new single-truck, semi-convertible cars, two double-truck cars, a convertible car, a summer car and an amusement park. Bids must be sealed and be accompanied with a certified check for 10 per cent of the bid, payable to the receiver. The remainder is payable at the confirmation of the sale. The minimum price fixed by the court for the property is \$60,000.

**Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis.**—The Railroad Commission of Wisconsin has authorized the Chippewa Valley Railway, Light & Power Company to issue \$150,000 of first mortgage 5 per cent bonds, \$50,000 of preferred stock and \$200,000 of common stock, to finance the construction of a 2000-kw hydroelectric power plant and other improvements.

**Coney Island & Brooklyn Railroad, Brooklyn, N. Y.**—The Public Service Commission of the First District of New York authorized the Coney Island & Brooklyn Railroad on March 9, 1910, to issue \$151,000 of consolidated mortgage 4 per cent bonds for improvements. The bonds just authorized take the place of the \$107,000 of bonds authorized in October, 1909, the total of bonds having been increased after further hearing before the commission. The bonds are to be sold at not less than 80. The order of the commission provides for the amortization of the discount and expenses in connection with the sale of the bonds out of the company's income before Jan. 1, 1935.

**Denver & Inter-Mountain Railroad, Denver, Col.**—The stockholders of the Denver & Inter-Mountain Railroad will vote on April 4, 1910, on the question of dissolving the company and transferring the property to a successor company which it is said will be known as the Intermountain Railway.

**Galveston-Houston Electric Railway, Houston, Tex.**—Lee, Higginson & Company, Boston, New York and Chicago, and Higginson & Company, London, Eng., offer for subscription at 95 and interest the unsold portion of \$2,750,000 of first mortgage 5 per cent sinking fund gold bonds of the Galveston-Houston Electric Railway, dated Oct. 1, 1909, and due Oct. 1, 1954, but callable as a whole or in part for sinking fund only on any interest date at 105 and interest.

**Janesville (Wis.) Street Railway.**—W. H. Lemons and William Murphy have been appointed receivers of the Janesville Street Railway by Judge Grimm in the Circuit Court, on application of the Finance Company, Philadelphia, Pa., trustees of a mortgage made by the Janesville Street Railway in 1892 to secure \$75,000 of 6 per cent bonds.

**Public Service Corporation, Newark, N. J.**—J. P. Morgan & Company, New York, N. Y., and Drexel & Company, Philadelphia, Pa., offer for subscription at 97 and interest less than \$1,000,000 of a block of \$8,000,000 of general mortgage 5 per cent sinking fund 50-year gold bonds of the Public Service Corporation. The bonds are dated Oct. 1, 1909, and due Oct. 1, 1955, but are callable when drawn from the sinking fund on or after Oct. 1, 1913, at 105 and interest and redeemable at the option of the company on Oct. 1, 1919, or any interest date thereafter at 105 and interest.

**Putnam & Westchester Traction Company, Peekskill, N. Y.**—The Public Service Commission of the Second District of New York has authorized the Putnam & Westchester Traction Company to issue \$11,000 of 30-year 5 per cent gold bonds to discharge outstanding obligations.

**Rhode Island Company, Providence, R. I.**—The Rhode Island Company paid from the earnings for the year ended June 30, 1909, an initial dividend of 5 per cent on the \$8,510,400 stock of the company.

**Stark Electric Railroad, Alliance, Ohio.**—The stockholders of the Stark Electric Railroad have voted to increase the capital stock of the company from \$1,000,000 to \$1,500,000 and to declare a stock dividend of 25 per cent, payable on April 1, 1910.

**Toledo Railways & Light Company.**—The annual report for the year ended Dec. 31, 1909, states that the gross earnings were \$2,733,177. Operating expenses were \$1,627,337, or 59.54 per cent of gross receipts. Net earnings were \$1,105,840, and interest charges \$778,286, leaving a surplus of \$327,554, or 2.36 per cent on the capital stock.

## Traffic and Transportation

### Decision in Seattle-Tacoma Fare Case

The Railroad Commission of Washington has rendered its findings in the appeal by residents along the Puget Sound Electric Railway for an order for a reduction in the fare between Seattle and Tacoma and intervening cities as fixed by the company on Oct. 17, 1909, in accordance with the announcement published in the *ELECTRIC RAILWAY JOURNAL* of Nov. 6, 1909, page 1000. The schedule adopted in October increased the regular rates to practically 2 cents per mile. The through rate of \$1 for the round trip between Seattle and Tacoma was also increased to \$1.50. The commission has refused to order a reduction in the round trip fare between Seattle and Tacoma or in the one-way fare between the cities, but certain readjustments have been ordered between Seattle and points south of Englewood and between Tacoma and points on the branch line between Willow Junction and Puyallup. The order of the commission follows:

"It is now ordered that the present round trip fares, being twice the single published rate from Seattle to points south of Englewood and as far south as and including Renton Junction, and from Tacoma to points north of Tidehaven and as far north as and including Algona, be and the same are hereby declared to be unjust, unreasonable and excessive, and it is ordered that the same be not hereafter charged to persons desiring round trip tickets between such points, and in lieu thereof and to take the place of such charges it is ordered that the round trip rates in force prior to Oct. 17, 1909, to such points be reinstated, published and charged in the future.

"That the present round trip rates between Tacoma and points on the branch line between Willow Junction and Puyallup be and the same are hereby declared to be unjust, unreasonable and excessive and that the same be not charged in the future, and to take the place of such round trip rates between Tacoma and the points on such branch line the round trip rates and fares charged prior to Oct. 17, 1909, be reinstated, published and charged in the future.

"That the present round trip rates, being twice the single published rate, from Seattle to Earlington and Renton, be and the same are hereby declared to be unjust, unreasonable and excessive, and that the same be not charged in the future, and that to take the place of such round trip rates between Seattle and such points, there be charged in the future a round trip rate between such points not to exceed 30 cents between Seattle and Earlington and 35 cents between Seattle and Renton.

"That the round trip rates between Seattle and points other than those above named and between Tacoma and said last-named points charged prior to Oct. 17, 1909, be reinstated, published and charged in the future, unless the defendant company agrees to issue commutation tickets good between Seattle and Tacoma and such points requiring not to exceed 32 rides in one month at rates for single rides not to exceed one-half the charge for round trip tickets prior to Oct. 17, 1909, and in the event of the defendant company filing with the commission within 20 days from this date its tariff providing for such commutation books between such points, then and in that event that portion of this order providing for round trip tickets between Seattle and points on the main line south of Renton Junction and between Tacoma and points on the main line north of Algona shall not be effective.

"It is further ordered that that portion of the complaint asking for a reduction of the single fare, and that portion asking for a reduction between local stations and not touching Seattle or Tacoma and that portion asking for a reduction between Seattle and Tacoma be and the same is hereby denied.

"It is further ordered that in view of the fact that if the rates herein established be published in conjunction with the rates now existing and not affected by this order, that the tariff so published will be inharmonious and will result in the combined sum of two or more local rates between terminals being less than the through published rates as well as being less from points near the suburban limits mentioned, and the commission feeling that a harmonious

tariff consistent with this order can be prepared, and believing that under the circumstances the defendant company should be permitted to prepare and submit such tariff to the commission, it is further ordered that the defendant company have and it is hereby given 10 days from the date of the service of this order upon it to prepare and file with the commission a new complete tariff consistent with this order, and in case of its neglect or failure so to do the commission will at the expiration of such time issue a supplemental order providing for a new and complete tariff and the rates to be hereafter charged between all points on its line."

**Increase in Wages in Brooklyn**

The Brooklyn Rapid Transit Company, which in January, 1910, announced an increase in the wages of its trainmen, as noted in the ELECTRIC RAILWAY JOURNAL of Jan. 15, 1910, page 126, has announced the following rates of pay effective on April 1, 1910, to apply to the positions indicated:

	First year.	Second year.	After two years.
Day dispatcher.....	\$2.85 per day	\$2.85 per day	\$3.00 per day
Dispatchers, night and swing..	2.65 per day	2.65 per day	2.75 per day
Inspector (line).....	2.85 per day	2.85 per day	3.00 per day
Starter .....	2.65 per day	2.65 per day	2.75 per day
Register inspector.....	2.65 per day	2.65 per day	2.75 per day
Register taker.....	2.50 per day	2.50 per day	2.60 per day
Transfer clerk.....	2.35 per day	2.35 per day	2.40 per day
Instructor of motormen (line)	2.80 per day	2.80 per day	2.90 per day
Foreman car cleaner.....	1.85 per day	2.00 per day	2.00 per day
Car houseman.....	1.60 per day	1.75 per day	1.75 per day
Car cleaner.....	1.60 per day	1.70 per day	1.70 per day
Helper (Twenty-third Street)..	.17½ hour	.17½ hour	.18½ hour

The company has also announced that hereafter all vacancies in the positions of transfer clerk, register taker, starter, register inspector, line inspector, night and swing dispatcher, and day dispatcher, will be filled, as far as possible, by promotion of conductors and motormen and from the ranks. For the purpose of making promotions from the ranks of conductors and motormen according to their seniority, service record, and general qualifications, there will be maintained at each depot a list of eligibles for the positions previously mentioned which will be based upon the following: First, a record free from demerits. Second, at least one year of service as conductor or motorman for positions of transfer clerk and register taker, and at least two years of such service for all other positions. Service as transfer clerk or register taker will be counted the same as service as conductor or motorman, to make up the requisite two years.

Any eligible motorman or conductor desiring promotion or transfer to one of the positions referred to may submit his name to the assistant superintendent for consideration. There is no objection to a man applying to have his name entered on several lists of eligibles. Such names will be referred to the superintendent of surface lines, together with the recommendations of the assistant superintendent. Favorable and unfavorable recommendations will alike be submitted to the superintendent of surface lines for his consideration, and the employee will be advised of the action taken. Positions as dispatchers will be filled only by promotion from starter or line inspector.

**Increase in Fare on Syracuse & Suburban Railroad.**—On April 1, 1910, the Syracuse & Suburban Railroad, Syracuse, N. Y., will cancel the 15-cent round-trip ticket fare between Orville and Manlius, or Edwards Falls, and charge 10 cents in either direction between these places.

**Train Service Over Electric Railway in West Virginia.**—The Fairmont & Clarksburg Traction Company, Fairmont, W. Va., has begun a service with trains of two cars over its line between Fairmont and Clarksburg. This is said to be the first service with trains which has been given over an electric railway in West Virginia.

**Bonus to New Men in New Jersey.**—The Public Service Railway, Newark, N. J., has adopted a rule which requires a new motorman to spend seven days breaking-in. As an inducement for new men to remain with the company indefinitely each new man who serves the company more than a year is awarded a bonus of \$10.

**New Buttons Adopted by Interurban.**—The Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., has adopted a new button and has substituted it on

all the clothing of its employees for the button formerly in use. The new button bears the diamond-shaped seal of the company, in which are inscribed the letters "T. H., I. & E." in gold.

**New York Central Electric Service Extended.**—The New York Central & Hudson River Railroad began service with electric trains over its Harlem division to White Plains on March 16, 1910. As stated in the ELECTRIC RAILWAY JOURNAL of March 19, 1910, page 466, the new service practically doubles the mileage served by the electrified lines of the company.

**Traffic Agreement in Oakland.**—The East Shore & Suburban Railway has arranged with the Oakland (Cal.) Transit Company for operating into Oakland over the lines of that company from Point Richmond to Seventh street and Broadway. The cars of the East Shore & Suburban Railway will be manned by crews of the Oakland Transit Company while in Oakland.

**Pay-as-You-Enter Service in Los Angeles.**—On May 1, 1910, the Los Angeles (Cal.) Railway will place in operation on its Central Avenue line the first of 30 cars now being reconstructed in the shops of the company for pay-as-you-enter operation. The cars will be equipped with wire gates, and push-buttons will be installed for the convenience of passengers who desire to signal the conductor from the center of the car to stop.

**New York & Queens County Railway's Cars to New York.**—On March 14, 1910, the New York & Queens County Railway began operating all of its through cars over the Queensboro Bridge to New York. The company has established a shuttle service between the bridge plaza in Long Island City and the Long Island Railroad's ferry from the foot of Borden Avenue, Long Island City, to Thirty-fourth Street, New York.

**Express Rights Asked in Massachusetts.**—The Milford, Attleboro & Woonsocket Street Railway, Milford, Mass., has petitioned the Massachusetts Railroad Commission for the right to carry baggage, express matter and freight in Milford, Hopedale, Franklin, Plainville, Wrentham, Mendon and Bellingham. The Interstate Consolidated Street Railway has petitioned the Commission for the right to carry baggage, freight and express matter in the towns of Attleboro and Seekonk.

**Interstate Railway Increases Wages.**—The Interstate Railways has made the maximum wage of motormen and conductors employed on the systems which it controls in Reading, Chester, Trenton, Wilmington, Norristown and Lebanon 23 cents an hour. The men formerly received a maximum wage of 20 cents an hour. It is stated that the company is considering the advisability of charging a straight 5-cent fare on all its lines hereafter.

**Extension in Schenectady to Increase Facilities.**—The Public Service Commission of the Second District of New York has approved the extension of the Schenectady (N. Y.) Railway on Edison Avenue from Washington Avenue to South Center Street, Schenectady, to facilitate and improve conditions for handling traffic in Schenectady in accordance with one of the suggestions in the report on transit conditions in the city made to the commission by C. R. Barnes, electric railroad inspector of the commission.

**Illuminated Station Indicators in Hudson & Manhattan Tunnel.**—The Hudson & Manhattan Railroad, New York, N. Y., on March 14, 1910, placed in operation an experimental train of three cars equipped with illuminated station indicators. The first trip of the train equipped with the device was made from the Twenty-third Street station, in Manhattan, at 11:15 a. m. The passengers comprised a party of 50 invited guests of the company, to whom the new signs were demonstrated. Among those who made the trip were Mrs. R. F. Cartwright, chairman of the public safety committee of the City League; Thomas Small, inventor of the device; Major C. W. Johnson; representatives of various women's clubs of the city and reporters from the daily papers. The company was represented by Wilbur C. Fisk, vice-president, in charge of operation; E. T. Munger, general superintendent, and Oliver T. Boyd, general passenger agent. Ten cars in addition to those on the first experimental train are being equipped with the signs. If the experiment proves successful, the station indicators will be installed in all the trains operated in the tunnel.

## Personal Mention

Mr. Lowe Brown has been appointed resident engineer for the construction of the subway which the Ferro-Carril Oeste de Buenos Ayres, Traction Department, proposes to build through Buenos Ayres. Mr. Brown was resident engineer for the Pennsylvania Railroad tunnels in New York before going to Buenos Ayres.

Mr. N. C. McCoy, formerly master mechanic of the Pittsfield (Mass.) Electric Street Railway, has been appointed assistant to Mr. W. P. Ripple, mechanical and electrical engineer of the New England Investment & Security Company, Springfield, Mass., with the title of general inspector of rolling stock equipment for the lines controlled by the company.

Mr. C. E. Hubbard has been appointed purchasing agent of the Mahoning & Shenango Railway & Light Company, New Castle, Pa. Mr. Hubbard retired as secretary, general manager and purchasing agent of the Farmington Street Railway, Hartford, Conn., following the recent absorption of the company by the New York, New Haven & Hartford Railroad in the interest of the Connecticut company.

Mr. R. H. Vansant has been appointed traffic manager of the Indianapolis, Crawfordsville & Western Traction Company, Indianapolis, Ind., to succeed Mr. W. O. Woodard, whose appointment as traffic manager of the Chicago, Lake Shore & South Bend Railway was announced in the *ELECTRIC RAILWAY JOURNAL* of Feb. 29, 1910. Mr. Vansant was formerly chief clerk in the operating department of the Indianapolis, Crawfordsville & Western Traction Company. He will have charge of all freight and passenger business, with headquarters at Crawfordsville.

Mr. R. P. Stevens, president of the Lehigh Valley Transit Company, Allentown, Pa., recently addressed the Bethlehem branch of the American Institute of Electrical Engineers at Lehigh University. Mr. Stevens referred to the magnitude of the electric railway industry, and gave the number of cars, the capitalization and the mileage of these properties in the United States and showed the possibilities that the interurban lines now offer for through travel. The industry must look to the colleges for the men qualified technically to carry on the work already begun. Mr. Stevens also referred to the question of fares and the proper return on the investment. In closing his remarks, Mr. Stevens said that it paid to be frank with the newspapers and the public.

Mr. C. A. Greenidge has been appointed an engineer with the operating department of the J. G. White & Company, Inc., New York, N. Y. Mr. Greenidge was born in Barbadoes, West Indies, and was graduated from Stevens Institute of Technology in 1895 as a mechanical engineer. Since then he has been connected with the Mount Morris Electric Light Company; New York Edison Company, as resident engineer in charge of steam-electric plant construction for the Equitable Gas & Electric Company of Utica, N. Y.; superintendent of the electric department of the Utica Gas & Electric Company, and general manager of the electric department of the Utica Gas & Electric Company. He is a member of the American Institute of Electrical Engineers and a member of the National Electric Light Association.

Mr. Edward Hammett, Jr., has been appointed superintendent and purchasing agent of the Sheboygan Light, Power & Railway Company, Sheboygan, Wis., to succeed Mr. H. J. Pagel, who resigned these offices on account of ill health, but who has been retained in the service of the company. Mr. Hammett was born in Wheaton, Ill., and entered railway work with the Aurora, Elgin & Chicago Railroad under Mr. Ernest Gonzenbach, who now is president and general manager of the Sheboygan Light, Power & Railway Company. Mr. Hammett was promoted rapidly while with the Aurora, Elgin & Chicago Railroad, and finally entered the selling field as district manager of the Electric Service Supplies Company at Pittsburgh, Pa., from which position he resigned to become connected with the Sheboygan Light, Power & Railway Company.

Mr. A. W. Hargett has resigned as manager of the Meadville & Cambridge Springs Street Railway, Meadville, Pa., and proposes to take a vacation of several months before resuming work. Mr. Hargett began his railway career as shop foreman with the McKeesport & Reynoldton Passen-

ger Railway in 1889, and resigned from that position to become master mechanic of the Monongahela Street Railway, Braddock, Pa., with which he continued until 1900, when he accepted an appointment as division superintendent of the Pittsburgh & Birmingham Traction Company. During 1902 and 1903 Mr. Hargett was engaged in the construction of the Pittsburgh & Charleroi Railway, the Wilkinsburg & Verona Street Railway and the Wilmerding, Pitcairn & Trafford City Street Railway. On Jan. 1, 1904, he assumed charge of the Allegheny Valley Street Railway, Tarentum, Pa. On July 1, 1908, Mr. Hargett was appointed manager of the Meadville & Cambridge Springs Railway.

### OBITUARY

Morey B. Harper, formerly connected with the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio, is dead. Mr. Harper was at one time connected with the Tennis Construction Company and was agent of the Baltimore & Ohio Railroad at Delhi, Ohio.

Eugene L. Crawford, recently appointed superintendent of the Northwest division of the Chicago (Ill.) Railways, died in Chicago on March 14, 1910. Mr. Crawford had served with the company and its predecessors for more than 35 years. He was born at Dowagiac, Mich., 57 years ago, and began street railway service in Chicago as a conductor on the North Side lines. His death was due to pneumonia.

### NEW PUBLICATIONS

**Corrosion of Iron and Steel.** By Alfred Sang. New York, 1910; McGraw-Hill Book Company. Cloth, 101 pages. Price, \$1.00 net.

The author has tried to compile in one handy volume all information available on the corrosion of iron and steel, particularly with regard to the different theories covering rust formation. Separate chapters are devoted to the effect of stress and to the corrosion of rails.

**The Prevention of Accidents.** By F. W. Johnson, superintendent Bureau for Prevention of Accidents, Philadelphia Rapid Transit Company; third edition, entirely rewritten. New York: McGraw-Hill Book Company; 50 pages; illustrated; cloth. Price, 25 cents, with discount in large quantities.

The first edition of this pamphlet was prepared by Mr. Johnson for use in his own work while claim agent of the Connecticut Railway & Lighting Company at Bridgeport, where he aimed to give in brief form the most valuable suggestions to motormen and conductors to reduce accidents. The book proved so successful that it was put on general sale and ran through two large editions, 16,000 having been sold since April, 1907. The third edition is now from the press of the same publishers. The pamphlet has been entirely rewritten by Mr. Johnson in the light of subsequent experience, both in the prevention of accidents and in the best way of clearly instructing motormen and conductors in the safe operation of cars. The pamphlet is not intended in any way to supersede the ordinary rule book. It is more of a text book in which the reasons for the standard operating rules are made evident to the thoughtful conductors and motormen, and many of the copies heretofore sold have been purchased by companies in large lots for distribution among their platform men. The purpose of the author is perhaps most clearly indicated by an anecdote related in the closing pages. A railway superintendent who places safety in operation above every other consideration had before him three applicants for the position of motorman for the one vacancy existing on the road. He asked each of them the same question: "If you were operating your car at a speed of 20 m.p.h., following another car, on straight rail, in broad daylight, and you suddenly found yourself within three car lengths of your leader, who was at a standstill receiving passengers, how quickly could you stop?" The first prospective motorman made a guess and said 30 ft. The second thought that he could make the stop in 20 ft. The third thought a moment and then asked how the motorman of the car ever got in such a fix. The superintendent recognized in this last speaker the kind of employee he wanted. He was anxious to engage the man who exercised enough forethought not to get into such a position. The book is illustrated with several engravings to show dangerous situations.

## Construction News

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

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

### RECENT INCORPORATIONS

**\*East Washington Suburban Railway, Washington, D. C.**—Application has been made by this company for a charter to build an electric railway in the District of Columbia on Nichols Avenue, Good Hope Road, Bowen Road and Surtland Road to the boundary line of the District, and there connect with the Anacostia & Potomac River Railroad. Incorporators: Samuel E. Cox, William A. Harrison and A. W. Thomas, Maryland; Albert Carry, O. A. Emmons, John Kuhn and Maurice Otterback, Washington; Reese Carpenter, New York; R. H. Phillips and J. S. Sims, Virginia.

**Griffin City & Suburban Railway, Griffin, Ga.**—Application for a charter has been made in Georgia to build an electric railway in Griffin, Atlanta, Macon, Jackson, Barnesville, McDonough, Fayetteville, Williamson and Zebulon. The line in Griffin will be 5 miles long. Capital stock, \$25,000. Incorporators: H. H. Bass, J. P. Nichols, B. R. Blakely, Frank Flynt, Joseph D. Bayd, Thomas J. Brooks, J. C. Brooks, R. F. Strickland, A. D. Akin and J. M. Preston. [E. R. J., Feb. 19, '10.]

**\*Eastern Illinois Railway, Chicago, Ill.**—Incorporated in Illinois to build a 16-mile surface railway from West Hammond to Riverdale through Harvey. When completed the line will connect at East Hammond with the Hammond, Whiting & East Chicago Elevated Railway, and at Riverdale with an extension of the Calumet & South Chicago Railway, which extension is yet to be built. Nominal incorporators: Warner H. Robinson, Edgar H. Pank and Samuel Blumenthal, Chicago, and John Cox, Joliet. Ira M. Cobe is quoted as having said that the Eastern Illinois Railway may be absorbed by the Chicago City & Connecting Railway, which is financing the enterprise. The territory to be tapped by the new line is at present unoccupied. Most of the right of way has been secured and franchise negotiations are under way.

**\*Iowa & Illinois Railway Terminal Company, Clinton, Ia.**—Application for a charter has been made in Iowa by this company to construct and operate railways by electricity or other motive power through Iowa. Capital stock, \$25,000. Officers: F. W. Ellis, president and treasurer; Henry Huenen, Jr., vice-president, and P. P. Crafts, secretary.

**\*North Maryland Railway, Baltimore, Md.**—Application will shortly be made in Maryland for a charter to build an electric railway in Baltimore, Hartford and Cecil Counties. Incorporators: Thomas H. Robinson, Michael H. Fahey, Omar D. Crothers, Richard Dallam, Samuel C. Rowland, Murray Vandiver and Clarence C. Pusey, Baltimore.

### FRANCHISES

**Brighton, Mich.**—The electors of Brighton have been asked to grant a franchise to the Detroit, Lansing & Grand Rapids Railway, Detroit, to build an electric railway over the principal streets in Brighton. [E. R. J., Feb. 5, '10.]

**Chatham, N. J.**—The Morris County Traction Company, Morristown, will soon apply to the Council for a franchise to build a line in Chatham. Surveyors are at work and nearly all the right of way has been secured.

**Long Branch, N. J.**—The City Council has granted a 20-year franchise to the Atlantic Coast Electric Railroad, Asbury Park, to extend its street railway from Florence Avenue and Atlantic Avenue to the southerly boundary of Monmouth Beach.

**Mt. Airy, N. C.**—Francis Jegiers has secured a franchise from the authorities of Mt. Airy to construct an electric railway on Main Street in Mt. Airy. This is part of a plan to build a 75-mile electric railway from Leadville to Mt. Airy through Rockingham and Stokes Counties. [E. R. J., Feb. 12, '10.]

**\*Springfield, Ore.**—The City Council has granted a franchise to the Sano County Asset Company to operate an electric railway over certain streets in Springfield.

**Chattanooga, Tenn.**—The City Council has granted a franchise to the Chattanooga Railway & Light Company to construct additional tracks and cross-overs on some of the municipal streets in Chattanooga.

**Brigham City, Utah.**—The Board of Commissioners has granted a franchise to the Ogden & Northwestern Railroad, Ogden, to build an electric railway in Brigham City, provided the company will have the railway built within one year from acceptance or forfeit a given sum.

**Renton, Wash.**—The Council has granted the Valley Railway & Power Company, Seattle, a franchise to build an electric railway over some of the principal streets in Renton. The proposed railway will connect Kent and Renton. The Council of Kent has granted a 35-year franchise to Thos. Chapman for the Valley Railway & Power Company, to construct an electric railway over certain streets in Kent. [E. R. J., Feb. 19, '10.]

**Snohomish, Wash.**—The Seattle Snohomish & Everett Railway, Seattle, has applied for a 50-year franchise to construct an electric railway over certain streets in Snohomish. This proposed 32-mile railway will connect Seattle, Bothell, Snohomish and Everett. Charles W. Kimball, secretary, 443 New York Block, Seattle. [E. R. J., Feb. 13, '09.]

**Oconomowoc, Wis.**—Application has been made to the City Council by the Milwaukee Light, Heat & Traction Company, Milwaukee, for a franchise to build lines over certain streets in Oconomowoc.

**Portage, Wis.**—The City Council has granted the Chicago & Wisconsin Valley Railway, Madison, a franchise to construct an electric railway in Portage. Material has been ordered and construction will commence as soon as the weather permits. This is part of a plan to build an electric railway from Janesville to Merrill via Friendship, Easton, Buggsville, Portage, Lodi, Middleton and Madison. [E. R. J., Dec. 4, '09.]

### TRACK AND ROADWAY

**Pacific Electric Railway, Los Angeles, Cal.**—This company expects to extend its electric railway from Glendora to San Dimas and from there a line will run direct to Claremont and join the railway now being constructed from Pomona to Claremont. At San Dimas the local line will join with an extension from Conna.

**San José & Santa Clara Railroad, San José, Cal.**—This company has acquired the property of the San José Railway, a narrow 3-ft. gage track, covering 13 miles of streets in San José. It is the intention to standardize this line.

**Indiana Union Traction Company, Anderson, Ind.**—It is stated this company is planning to double-track its line between Indianapolis and Muncie.

**Fort Wayne & Toledo Electric Railway, Harlan, Ind.**—This company has resumed work on its 42-mile railway between Fort Wayne, Ind., and Bryan, Ohio. This railway, when completed, will give Fort Wayne a direct route to Toledo. R. T. Bastress, Harlan, general manager. [E. R. J., Sept. 23, '09.]

**Clinton (Okla.) Street Railway.**—This company is planning to adopt electricity as motive power instead of operating gasoline motor cars. It is stated that the company will soon purchase the necessary material for the construction of the line. H. Smith, Arapahoe, Okla., is interested [E. R. J., April 24, '09.]

**Lawton & Fort Sill Electric Railway, Lawton, Okla.**—This company has been granted right of way by the Government to build an electric railway through the military reservation in Lawton. Construction will commence at once. D. L. Sleeper, vice-president. [E. R. J., Jan. 1, '10.]

**\*Tahlequah, Okla.**—Press reports state that J. B. Moore and associates are promoting an interurban electric railway from Tahlequah to Muskogee and are considering the building of a dam in the Illinois River east of Tahlequah for the purpose of establishing a power plant.

**Portland Railway, Light & Power Company, Portland, Ore.**—This company states that it expects to reconstruct about 20 miles of city track with paving. The company will do its own work.

**Montreal (Que.) Street Railway.**—This company has applied to the City Council for permission to double-track

certain sections where there has previously been but a single line, to widen certain streets, so as to allow double-tracking, to permit the laying of rails on thoroughfares which have hitherto been without tracks, and to inaugurate a number of changes in the present routing system. About 13 miles of track will be constructed.

**Slippery Rock & Grove City Railway, Slippery Rock, Pa.**—This company has completed surveys, and is securing rights of way preparatory to awarding the contract for the construction of the railway within the next month. H. B. Graves, Butler, chief engineer.

**Corpus Christi & Interurban Railway, Corpus Christi, Tex.**—This company has completed its street railway in Corpus Christi and the line is now in operation. Power is rented from the People's Light Company. V. S. Heinly, Corpus Christi, secretary and treasurer.

**Galveston-Houston Interurban Electric Railway, Galveston, Tex.**—The Stone & Webster Engineering Corporation has awarded a contract for building 2.6 miles of this projected line from the causeway on Galveston Island to the city limits. Other contracts will soon be let.

**Utah Light & Railway Company, Salt Lake City, Utah.**—This company has completed its extension from the business district in Murray to Lovendale on the southern limits of Salt Lake City. The line will be extended on to Midvale and Sandy.

**Whatcom County Railway & Light Company, Bellingham, Wash.**—This company has succeeded in raising stock subscriptions to the amount of \$400,000 in aid of the construction of the proposed 33-mile railway from Bellingham south to Skagit County. The estimated cost is \$1,500,000. Construction will begin at once. [E. R. J., Feb. 12, '10.]

**Wenatchee Valley Railway & Power Company, Wenatchee, Wash.**—This company advises that construction will begin on its proposed railway as soon as all the franchises are obtained from the cities along the route. It will extend from Wenatchee to Monitor, Cashmere, Peshastin and Leavenworth, a distance of 50 miles. Capital stock, \$1,500,000. Power for railway and lighting purposes will be obtained from a plant to be built on the Wenatchee River. Contracts have not yet been awarded. Officers: A. J. Linnle, Wenatchee, president; H. A. Chapin, Wenatchee, vice-president; John Godfrey, Wenatchee, secretary; C. A. Battles, Wenatchee, treasurer. [E. R. J., Feb. 29, '10.]

**Fairmont & Pittsburg Railway, Fairmont, W. Va.**—This company, recently chartered, has organized by the election of the following officers: M. W. Laws, Jersey City, N. J., president; Harry F. Smith, vice-president; S. E. Miller, secretary; J. R. Linn, treasurer, and J. Fred Seatty, general manager. It is intended to build two electric railway, one from Fairmont to Blacksville, Waynesburg and Pittsburg, the other from Fairmont to Mannington, Blacksville, Morgantown and along the Monongahela River back to Fairmont. [E. R. J., March 12, '10.]

**Fairmont & Clarksburg Traction Company, Fairmont, W. Va.**—This company is reported to be surveying for the 20-mile extension of its electric railway from Clarksburg to Mount Clair, Lost Creek, Janelew and Weston. S. B. Miller, Fairmont, chief engineer.

**Union Utilities Company, Morgantown, W. Va.**—During the next four weeks this company expects to place contracts for building 2 miles of new track with 60 or 65-lb. rails. It will also build a small single span girder bridge. H. R. Warfield, Morgantown, general manager.

**Sparta-Melrose Electric Railway & Power Company, Sparta, Wis.**—This company advises that during this summer it will place contracts for building its proposed 30-mile railway from Sparta to Melrose. An 800-ft. bridge will be built across the Black River, near Melrose. A. B. Karns, 401-402 American National Bank Building, St. Paul, secretary. [E. R. J., July 17, '09.]

#### SHOPS AND BUILDINGS

**Centerville Light & Traction Company, Centerville, Ia.**—This company has purchased a site 500 ft. x 100 ft., on which it expects to build a car house, repair shop and freight yards. Frank S. Payne, Centerville, president and general manager.

**Union Street Railway, New Bedford, Mass.**—It is reported that this company has completed plans for a new car house to be erected in New Bedford on its property north of Weld Street, between Purchase Street and Clark Street. Henry H. Crapo, New Bedford, president. [E. R. J., Sept. 11, '09.]

**Wahpeton-Breckenridge Street Railway, Breckenridge, Minn.**—This company has purchased a site in Breckenridge on which it proposes to build a car house. F. L. Sturm, Wahpeton, general manager.

**Portland Railway, Light & Power Company, Portland, Ore.**—This company states that it intends to build during the year two new car houses with a capacity of 40 cars each.

**Sparta-Melrose Electric Railway & Power Company, Sparta, Wis.**—This company will place contracts during the summer for apparatus for the repair shops which it expects to erect at Sparta. A. B. Karns, 401-402 American National Bank Building, St. Paul.

#### POWER HOUSES AND SUBSTATIONS

**British Columbia Electric Railway, Ltd., Vancouver, B. C.**—This company is installing a 4000-horse-power turbine at its new steam auxiliary plant at False Creek in Vancouver. A 250-ft. chimney will be built of reinforced concrete. [E. R. J., Jan. 22, '10.]

**Middle Georgia Interurban Railway, Atlanta, Ga.**—This company expects to build a power plant at Smith's Mills, on the Okmulgee River, Jackson, about 4 miles below the site of the Central Georgia Power Company's plant.

**Fort Wayne & Wabash Valley Traction Company, Ft. Wayne, Ind.**—This company is having a portable substation equipped by the Westinghouse Electric & Manufacturing Company for early delivery for use at Lafayette, Ind., while changes are being made to the permanent power station of the company in Ft. Wayne.

**Citizens' Railway & Light Company, Muscatine, Ia.**—This company has recently installed a 750-kw Westinghouse turbo-generator set in its power plant at Muscatine. [E. R. J., Sept. 25, '09.]

**Hudson Valley Railway, Glens Falls, N. Y.**—This company has applied to the Public Service Commission of the Second District for approval of the construction of a high-tension transmission line from Half Moon to Troy.

**Interborough Rapid Transit Company, New York, N. Y.**—This company closed a contract with the Westinghouse Electric & Manufacturing Company for four 3000-kw rotary converters and twelve 1100-kva. air blast transformers. The rotaries are duplicates of the two sold to this company in June, 1909.

**Columbus Railway & Light Company, Columbus, Ohio.**—This company has contracted with the Allis-Chalmers Company for a 4000-kw, 4150-volt, 3-phase, 60-cycle, 1800 r.p.m., steam turbo-generator set.

**Portland Railway, Light & Power Company, Portland, Ore.**—This company advises that it expects to build during the year a steam power station having a capacity of 6000 kw. In addition the company will build foundations and dam for a 16,000-kw hydroelectric plant; also preliminaries for a storage dam.

**Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa.**—The Waynesboro Electric Light & Power Company, which is owned by the Chambersburg, Greencastle & Waynesboro Street Railway, is having specifications prepared for a 600-kw 3-phase generator, direct-connected to either a Corliss cross-compound non-condensing engine operating at 100 r.p.m., or a 4-valve simple engine operating at about 150 r.p.m. R. D. Sefton, Waynesboro, general manager.

**Winchester & Washington City Railway, Winchester, Va.**—This company has recently purchased from the American Ship Windlass Company four 3-retort Taylor gravity under-feed stokers which are to be installed in pairs under 750-horsepower Stirling boilers at its power station at Millville, W. Va.

**Union Utilities Company, Morgantown, W. Va.**—This company expects to purchase a 500-kw, low-pressure steam turbine during the next month. H. R. Warfield, Morgantown, general manager.



# Manufactures & Supplies

## ROLLING STOCK

**Clinton (Okla.) Street Railway**, a proposed electric railway, is asking prices on new or second-hand cars.

**West India Electric Company, Kingston, Jamaica**, has ordered a 9-bench open car from The J. G. Brill Company.

**Portland Railway, Light & Power Company, Portland, Ore.**, is in the market for about 35 flat cars and 10 ballast cars.

**Bucharest (Roumania) Tramway** has placed an order with The J. G. Brill Company for two 17-ft. closed car bodies.

**Asheville (N. C.) Electric Railway** has contracted with The J. G. Brill Company for four 10-bench open cars and two semi-convertible cars to be mounted on Brill No. 21-E trucks.

**Springfield (Mass.) Street Railway** has remodeled six of its cars for pay-as-you-enter operation and will equip the rest of its rolling stock for pay-as-you-enter service as rapidly as possible.

**Schuylkill & Dauphin Traction Company, Pottsville, Pa.**, reported in the *ELECTRIC RAILWAY JOURNAL* of Nov. 27, 1909, to contemplate the purchase of five cars, will order three gasoline motor cars soon.

**Peoria (Ill.) Terminal Railway** has placed an order with the McGuire-Cummings Manufacturing Company, Chicago, Ill., for the five interurban cars for which it was reported to be in the market in the *ELECTRIC RAILWAY JOURNAL* of Aug. 21, 1909.

**Sparta-Melrose Electric Railway & Power Company, Sparta, Wis.**, a proposed road, expects to order two locomotives, four gasoline motor cars and some freight cars during the coming summer. The general offices of the company are located in the National Bank Building, St. Paul, Minn.

**Winona Interurban Railway, Warsaw, Ind.**, reported in the *ELECTRIC RAILWAY JOURNAL* of Feb. 19, 1910, to have ordered a number of cars, has not placed this rolling stock order, but contemplates buying 5 interurban passenger cars, 2 closed and 6 13-bench open city cars, 1 60-ft. baggage car, 5 freight and 4 stock cars.

**Virginia Railway & Power Company, Richmond, Va.**, recorded in the *ELECTRIC RAILWAY JOURNAL* of Feb. 5, 1910, as having ordered 20 pay-as-you-enter cars from The J. G. Brill Company, has specified that these cars be mounted on Brill No. 39-E trucks. The company also purchased 40 additional trucks of the same type.

**Interborough Rapid Transit Company, New York, N. Y.**, mentioned in the *ELECTRIC RAILWAY JOURNAL* of Feb. 19, 1910, as contemplating the purchase of 75 all-steel subway cars, expects to place the order for these cars at once. The company is also in the market for 100 cars for elevated service.

**Athens (Ga.) Electric Railway**, noted in the *ELECTRIC RAILWAY JOURNAL* of March 12, 1910, to have ordered six cars, will have three cars of the 12-bench open Narragansett type built by the American Car Company and three 25-ft. cars of the semi-convertible type built by the John Stephenson Company. The cars will be mounted on Brill No. 27G-1 trucks.

**Louisville & Eastern Railroad, Louisville, Ky.**, mentioned in the *ELECTRIC RAILWAY JOURNAL* of July 31, 1909, as having ordered five interurban cars from the American Car & Foundry Company and as contemplating the purchase of three express cars, has received all of this rolling stock from the Jeffersonville plant of the American Car & Foundry Company. The interurban cars are equipped with four GE-204 motors, mounted on Baldwin trucks, are 56 ft. over all, divided into passenger, baggage and smoking compartments, finished in mahogany throughout, and have rattan seats with arm rests. The baggage cars are 46 ft. over all, equipped with four GE-57 motors and are mounted on Baldwin trucks.

**Compania Electrica y de Ferrocarriles de Chihuahua, Chihuahua, Mexico**, has ordered four pay-as-you-enter motor cars and four trail cars from the American Car Company,

St. Louis. The motor cars will be of the semi-convertible type, single truck, and will seat 32 passengers. Other details follow:

Weight.....	11 tons	Motors .....	GE-80
Wheel base.....	6 ft. 6 in.	Roofs.....	Monitor Deck
Length of body....	20 ft. 8 in.	Sanders.....	2 Brill
Length over all....	32 ft. 1 in.	Sash fixtures....	cherry, glass
Width inside.....	7 ft. 9½ in.	Seats .....	7 transverse, re-
Width over all....	8 ft. 2 in.		versible; one long, Sty.
Body .....	wood	corner seats each	side
Underframe .....	metal	aisle	
Couplers....	Brill's improved	Trolley catcher.....	Ideal
Curtain fixt....	Spring rollers	Trolley poles,	
Curtain material....	Pantasote		General Electric
Destination signs....	Hunter	Trolley wheels,	
Fare boxes,		Holland Trolley Supply "A"	
	2-A, 4 compartments	Trucks.....	Brill 21-E
Gongs.....	20-in. Dedenda	Varnish (manufacturer),	
Hand brakes,		American Varnish	
	Ackley adjustable	Ventilators,	
Headlights .....	Incandescent	White Florentine Glass	
Journal boxes.....	Brill		

The specifications for the four trail cars are:

Seating capacity .....	60	Fenders .....	Brill
Length over all....	28 ft. 8 in.	Gears and pinions.....	Brill
Width inside.....	6 ft. 3 in.	Hand brakes....	Brill vertical
Width over all.....	7 ft.	Motors .....	GE-80
Body .....	wood	Roofs..	Mon. deck, vent sash
Underframe .....	wood	Seats..	6 reversible and 4 sta-
Curtain fix.....	Striped duck	tionary.	

## TRADE NOTES

**Galena-Signal Oil Company, New York, N. Y.**, has moved from 43 Water Street to the Battery Park Building, 24 State Street.

**George D. Cook & Company, New York, N. Y.**, have removed their offices to Rooms 717-721 Empire Bldg., 71 Broadway, New York.

**Griffin Wheel Company, Chicago, Ill.**, contemplates building a new plant in Salt Lake City, where about 17 acres of land have been purchased.

**MacArthur Brothers Company, New York, N. Y.**, have appointed David Sloan consulting engineer and W. G. Sloan chief engineer of the company.

**Walter H. Cottingham**, president of the Sherwin-Williams Company, Cleveland, Ohio, has accepted the position of executive member of the Railway Business Association.

**Railway Steel Spring Company, New York, N. Y.**, announces that A. S. Henry has been elected vice-president of the company and that Scott R. Hayes has been appointed general sales manager.

**United States Metal & Manufacturing Company, New York, N. Y.**, announces the appointment of Harold A. Hegeman as salesman in the railroad department to succeed John Wolfe, resigned.

**National Lock Washer Company, Newark, N. J.**, has taken J. H. Horn, formerly with the American Locomotive Company, New York, N. Y., into its sales department to handle both curtain fixtures and lock washers.

**Ackley Brake Company, New York, N. Y.**, has received an order from the Seville (Spain) Tramways for Ackley adjustable brakes. When these brakes are installed the Seville Tramways will have 10 cars equipped with the Ackley brake.

**Heywood Brothers & Wakefield Company, Wakefield, Mass.**, are erecting a 10-story fireproof office building and warehouse at Thirty-fourth Street and Eleventh Avenue, New York, N. Y., which will be ready for occupancy by Jan. 1, 1911.

**C. H. Whall & Company, Boston, Mass.**, announce that John B. Given, formerly assistant to the vice-president of the Duplex Metals Company, New York, N. Y., has become associated with Whall & Company, which make fiber insulators and fuses.

**Allis-Chalmers Company, Milwaukee, Wis.**, has received an order from the Public Service Railway to equip the 100 cars recently ordered from the Cincinnati Car Company

with air brake equipment which will include its Standard AA-6 compressors.

**Hicks Locomotive & Car Works, Chicago, Ill.**, announce the resignation of H. F. Wardwell to become connected with the Chicago & Western Indiana Railway. F. O. Bailey was made sales manager of the company, with offices in the Fisher Building.

**J. C. Ward**, director of Edgar Allen & Company, Ltd., in charge of the American branches, with an office at Chicago, Ill., has returned from a visit to the company's Imperial steel works at Sheffield. Mr. Ward arrived on the *Lusitania* during the week ended March 12, 1910.

**Holland Trolley Supply Company, Cleveland, Ohio**, has shipped to the Cincinnati (Ohio) Traction Company, for high-speed service, 18 No. 3 Holland ball-bearing trolley bases. Practically all of the cars used in this company's high-speed service are equipped with these bases.

**Cleveland Frog & Crossing Company, Cleveland, Ohio**, announces that L. G. Parker has become connected with its sales department. Mr. Parker was formerly with the engineering department of the Lake Shore & Michigan Southern Railroad at Cleveland and Toledo and the Chicago Terminal Transfer Railroad at Chicago.

**J. G. Brill Company, Philadelphia, Pa.**, has secured the services of Henry Pearson, president of the Wason Manufacturing Company, as general consulting engineer. Mr. Pearson will remain a director of the Wason Manufacturing Company, but S. M. Curwen, vice-president and general manager of The J. G. Brill Company, will become president of the Wason Manufacturing Company.

**Vulcan Steam Shovel Company, Toledo, Ohio**, advises that Alexander Backus has disposed of his entire holdings in the company and has retired as president of the company after 20 years of active service. The new officers are: H. P. Eells, president, and G. F. Steedman, vice-president. Carl Horix, who has been acting as general manager for some time, will continue in this capacity.

**Consolidated Car Heating Company, New York, N. Y.**, received an order to equip the 100 new cars being built for the Public Service Railway with its trolley voltage buzzer system, which has been made standard on the Public Service Railway. The battery type of buzzer installed on the 200 cars now being rebuilt by the John Stephenson Company for this company will be replaced by the Consolidated trolley voltage buzzer.

**American Locomotive Company, New York, N. Y.**, has elected Lewis L. Clarke, president of the American Exchange National Bank, a director of the company to succeed his father, the late Dumont Clarke. C. B. Denny, formerly treasurer of the company, has been elected secretary and treasurer of the company, and J. O. Hobby, assistant to Mr. Denny, has been elected assistant secretary and treasurer of the company.

**Western Electric Company, New York, N. Y.**, reports that the Santa Fé system has extended the use of the telephone for train dispatching over its road from Denver to Pueblo, Col. Telephones have now been installed over approximately 1950 miles of the lines of this company, which is planning to extend the equipment on other sections of the road as rapidly as possible. It is estimated that the installation of telephones on the Denver-Pueblo division will enable the dispatchers to handle the same amount of work as previously in about 60 per cent of the time.

**Dearborn Drug & Chemical Works, Chicago, Ill.**, on May 1 will move their general offices and chemical laboratories from the Postal Telegraph Building, where they have been located since the organization of the company more than 20 years ago, to the new McCormick Building, on Michigan Avenue and Van Buren Street. The extensive growth of the business of the company has made necessary this removal to its new headquarters, where the general offices and laboratories will occupy the greater portion of the top floor, with a total floor space of more than 5000 sq. ft.

**American Ship Windlass Company, Providence, R. I.**, built the Taylor gravity underfeed stokers which have been installed in connection with the three new 600-hp Edgemoor boilers in the West Albany power station which furnishes light and power for the shops of the New York Central & Hudson River Railroad. The mechanical draft

for the stokers in this power plant is furnished by two turbo-blower units, each consisting of a Bliss turbine and double width "squirrel cage" fans manufactured by the Massachusetts Fan Company, Watertown, Mass.

#### ADVERTISING LITERATURE

**Frank Ridlon Company, Boston, Mass.**, has issued its list of second-hand electrical machinery for March, 1910.

**Ohmer Fare Register Company, Dayton, Ohio**, has issued a folder in which is discussed the importance of the Ohmer merit system.

**Shanahan Trolley Specialty Company, Little Falls, N. Y.**, has printed an illustrated 12-page booklet descriptive of its automatic trolley retrievers, which gives directions for attaching and operating the apparatus.

**Arnold Company, Chicago, Ill.**, is mailing an illustrated postal card showing the progress made by the Arnold Company in the construction of the locomotive terminal plants of the Kansas City Southern Railway at Heavener, Okla., and De Queen, Ark.

**Fairbanks, Morse & Company, Chicago, Ill.**, have issued Catalog No. 113, in which the company's 1910 2-cycle marine engines are described and illustrated. The catalog is on coated paper. Another catalog, No. 112B, contains descriptions of the company's 4-cycle, heavy-duty engines.

**Chain Belt Company, Milwaukee, Wis.**, has issued a 48-page catalog on its chain-belt concrete mixer. The various parts of the mixer and its appurtenances are described in detail. This is supplemented by a table giving the sizes and capacities of concrete mixers. The catalog is profusely illustrated and contains several testimonials from users of the company's product.

**Ingersoll Engineering & Construction Company, Pittsburgh, Pa.**, has issued a booklet in which are shown views of roller coasters and racer dips built by the company and installed in various amusement parks in the country. Testimonials from the owners of these resorts accompany the views. The racer dip, a new amusement device, which is constructed on the same general plan as the roller coaster, is also described.

**Ohio Brass Company, Mansfield, Ohio**, prints in its February *Bulletin* an interesting description of its chemical laboratory. The *Bulletin* also contains a paper by E. J. Dunne on the "Standardization of Construction," read before the American Street & Interurban Railway Association at the Denver convention, and an article which describes a campaign against accidents made by the Cleveland, Southwestern & Columbus Railway.

**Duplex Metals Company, New York, N. Y.**, has issued a 22-page booklet in which its home office and works at Chester, Pa., are described and illustrated. The illustrations also include several interesting views of lower Manhattan taken from the offices of the company in the tower of the Singer Building. The company has also printed a booklet, dated February, 1910, which contains standard specifications for hard-drawn, copper-clad steel wire and for copper-clad steel bond wires.

**J. A. & W. Bird & Company, Boston, Mass.**, have published a treatise on "Waterproofing of Structures." The question is discussed in its general aspects and some interesting facts are presented regarding waterproof felt. Special reference is made to sublevel construction, the envelope method and the application of Tunaloid. Views are presented which show the application of Tunaloid in the improvements being made by the Pennsylvania Tunnel & Terminal Railroad at New York and Sunnyside.

**Western Electric Company, New York, N. Y.**, has issued an attractive booklet showing a complete line of lighting fixtures known as Hawthorn Mazdaliers. The anti-jar link suspension, a protective device which adds to the life of the tungsten filament by eliminating all vibration and jar, is shown in detail. The booklet is well illustrated with cuts which show the construction of the different parts of the Mazdaliers. The text gives details regarding those parts and features of installation. "How to Figure Illumination" is the title of a bulletin issued by the company which treats the lighting of interiors and gives useful information in connection with Sunbeam Mazda lamps.