

# Electric Railway Journal

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## OUTDOOR SUBSTATION DESIGN

Outdoor substations are advantageous from several points of view in electrical distribution systems of moderate voltage. Low cost is one of the chief merits of this class of construction where the line potential does not run up much above 22,000 volts; but economy of investment may be pushed too far. There is room for improvement in some cases, notably in connection with the arrangement of circuits with respect to adjacent structures such as metal stacks; in the provision of wider clearances between lines of different voltage, and in the facilities for disposing of transformer oil in case it has to be drained out of the casings under emergency conditions. In this case a small outlay for pipe connections to a sewer or to a point of discharge at a safe distance from near-by buildings is well made. At least two entrances to the inclosure containing the transformer and oil switch banks are desirable in case trouble in one part of the installation threatens to cut off ingress and egress in entire safety, and the best mechanical construction for pole fixtures is none too good even in an outdoor substation designed for operation at 11,000 volts and over. Double cross-arms, well-secured strain insulators, clean-cut runs of wiring and adequate space around the bases of transformer and switch casings are worth all they cost, and the interests of both safe and convenient operation call for a standard of engineering design and construction not always appreciated by those who erect these structures. In fact, the margin between good work and a down-at-the-heels installation is too small to justify excessive economies in these plants.

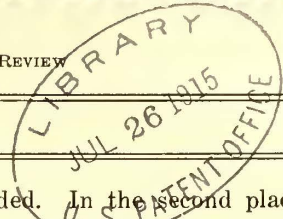
## LOCOMOTIVE COAL CONSUMPTION

In the discussion on W. S. Murray's paper on the New Haven Railroad's operating costs which was published in abstract in last week's issue, the statement that the steam locomotive required twice as much coal as the electric machine seemed to be something in the nature of a storm center. The problem presented is, of course, decidedly involved, but from such evidence as has been made available the electric locomotive requires some 2.5 lb. of coal for every horsepower-hour produced at the drawbar, making the steam locomotive consume 5 lb. if Mr. Murray's basis of comparison is accepted. As opposed to this there were cited in the discussion the results from a number of laboratory tests in which the coal consumption of a steam locomotive ranged from 5 lb. all the way down to 2.5 lb. per horsepower-hour. However, the laboratory test of a locomotive can hardly be accepted as equivalent to road conditions. In the first place, no

standby losses are included. In the second place, the laboratory test gives the coal consumption at a fixed cut-off, a condition that does not exist in practice. As a matter of fact, the most economical loading is that under which the steam locomotive is loaded right up to its limit so that it works at full cut-off on the ruling grade, and this condition would not be likely to produce a coal rate much less than 5 lb. of coal per horsepower-hour even aside from standby losses. Unfortunately, the different characters of the respective services do not permit accurate comparisons of the coal consumption for the steam and electric locomotives on the New Haven Railroad. However, it is of certain interest to note that the annual coal consumption is about 1,800,000 tons, while the ton-mileage is of the order of ten billions, making a rough average figure of 0.36 lb. of coal per ton-mile. As the average power consumption for the electric locomotives is close to 60 watts per ton-mile, this gives a coal consumption of 0.165 lb. per ton-mile, or actually less than half of that of the steam locomotives.

## THE CHICAGO ARBITRATION AWARD

The Chicago arbitration decision will be a disappointment to all who believe in the principles of real arbitration. We expressed the hope at the time the arbitrators were selected that the verdict would not be a mere compromise on the questions at issue but would be based on the merits of the case. But the decision shows that the majority of the board did not take into consideration either the average wages paid for the same work elsewhere or the average wages paid in the building trades and similar trades in Chicago. We see no excuse for a decision, supposed to be fair for both sides, which gives wages higher than those in other large cities east of the Rocky Mountains, when the evidence at the hearing showed that the cost of living is less in Chicago than in St. Louis, Detroit, Cleveland, New York, Pittsburgh, Philadelphia or Boston, the latter city exceeding Chicago by more than 27 per cent. Nor is there any logic in the requirement that the company should pay its trainmen so much more than skilled workmen in Chicago earn in such lines as the carpenter trade, as shown in the statement of Mr. Sheean, or the wages paid to the employees of the city itself in such duties as foremen in the street department, officers in the health department, laborers, motor drivers, etc. An unfortunate feature of the arbitration was the action of the Mayor in taking independent testimony during the hearing by calling in some 200 employees whose wages were directly involved in the arbitration, and questioning some himself and having others questioned by represent-



atives of the corporation counsel's office with reference to the issues involved, without the principals being present or represented. If such action had been taken in a jury trial, and some of the jurors had listened to evidence independently of the other jurors, the case would be thrown out of court, and according to the Illinois Supreme Court action of this kind is equally improper in an arbitration hearing. Nevertheless, the company has announced that it would accept the decision and carry out its provisions faithfully, and it has appealed to the public and the trainmen to co-operate with the management in every way possible to give a better service than ever before. This attitude should command the support of the public in Chicago, and as the city is a partner in the profits of the surface lines to the extent of 55 per cent, it has a vital interest in their financial success. Some of the broader questions raised by the decision of the arbitration board in Chicago are considered in an editorial on the opposite page.

#### UNEVEN WEAR IN INSERT SPECIAL WORK

Perhaps the principal criticism to be made against the general use of insert special work is the uneven wear which predominates, particularly in insert work in curves over which a dense heavy service is operated. Here the manganese steel insert and the rolled rail or cast-steel arms of frogs are subjected to excessive wear, and the insert, being made of a metal of high abrasion resisting qualities, does not wear as rapidly as the arms. Frequently rather serious variations in the curve alignment occur, due to excessive flange wear, and coincident with this the insert surface is found to be above that of the adjoining rails. Where this takes place, uniform wear throughout the layout is, undoubtedly, desirable. To obtain it, heavy traffic curves should be laid with one kind of material, either open-hearth steel rails and special work throughout or solid manganese steel rails and special work. Some engineers, however, have been successful in obtaining uniform wear and reasonably long life, even where the rails join manganese steel special work, by specifying a high carbon content. If this produces the desired result, it should be practised particularly where greater economy may be obtained by reason of the low first cost.

Frequently the question is raised as to the value of renewable as opposed to non-renewable inserts. No doubt some engineers draw the conclusion that renewable inserts are useless because the work of renewing them is difficult, especially when the frog arms have become considerably worn. This objection is well founded, but other more important reasons govern the use of renewable inserts. We believe that track engineers generally favor this type of insert because it permits replacements in case an insert fails early in the life of a frog or crossing and because the insert can be reset in the field if it should become loose under traffic. These two advantages of the renewable insert are certainly sufficient to make it economically desirable. In many instances where the company's repairmen have become skilled in resetting the various types of inserts, success

in replacing is obtained even where they are badly worn. On the other hand, most insert renewals due to excessive wear are in right-angle crossings. In these the wear on the running rails is slight while that due to impact blows at the intersecting flangeways is great.

In all cases where inserts are renewed, the tolerances in the setting should be measured to provide for thinner plates when necessary. It is possible, however, where the variation is slight, to surface the insert with a grinder after it has been set in position. In connection with the renewability of inserts, it must also be borne in mind that although this is a desirable quality, the fastenings can be such as to make replacements too easy. This may reduce the effectiveness of the fastenings which, in turn, may shorten the service life of the piece. To guard against a weakness of this kind, track and roadway engineers should not specify that their insert fastenings should be designed to make replacements easy, but should insist primarily on a design which will hold the insert secure.

#### SPARKING AND FLASHING IN RAILWAY MOTORS

The very interesting study of motor commutation by R. E. Hellmund, printed in last week's issue of this paper, must have served to remind users of railway motors of the fact that present conditions in this line are in marked contrast to those of the early days. In the light of the present knowledge of the causes of sparking and flashing the younger generation of master mechanics may have difficulty in realizing how progress was made step by step. The three big and conspicuous steps in this progress were these: The introduction of the carbon brush; the application of saturation in the magnetic circuit to control flux displacement by armature magnetomotive force, and the introduction of the commutating pole. Smaller intermediate steps involved details of design incident to all progress.

The railway motor is inherently inclined to good commutation because, being a series motor, its flux increases with the load. Hence armature reaction, the bane of good commutation, has less effect than in shunt machines because the armature teeth become saturated under heavy load and limit flux distortion. On the other hand, necessary reversibility in direction of rotation prevents the shifting of brushes to the position best for commutation, and space limitations force designers to bring "live" parts closer together than is ideal from the insulation standpoint.

The carbon brush was introduced so early in the history of the commercial railway motor as now to seem a matter of course, but its adoption in place of the earlier copper brush contributed tremendously to success in electrifying horse railways. It provided a simple and cheap means for choking down the currents in the armature coils during the period of reversal. In stationary motors this could be done by shifting the brushes backward from the neutral axis, i.e., against the direction of rotation, but not so in car motors. With surface-wound armatures, and consequent long air gaps between pole faces and armature cores, the

carbon brush could have controlled the sparking evil alone. The field ampere-turns were large compared with those of the armature, and air-gap flux distortion was not serious. But when slotted armature cores, with short air gaps, came in, the case was different. It then became necessary to saturate the teeth heavily to prevent the production of a strong magnetic field along the brush axis, in a position to be cut by the short-circuited coils and in a direction to resist commutation. More recently the commutating pole has been introduced to supplement the effect of saturation and to reduce the necessity for it by providing a reversing flux in a definite location varying with the armature current. In this way it has greatly extended the range of non-sparking and non-flashing operation.

The above is in merest outline the history of commutation in the railway motor. Along with these large developments have gone others only slightly less important. The slotting of commutators, the expert manufacture of carbon brushes and the determination of the proper relation of armature and field turns, of the allowable voltage per commutator bar, etc., have all contributed to relieve the operating man's mind of what was once a bugbear to him. All of the items mentioned have contributed to pave the way for the higher-voltage motor.

#### LABOR DISPUTES AND ARBITRATION BOARDS

In discussions relating to the wages to be paid to railroad trainmen we think that the public often misses one very important point which distinguishes controversies of this character and those of the same kind between private employers and their employees. The private employer figures upon a certain amount of profit between the price at which he can sell his goods and the cost of producing them, and if the latter is increased because of the necessity of paying higher wages, there are three things which he can do. He can raise the price of his goods to cover the additional cost of production, or he can stop manufacturing entirely and sell his factory at comparatively small loss to someone to conduct some other industry there, or he can sell his factory and move to another place where the wages which he has to pay are lower. The railway, in common with most other public utilities, does not have this choice. It cannot stop operation even if it is not making enough money to pay operating expenses and the interest on its investment, and usually it cannot increase its fares. The business of electric railway transportation in most cities is conducted on a very narrow margin of profit, whose continuance depends on the maintenance of existing conditions. On this basis it has assumed certain burdens, such as pavement charges, street sprinkling, street cleaning, etc., and, in Chicago, enforced extensions with no earning capacity to justify them and the expense of rebuilding the track whenever water pipes, sewers or other underground city utilities are built across them or along them. With any radical change in the basic conditions of operation the close balance between income and

outgo to yield a profit no longer obtains, and if expenses for labor are increased the extra-operating expenses just mentioned should be decreased. No railway manager begrudges an increase of pay to his men where the evidence shows that such an increase is warranted according to the wages paid elsewhere for similar work under similar conditions. But they recognize the economic fact that unless in some way a sufficient margin is maintained between gross receipts on the one hand and operating expenses and fixed charges on the other, present stockholders suffer an injustice and no additional capital for needed extensions and improvements can be secured.

The Chicago arbitration case teaches several important lessons. One of these, and perhaps the main one, is the supreme importance of the choice of the third or impartial arbitrator. In an arbitration case there is legally no obligation on the part of the arbitrators to be governed by the evidence, and in many cases they do not even discuss the evidence in their verdict but simply give their conclusions. We are not prepared to say that this is necessarily wrong, but we mention it to show the difference between a case decided by arbitration and a case decided by law. Cases at law may be decided erroneously as often as cases before a court of arbitration, but the judge in the former case feels obliged to justify his view of the case by an extended statement in which he attempts to prove that his verdict is justified by the evidence presented. Again, while an arbitration board consists nominally of three persons, it really consists of one judge and two counsel, one for each side. This leaves the "third" arbitrator in a position where he is unable to consult with any impartial persons upon the decision. Where the interests involved are large, this is a position of great responsibility, often too great for one man to fill properly, especially when he is in public life and has political ambitions. The whole tendency in modern government where decisions have to be reached from which there is no appeal is to provide more than one arbiter. This is the case with public service commissions, where there are always three and usually five members. It is also the case with the higher courts and the federal commissions. One remedy suggested is an increase in the number of "impartial arbitrators" from one to two or three. Such action would be a step in the right direction. Several men, under such circumstances, would not only be of assistance to each other in arriving at a proper decision, but would be of help in justifying the decision after it was announced. For the same reason, a further improvement, in our opinion, would be a change from one to two in the number of representatives from each side. A single representative has necessarily to be largely a partisan. To be otherwise would seem to be neglectful of the interests of those who had selected him. But with two arbitrators representing a side one would give moral support to the other in reaching a decision based on the merits of the case, even if it did not give all that was sought by those whom he represented.

# Long Island Railroad Adopts Light, Steel Trailers

These Cars are Intended for Summer Use Exclusively—Unusual Features of Construction Are Provided for Combining Strength with Lightness

The Long Island Railroad, in order to provide for its heavy suburban passenger traffic during the summer, has ordered from the Standard Steel Car Company twenty new all-steel trailers, the design of which reveals a marked reduction in weight, while preserving a neat appearance and securing unusual strength at the points desired. The new cars were delivered recently, in time for operation during the heavy summer season. They are based in general on the dimensions and specifications of the "MP-54" car, the standard steel, 64-ft. 5¼-in. (over couplers) motor car now in suburban electric service on the railroad, and are now being operated in trains with these cars.

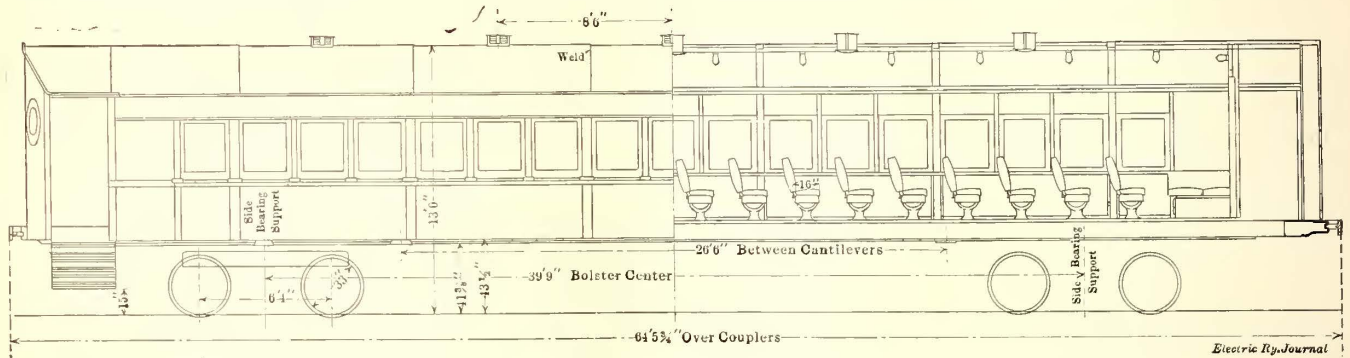
The general dimensions are as follows:

Length over body corner posts	54 ft. 9¾ in.
Length over couplers	64 ft. 5¼ in.
Distance between truck centers	39 ft. 9 in.
Wheelbase	6 ft. 4 in.
Height, rail to top of roof	13 ft.
Width over side sheets	9 ft. 8¾ in.
Width over belt rail	9 ft. 10¾ in.

The cars, complete, including trucks, brake rigging and interior equipment, are estimated to weigh only about 68,000 lb., as compared with 87,000 lb., the approximate weight of the motor car without electrical

equipment. The trailer car bodies, fully equipped, weigh about 49,000 lb., as against the motor car body weight of about 54,000 lb., not including electrical equipment.

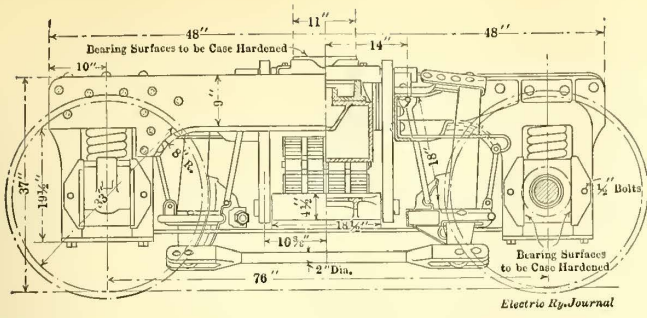
As the trailers are exclusively for summer service, neither heaters nor headlining are installed. The car body is further lightened by the use of a rather flat-arched roof. The 3/32-in. roof sheets are riveted and welded together in such a manner as to eliminate leakage. The roof is supported directly by combined posts and carlines spaced on 8-ft. 6-in. centers. Opposite carline sections are welded together at the center of the roof, thus forming one continuous inverted U-shaped member. In order to support the low arch without an excessive number of carlines the roof is reinforced in an unusual way by means of two parallel lines of steel purlins, consisting of sections but continuous in effect, running longitudinally from end to end of the car. Each purlin is located 22 in. from the center line of the roof. The purlin sections at carline intersections meet and terminate in flanges shaped around under and riveted to the carline. The purlins transmit extraordinary longitudinal stresses to the roof and sides of the car, a strong vestibule and body end construction being provided.



LONG ISLAND TRAILER—ELEVATION OF CAR

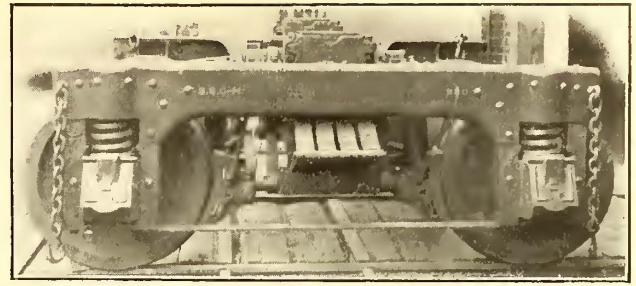


LONG ISLAND TRAILER—SIDE VIEW



LONG ISLAND TRAILER—SIDE ELEVATION AND SECTION OF TRUCK

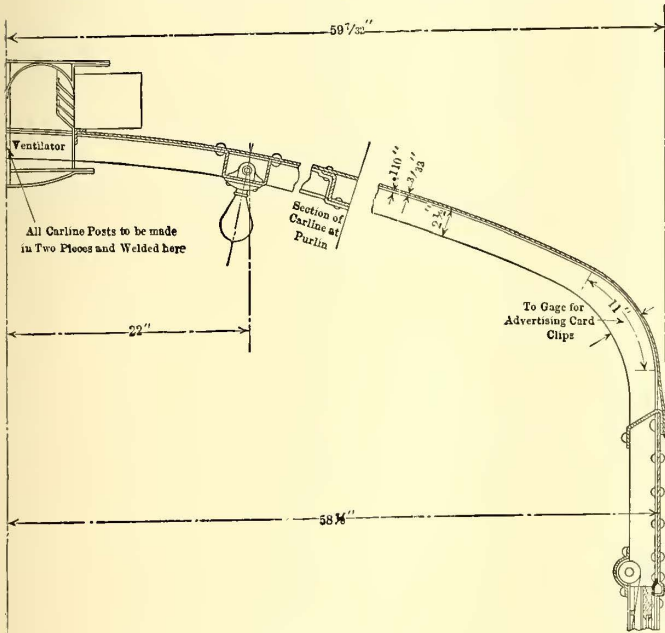
The purlins receive extra support at each body end by means of two vertical pressed-steel posts 4 in. wide, flanking each side of the 36-in. wide bulkhead door opening. The posts are riveted to the end sills and are tied together by a steel section running across the top of the door opening. The vestibule end posts, shown in the accompanying vestibule plan, are unusually strong and consist of two 12-in. I-beams weighing 31.5 lb. per foot. The purpose of this combination carline, purlin, vertical post and I-beam framing is to distribute the shock of a head-on collision among the members forming the structure as a whole.



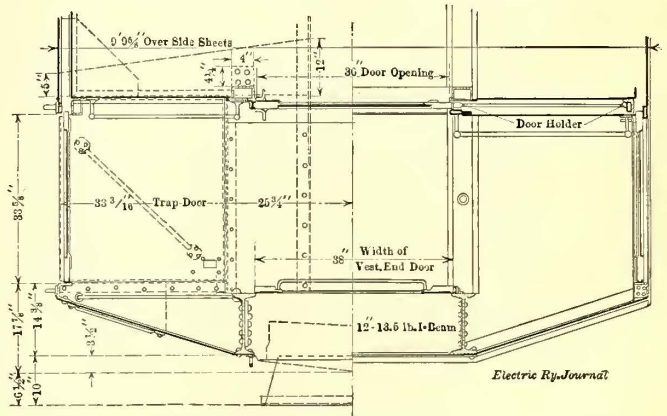
LONG ISLAND TRAILER—SIDE VIEW OF TRUCK

The underframe crossings consist of a number of 5-in. channels and two cantilevers, spaced 26 ft. 6 in. apart, each 14 ft. 1 7/8 in. from the outside of body posts. These cantilevers, together with the body end sills, take the place of the usual body bolsters. No body bolsters are installed, the center plates being attached to the center sills, which extend across the space between the cantilever and the body end sill in the form of a heavy box girder. The extension of this box girder supports the platform. The end corners of the underframe have been specially reinforced by horizontal pressed steel sections in order to protect the body corner from injury by side swiping.

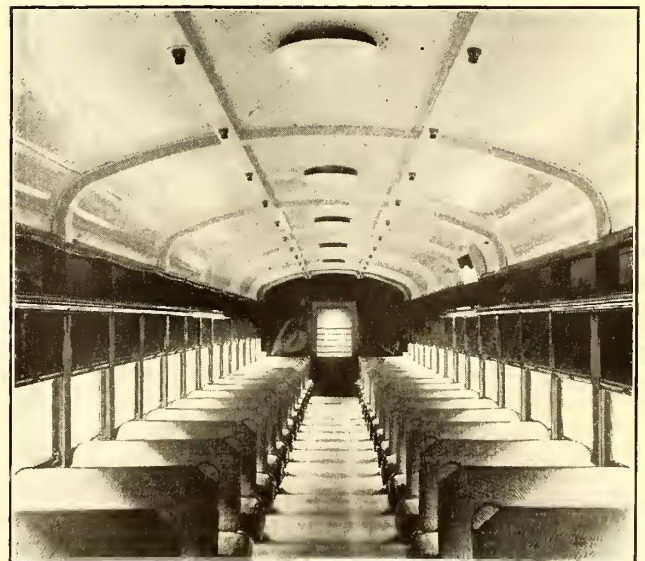
The same principle of combining lightness with strength has been followed in the truck design. The weight of the new truck, including brake rigging nor-



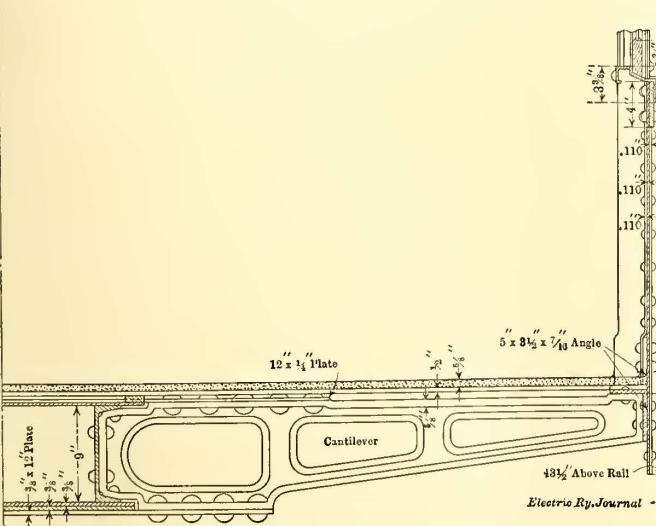
LONG ISLAND TRAILER—VERTICAL CROSS-SECTION OF CAR



LONG ISLAND TRAILER—FLOOR AND UNDERFRAMING PLAN OF VESTIBULE



LONG ISLAND TRAILER—INTERIOR VIEW



mally carried on it, is estimated at 9300 lb., as compared with 13,800 lb., the weight of the trailer truck of the "MP-54" motor car. The new truck, a side view of which is shown, is designed especially to withstand transverse stresses, being provided with a cast-steel bolster. The side gusset fastening to the transom is of extra width to stiffen the connection between pedestal and transom. No end rail is used. The chafing plates are case-hardened and have large bearing areas in order to overcome tilting of the bolster. They are bolted, not riveted, to the transom and bolster, respectively, and therefore are easily replaceable. The spring hangers are supported by chilled cast-iron blocks in order to prolong the life of the support. The trucks have 4¼-in. x 8-in. M.C.B. journals and Midvale Steel Company's 33-in. rolled-steel wheels with 2½-in. rims.

#### MISCELLANEOUS EQUIPMENT

Ventilation of the cars is provided by "Automatic" ventilators of a new design but embodying the well-known "intake and exhaust" principle of this system. This device, known as Type E-B, is installed at five points, spaced 8 ft. 6 in. apart, on the center line of the almost flat roof. It consists of an exterior hood, divided into four separate compartments, two exterior deflectors, and an interior disk.

The flooring inside the cars consists of monolith laid in Keystone metal flooring. Thirty-six double "walk-over" seats and eight single end seats provide seating capacity for eighty passengers. All seats are rattan covered and have statuary bronze trimmings.

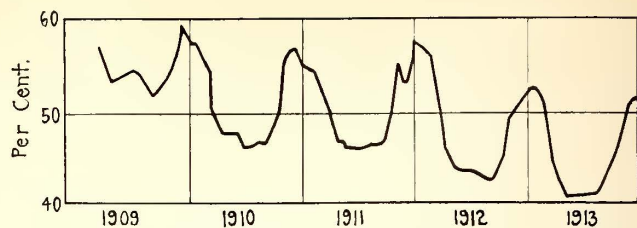
Sliding vestibule side and body-end doors are provided. The vestibule side doors are operated by the Gibbs door-operating device. Diamond pressed plate, 1½ in. thick, is provided for platform floors, trapdoors and steps. Electric lighting consists of thirty 36-watt 130-volt lamps arranged in six circuits.

Other equipment specified includes Westinghouse air brakes, schedule A.T.L., including triple valves, 12-in. x 12-in. cylinder with slack adjuster, auxiliary and supplementary reservoir, Westinghouse friction draft gear, Westinghouse automatic hose couplers, Sharon special coupler, Union Spring & Manufacturing Company's springs, Lindstrom hand-brake handles, National Lock Washer Company's window and curtain fixtures and Pantasote curtain material.

## Railway Power Rates in Chicago

### Unit Cost for Energy Under the Terms of the 1913 Contract Has Increased Due to Decreasing Load Factor

The sixth annual report of the Board of Supervising Engineers, Chicago Traction, recently issued, contains an analysis of power costs over a period of four and one-half years under the contract described in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 6, 1913, page 1180. Early in 1913 this new contract was executed between the Commonwealth Edison Company and the surface railways. It possessed a number of advantages over the previous contract and was made retroactive, dating back to 1909. The report outlines the important points of the 1913 contract and presents records to show the savings resulting. The contract provided for a sliding scale in primary charge decreasing with a maximum demand from \$1.25 per kilowatt per month for the first 30,000 kw., in 30,000-kw. steps, to 83½ cents per kilowatt. It also provided for a sliding scale of secondary charge decreasing with increasing output from 0.4 cent to 0.36 cent per kilowatt-hour. Under the old contract there was a flat primary rate of \$1.25 per kilowatt of maximum demand and 0.4 cent per kilowatt-hour secondary charge.

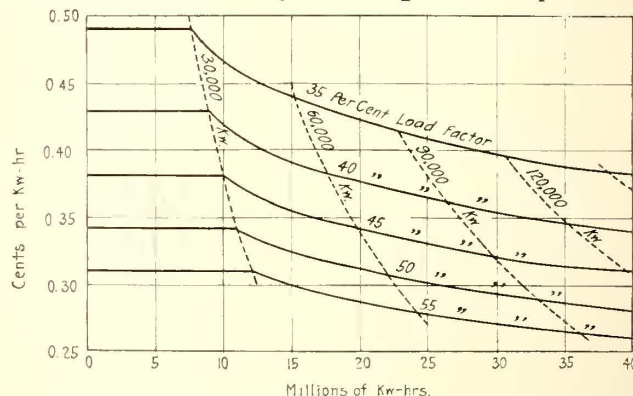


CHICAGO POWER RATES—GRAPH OF LOAD-FACTOR VARIATION BY MONTHS

Under the old contract the primary charge would have increased between 1910 and 1913 from 0.337 cent to 0.383 cent per kilowatt-hour, whereas under the new contract it has increased from 0.325 cent to 0.348 cent per kilowatt-hour. During the same period the secondary cost has averaged about 0.395 cent, the limits being 0.397 cent and 0.392 cent per kilowatt-hour. The total cost has increased in spite of the larger amount of energy used, as follows: 1910, 0.737 cent; 1911, 0.741 cent; 1912, 0.760 cent, and 1913, 0.783 cent.

The increase in total cost is due to the larger primary charge, due in turn to the decreased load factor. The change in load factor is shown in an accompanying diagram, and it is explained in the report by reference to the rush-hour conditions which have become more acute each year. The addition of cars during the rush-hour period increases the peak load during that period and correspondingly decreases the load factor. The maximum demand has therefore grown at a greater rate than the total energy consumed.

The second chart reproduced herewith from the report gives in graphical form the basis of the calculation of primary charge per kilowatt-hour for different monthly energy consumptions and different load factors. These curves can be reproduced from the terms of the contract by assuming for each point any



CHICAGO POWER RATES—CURVES OF PRIMARY CHARGE WITH DIFFERENT LOAD FACTORS

maximum demand and load factor. Multiplying these two gives the average load, and multiplying this by 730, the average number of hours in a month, gives the monthly kilowatt-hour consumption. The primary charge per month for the assumed maximum demand is given by the terms of the contract, and this divided by the monthly energy consumption gives the primary unit cost. The chart shows clearly the effect of load factor on this unit cost and, taken together with the load-factor diagram, furnishes an explanation of the increasing total unit cost for energy.

As would be expected, there is a decided seasonal variation in the cost of power, the maximum, which is reached in summer, being higher by 0.15 cent per kilowatt-hour than the minimum, which occurs in the winter months. Graphs reproduced in the report show these seasonal variations.

# Pittsburgh Railways Claim Department

A Co-operatively Functional Type of Organization, with the Five Separate Bureaus, Has Been Built Up—  
Details of the Various Systems Used Are Published

The claim department of the Pittsburgh (Pa.) Railways, under the supervision of Cecil G. Rice, superintendent, is an excellent example of the application of modern business principles to the work of settling claims. To be more specific, it deserves description on account of its functional type of organization and its recognition of the value of fixed principles, definite policies and psychological essentials in every-day claim work. This article will be confined to a description of the organization itself, and the psychological and other features will be discussed in a later issue.

## TYPES OF MANAGEMENT

When Mr. Rice took up the reorganization of the Pittsburgh Railways' claim department more than five years ago, he resolved not to base the practices of his department upon mere imitation of those in the claim departments of other companies or gradually to work out a system for Pittsburgh by means of the "trial and error" process. Instead, it was decided that of the three types of management, "autocratic," "autocratic-divisional" and "co-operatively functional," the last and most modern was best suited to solve the existing problems. According to this decision, active work was immediately begun along the five factors of such management, as follows:

1. Investigation and standardization.
2. Planning of organization to carry the chosen standards into effect.
3. Selection of staff for organization.
4. Provision for compensation, discipline and development.
5. Provision for understudies and recruits.

## PRINCIPLES OF STANDARDIZATION

After investigation of the conditions the management evolved six distinct fixed principles of standardization, or standards, in accordance with which every claim employee in so far as possible must bring his thoughts and actions.

These fixed principles are as follows:

1. *Maximum Accuracy*—Incontrovertible facts unearthed from all available sources.
2. *Utmost Expediency*—The promptest action in accord with propriety and correctness.
3. *Absolute Fairness*—A fixed, irrevocable policy of dealing with justice to all concerned.
4. *Persistent Courtesy*—Constant politeness combined with kindness.
5. *Minimum Consistent Expenditures*—Disbursements proportionate to all the facts.
6. *Perfect Co-operation and Efficiency*—Working in harmony to produce the most satisfactory results with the least expenditure of time and effort.

## PLAN OF ORGANIZATION

To carry out the above-enumerated standards, the claim department was divided into five separate bureaus to handle the different classes of work. These are called the clerical bureau, the inspection bureau, the adjustment bureau, the litigation bureau and the medical bureau. They act automatically and co-operatively in handling accidents and settlements. Each one is also capable of acting separately as a unit department of the Pittsburgh Railways. All the bureaus are super-

vised by the superintendent of the claim department, who reports directly to the president of the company. It is the desire of the management that each bureau be ultimately known far and wide by its distinctive bureau title and not as a so-called branch of that generally misunderstood and therefore mistrusted "claim department." Only occasionally is the "claim department" referred to in dealing with the public, the bureau concerned alone being mentioned.

Each bureau at its very beginning was placed under a chief reporting directly to the superintendent. Each chief is regarded as and in reality is an assistant superintendent and is of equal rank with the other chiefs. The superintendent each month appoints one chief as the senior chief to act in his absence. Yet the equality of all the bureau chiefs is shown here, too, for they all rotate in appointment as the senior chief.

## SELECTION OF STAFF

Of allied importance with the co-operatively functional organization of the department is, of course, the personnel selected to carry on the work. One of the most difficult problems for claim departments to solve effectively is the public feeling that claim agents and their employees are all "thugs," "roughnecks" and tricksters. The first act in selecting employees for the new organization in Pittsburgh was the employment of several college men of pleasing personality for the purpose of influencing the opinion of the public. All the new members of the department came in without previous experience in claim work, but they were rapidly developed along the proper lines and from the beginning helped to inspire in the public a better confidence in the gentlemanliness and integrity of claim employees. The present number of employees is fifty-five, of which eleven are college-trained men. Others were selected from among the platform men or because of some special fitness. Everything else being equal, college men are preferred, but they are always selected in competition with other applicants and not solely on account of their qualification of college training.

## PROVISION FOR COMPENSATION

The claim department of the Pittsburgh Railways recognizes the relation that exists between efficient results and the payment of a reasonable compensation for work actually done, both currently and in the future. Accordingly, it does not pay for a certain "job" or a certain "desk" but rather for individual ability and personality. To do this it uses a unit system of efficiency that enables it to make a systematic record of the work performed by each employee and to govern his salary thereby. Each employee makes out a daily report covering the work done, and this is checked by the chief of the bureau. The blank used for such reports, shown in Form 1, has ruled sections for the reporting of all cases returned for credit, the noting in full of all "defects" observed in construction or operation and the making of explanations, remarks and suggestions in connection with anything affecting claim or other departmental work. These individual reports are summarized by the auditor on the monthly comparative efficiency report illustrated by Form 2. At the top of this sheet, which is 19½ in. x 26¼ in., there are separate sections for the inspection bureau, the adjust-

**PITTSBURGH RAILWAYS COMPANY  
CLAIM DEPARTMENT**

Form No. 1 C. D. - 1911

Use Reverse Side of Sheet For: Listing All Cases Returned for Credit Reporting in Full all Defects Noted Explanations, Remarks and Suggestions on Work		STATEMENTS TAKEN			SETTLEMENTS MADE		
		A NO CLAIM Claim	B Inj.	C Prop.	D Wit.	E Amount Cash	F Amount Voucher
Case No.	Principal						
Time	Witness						
M. Taken at							
Case No.	Principal						
Time	Witness						
M. Made at							
Case No.	Principal						
Time	Witness						
M. Made at							
Approved	The correctness of the report is certified to by				Total units	No. cases on hand	
Chief of Bureau	Investigator or Adjuster				Date work performed		

**PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 1—  
BLANK USED BY INDIVIDUAL CLAIM EMPLOYEES  
FOR MAKING DAILY REPORT**

ment bureau and the litigation bureau, with separate lines for the individual employees. The illustration shows merely the bottom of the sheet, beginning with the summary for these bureaus, the column rulings and headings being the same as used above.

Different units are granted for different classes of work; for example, two for every release, two for every signed statement, one for every special inquiry and one extra unit for any work after 7 o'clock in the evening. By actual trial it has been found that to be 100 per cent efficient a man should have to his credit 300 units per month, or 3600 units per year. Any number of units less than these amounts would indicate that the employee was only proportionately efficient. Frequently the average of several men is higher than 300 units. Of course, when the number of units of work performed by any man falls below the standard, the management is most careful to ascertain the cause for such inefficiency. Sometimes, for instance, it might

be found that the work presented to an entire bureau for a certain period was slack.

If ten outside inspectors are paid on an average of \$90 per month, the work done by these men costs \$900 per month. When \$900 is divided by the total number of units of work credited to these men, the quotient in reality gives the cost of each unit of work, but the management reverses the point of view and considers this to be the amount of money earned by the employees for a unit of work. Each person's total units are multiplied by the average cost per unit, the result equalling what he has earned for the month. This may be more or less than his payroll rate. The salaries do not fluctuate monthly in accordance with these figures, but if a man can earn on this basis more than he is being paid and continues to do so for a period of four months or more, his salary is automatically increased on the basis of his record. If a man runs lower than the standard for four months, or even for a shorter time if the deficiency is great, the management takes steps to find out the reason. Inquiries are made from the chief of the bureau, or, if no explanation is forthcoming here, from the man himself, the management in all its interviews working with the intention of keeping its efficient employees permanently in the organization if possible.

In general, this unit system has resulted only in increased efficiency. For example, during the year following its installation the efficiency of the outside men was increased 20 per cent. Experience has shown, too, that the cost of supervision is less on the high-unit men. Maximum supervision is provided with a minimum number of outside men. The salaries have, of course, increased. During the five years when the unit plan has been in operation, the salaries in the claim department have increased \$1,500 per month for the fifty-five employees now there. At the present time, however, with more work, the department has six less men than a year ago, and the total payroll is less. No employee ever thinks of asking for an increase in salary, for he knows that he will get it if he can prove by the sustained character of his work that he merits it.

**PITTSBURGH RAILWAYS COMPANY—CLAIM DEPARTMENT**

Form No. 2 C. D. - 1911

COMPARATIVE EFFICIENCY REPORT SHOWING WORK OF ALL BUREAUS during Month of \_\_\_\_\_, 191\_\_

INVESTIGATION BUREAU	STATEMENTS			SETTLEMENTS			Extra Units	MEDICAL BUREAU	TOTALS	PERCENTAGE OF EFFICIENCY												DAYS ABSENT													
	PRINCIPAL Claim	NO CLAIM Present	Witness	Total Settle- ments	Cash	Voucher				Total Settle- ments	Cost G. Per Unit	Atty's Hours	Defects Reported	Cases on Hand	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average Efficiency Per Case Year	Average Expense Per Case Year	Sick	Leave	Location	Cases	Court	Travels	
Investigation Bureau Totals																																			
Adjustment Bureau Totals																																			
Litigated Claims Bureau Totals																																			
<b>GRAND TOTALS</b>																																			

OFFICE STATEMENTS							MEDICAL BUREAU		MISCELLANEOUS				Remarks:
STATEMENT INVESTIGATORS	Claim	No Claim	Witness	Total	Total Units	Per Cent. of Efficiency	Dr.	Consent Year To Date	Some Per Cent Last Year				
1							Dr.						
2							Dr.						
3							Dr.						
4							Dr.						
5							Dr.						
6							Dr.						
<b>Totals</b>							Dr.						

INQUIRY BLANKS							Special Physical Examination	AVERAGE COST PER UNIT FOR DEPARTMENT			
NAME	Number Made	Average Number Per Case	Per Cent. Required	Percentage Not Delivered	Total Units	Per Cent. of Efficiency		Average To Compare Month	Some Last Year	Average This Year To Date	Average Some Per Cent Last Year
1							Dr.				
2							Dr.				
3							Dr.				
<b>Totals</b>							Dr.				

SPECIAL ESTIMATES		VETERINARY EXAMINATIONS	
Automobile	Dr.		
Wagon	Dr.		
Property	Dr.		
<b>Total</b>		<b>Total</b>	

**PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 2—MONTHLY COMPARATIVE EFFICIENCY REPORT  
SUMMARIZING WORK OF INDIVIDUALS AND BUREAUS**



In the foregoing manner the management keeps the employees of the claim department in a satisfied frame of mind as regards their salaries. Occasionally, however, there is found a man who does not find himself suited to claim work. Although the management offers every inducement to permanent employment, yet if any competent employee really desires to change to another line of work, the superintendent is at all times ready to use his best influence to place the employee in another position. Just how tangible this aid is can be judged from this—out of forty-seven previous employees, twenty-two now have good positions secured chiefly through Mr. Rice's influence and efforts. Five men are chief adjusters for casualty companies, and the others hold such varied positions as parole officer and assistant parole officer of Allegheny County, parole officer of western Pennsylvania, chief clerk in the county tax collector's office, superintendent of schools in a New Mexico city, investigator for the Carnegie Hero Fund, practicing attorneys, doctors, secretary to a bank president, city editor of a Pittsburgh newspaper, etc. The attitude that Mr. Rice takes toward these men is exactly that which a university feels toward its graduates. At a meeting of the claim department in December, 1914, held as a testimonial to Mr. Rice, these outside men were present as the "alumni" of the department. They all are still loyal to the department and in every action testify to the spirit of good fellowship that exists between the management of the claim department and the employees, past or present.

#### PROVISION FOR CO-OPERATION AND DEVELOPMENT

The basis of the co-operative work of the department is a meeting between the superintendent and the members of his staff, held every Saturday at 2 p. m. Besides the bureau chiefs, there are present the auditor and the principal adjuster, whose duties are later explained. At each meeting the work of the last week and the immediate future is discussed, and each staff member is held responsible for knowing as much about the business as the superintendent. The rotating appointment as senior chief and the possible necessity of acting in Mr. Rice's absence makes this responsibility an important one. Those meetings are reported, and copies of the minutes furnished to each member. Later these minutes are bound and preserved in the department library.

To bring about closer co-operation among the employees of each bureau and between them and the management, a meeting of one of the bureaus is held once a month. At this the policies and the acts of the bureau are discussed and all questions put forth by the employees answered. When these meetings are about half over, Mr. Rice usually joins the group for a short talk to the men. The last Friday of each month is devoted to a general meeting of all the employees of all the bureaus, and this meeting is sometimes addressed by attorneys, doctors, executive officers of the company and other prominent persons. Once a year a meeting is set aside for the consideration of suggestions turned in by the department members. Another meeting, a sort of informal reception, is attended by relatives of employees. All meetings are fully reported in typewritten form.

The general meeting of December, 1914, was in charge of the members of the staff and the program was arranged by them. Each bureau chief read a paper in the nature of a review of the changes made in his branch of the work under the present superintendent. In addition, each member of the different bureaus ad-

ressed a letter to Mr. Rice, commenting upon the advancement made as an individual and as a unit of the department. These papers and letters were bound in limp leather and presented to the superintendent. At a meeting held in 1913 an embossed resolution signed by each member of the department was presented to Mr. Rice. This meeting was addressed by the then vice-president and general manager, S. L. Tone.

The work of developing the men is carried on not only through the talks given by the superintendent, the chiefs and the outside experts, but also by the papers which the men read at the meetings. Most papers are read at the general monthly meeting, but some are read in the bureau meetings on subjects relating to particular practices and policies of each bureau or even to more general topics, such as the experiences of delegates attending the American Electric Railway Association conventions, visits to other claim departments, etc. All papers are made out in duplicate, and copies are bound each year and added to the library. Besides the presented papers, the department also has in its library various inspirational books, works on practical psychology, efficiency, scientific management and claim work, as well as many periodicals and all paper books of attorneys. Furthermore, it reprints certified copies of Pennsylvania Supreme Court and Superior Court decisions for distribution to the men, in order that they may at all times be conversant with the final legal decisions in matters relating to claims and allied subjects.

#### PROVISION FOR PROMOTION, UNDERSTUDIES AND RECRUITS

New men entering the claim department are usually started in clerical bureau work, inasmuch as this requires the least experience and can be most readily learned. The next step is to the inspection bureau, then to the litigation bureau and finally to the adjustment bureau. The medical bureau members, of course, are doctors. In general, the chief of each bureau gives his personal attention to each man under him. If a high-priced man leaves the department, an effort is made to move the men up all along the line. If his work, however, can be transferred to the other members, the pay of the man who left, or a portion of it, is distributed among those who thus increase their efforts.

The plan of organization of the department provides for understudies in all its branches, or men trained to handle the work of their immediate superiors. They are tested during the vacation period. This not only protects the work of the department during absences but also marks out a definite program of advancement for the men if they keep up to and above the standard and if they are fitted for the advanced work. The time for progress from one bureau to another varies with conditions and with men. Some have made the rounds in less than a year, while others may never reach the highest position.

Besides the understudies the department has recruits, or men on the waiting list for employment. Applications for employment in the claim department come from widely-scattered sections of the United States, such as New York, Illinois, Washington, etc. These are all systematically listed for future reference as the way is opened up for new men.

#### SUPERINTENDENT'S OFFICE

The supervision of the entire claim department is in the hands of the superintendent. He receives a copy of every typewritten letter, memorandum and report received or sent out, and he signs all letters, although

they are dictated by the bureau chiefs. The superintendent has in his own offices a stenographer, who is the only one not under the supervision of the chief of the clerical bureau. Directly under the superintendent's control there is also the auditor, who handles all the accounting records for the claim department and in turn supervises the work of the cashier and the release clerk.

The cashier keeps a card index for all disbursements and all sums paid in the settlement of claims. Cards are kept under the name of the individuals when money is paid to them directly, or under the names of the individuals and their attorneys when payments are made to the latter. The release clerk keeps a record of all cases released and sends word of this final settlement to the proper persons for filing and for preventing any possible duplication or needless assignments. A release taken by an outside adjuster is approved by the chief of the adjustment bureau and checked by the release clerk, the cashier and the auditor before being finally approved by the superintendent.

The two most important records used by the cashier are shown in Form 3 and Form 4. Form 3 is the receipt that is filled out by an adjuster when he receives money needed for the settlement of current claims. He stands charged with the amount turned over to him and must account for it all in cash, properly executed releases, receipts or other proof of authorized expenditures. An adjuster is not allowed to have more than one receipt outstanding against him at any time. The bottom half of the form is retained by the adjuster and is filled in by him before he turns back his remaining money to the cashier. The back of the top half contains similarly-ruled divisions in order that the cashier may place on her record a list of the releases secured and the balance returned. A general requisition is issued by the claim department upon the auditor of disbursements of the company in order to be

JAN.

Form No. 23 B. C. D. 12M. 4 13

Name	Case No.		
Address	Carded By		
Occupation	Age	Photo	
Date of Accident	Location		
Time of Accident	M Nature		
Attending Physician	Attorney	Inv. or Adj.	
Photographs Taken By	Date	Negative Numbers	
Date of Settlement	Amount Paid	By Whom	
Date Suit Entered	By Attorney		
At No.	Term, 19		Court
Result:			
Remarks:			

PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 4—  
CARD USED IN GENERAL INDEX FILE OF  
CLERICAL BUREAU

reimbursed for amounts expended for the releases listed in the requisition.

One of the most novel creations of the present management is the "satisfaction book." This book contains a record of all cases which have been decided in court for less than the claimant had originally been offered by the company in settlement, or in which verdicts were returned in favor of the defendant. The cases are indexed according to the character of the accident, the street and geographical location of the claimant and the attorney involved. The adjusters have access to this book and each chief has a copy. It is very useful in showing claimants that certain attorneys "who have won every case" have lost particular cases perhaps like the one in question, in furnishing claimants with names of neighbors who can testify as to the foolishness of taking cases to court, and in offering concrete proof that the company has itself in so many cases in its first offer exceeded what the courts later held to constitute a fair settlement.

The superintendent maintains in his own office an index of all the attorneys in the three counties served by the company and also files the reports from the several bureaus and all statistical reports. Aside from the regular periodic statistical reports showing the work of the department, there might be mentioned as one example of special statistical investigation the time study that was conducted to ascertain the most agreeable hours of calling for various classes of men who come to the company offices to discuss claim subjects. It was found that the time generally preferred by claimants was from 10 a. m. to 4 p. m., while attorneys could most conveniently call from 8 a. m. to 10 a. m. and from 3:30 p. m. to 5 p. m., and employees were able to report at any time. This investigation made it possible to arrange the calling hours so as to cause the least conflict between the first two classes, the employees being used mostly to fill up any light periods.

The superintendent also keeps a file giving the complete records of all the men employed in the claim department. Moreover, he has a pocket list showing the names of the men, their telephone numbers, the time required for each man to reach the office after notification and also the time required to reach the nearest carhouse. Each member of the staff has a copy of this list.

Now and then, under the superintendent's direction, a check is made with comptometer cards to see how much time is being spent upon some particular operation in the bureaus, such as indexing different papers, dictation, transcribing and similar acts. This

PITTSBURGH RAILWAYS COMPANY  
CLAIM DEPARTMENT

Form No. C. D. 18-4244

No. **16349** Pittsburgh, Pa. \_\_\_\_\_

RECEIVED from the Superintendent Claim Department Pittsburgh Railways Company, the sum of \_\_\_\_\_ Dollars, to be returned on demand either in cash or properly executed and approved Releases, Receipts or other proof of authorized expenditures

Case \_\_\_\_\_

Authorized by \_\_\_\_\_ Adjuster

I HEREBY CERTIFY that all previous receipts authorized for above Adjuster have been cancelled

To be Retained by Cashier \_\_\_\_\_ Cashier

---

No. **16345** Pittsburgh, Pa. \_\_\_\_\_

The sum of \$ \_\_\_\_\_, receipted for on upper half of this form, is hereby accounted for as follows:

Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____

Received payment as above noted Total Credit \$ \_\_\_\_\_ Cash Returned \$ \_\_\_\_\_

Cashier \_\_\_\_\_ Adjuster \_\_\_\_\_

To be Retained by Adjuster \_\_\_\_\_

No. \_\_\_\_\_ Pittsburgh, Pa. \_\_\_\_\_

The sum of \$ \_\_\_\_\_, receipted for on other side of this form, is hereby accounted for as follows:

Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____
Date _____	Release of _____	\$ _____

Received payment as above noted Total Credit \$ \_\_\_\_\_ Cash Returned \$ \_\_\_\_\_

Cashier \_\_\_\_\_ Adjuster \_\_\_\_\_

To be Retained by Cashier \_\_\_\_\_

PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 3—  
ADJUSTER'S BLANK FOR RECEIPTING MONEY AND  
ACCOUNTING FOR DISBURSEMENTS

is done in order to keep efficiency up to the proper standard and to divide the time rightly between different operations. Each of the seventy forms in use is original, and, before a supply is reordered, is checked by the superintendent and the chiefs for improvements or changes. Furthermore, twice a year suggestions are solicited from every employee in the department as to changes in the methods of doing the work or the elimination of any feature. Suggestions, however, are welcome at any time. In these ways waste motion is avoided and errors are corrected. Accuracy and speed are the ends sought.

#### ADJUSTMENT BUREAU

The adjustment bureau of the Pittsburgh Railways contains the chief of the bureau, the principal adjuster and four outside adjusters. Under the original plan of organization the principal adjuster was not included, but as the work developed this office was created. All claimants calling at the department offices are received by the principal adjuster, who works in close harmony with the outside adjusters and the bureau chief. During 1914 he alone settled 2900 claims, an average of eight a day. The chief of the adjustment bureau has to do with cases that are settled on the outside and has charge of the four outside adjusters. The principal adjuster is really a master adjuster handling a particular class of cases, and he has no more authority than the chief of the adjustment bureau. Both of these men report directly to Mr. Rice, and neither would ordinarily pay more than \$300 in settling a case without consulting him.

At 8 a. m. the adjusters report at the office, where they have a separate desk and the services of a typewriter operator, who takes their dictation directly on the machine. Every act in connection with any case is a matter of record. During most of the day the adjusters are outside and report by telephone four times. The process of adjusting cases is largely a matter of judgment on their part. No adjuster, however, would think of paying more than \$100 without an authorization from the chief of the adjustment bureau. There are, in general, four steps in adjustment work, as follows: (1) The adjuster settles by using his own judgment; (2) the next morning, if the case is not settled, the adjuster turns it over to the chief of the adjustment bureau for decision; (3) if the chief does not desire to pass upon it, it is put up to the superintendent of the department, and (4) if the superintendent should be in doubt, the case is presented to the "board of claims review," composed of the president, the superintendent of the claims department, the general attorney and the general manager. The number of cases presented to this board is a matter to be determined by the superintendent of the claim department.

The chief of the adjustment bureau maintains a follow-up file of every current claim pending and is at all times in possession of all essential facts. During 1914 three-fifths of all settlements made were effected in the offices of the claim department, an increase of 50 per cent over 1912. This shows the growing tendency of the public to handle claims as "a matter of business" instead of "a matter of law," as well as the fact that the prejudice of the public against the department is being speedily overcome.

#### INSPECTION BUREAU

Besides the chief, the inspection bureau is composed of a statement inspector, who takes statements from all persons calling at the offices; a photographer; a night inspector, who is on duty from 6 p. m. to 6 a. m.;

an estimator, a veterinary surgeon, safety inspectors with offices at selected carhouses, secret service operatives and six inspectors. It is the function of these men to secure all particulars regarding accidents. The estimator inspects damages to physical property, the veterinary examines injured animals and the photographer takes assignments in duplicate from the chief of the bureau. The safety inspectors at the various carhouses interview trainmen, typewrite statements and inspect equipment involved in accidents. The claim department is open twenty-four hours a day, and after business hours the night inspector sends out inquiry blanks, clips newspapers, receives all telephone reports of accidents and notifies the chief or the superintendent in the event of a severe accident.

#### LITIGATION BUREAU

When a claimant enters suit against the company, the department receives a notice from the general attorney. After being reviewed by the superintendent, the case then goes to the litigation bureau. If all witnesses have not been seen, however, it is referred to the inspection bureau for such action and is then returned to the litigation bureau for preparation for trial. Under any conditions the case goes finally to the litigation bureau when it is placed upon the court calendar.

Under the chief of the litigation bureau are the principal court investigator, the principal locator, the court investigators, four locators and the court clerk. The locators are used to see that witnesses are in court when needed. They act as investigators when court is not in session. The court clerk each evening secures from the clerk of the court a list of the cases to be called the next day and a list of suits entered that day. He also obtains a summary of all damage suits entered in the county against anyone and a summary of all verdicts rendered against any defendant, which are made a matter of record in the claim department.

The litigation bureau keeps a card file for every suit entered and also an index of legal opinions. Transcripts of testimony, records of appeal, etc., are filed in this bureau. It also maintains a record of all witnesses for and against the company in the cases that arise. The witnesses in new cases are then checked up by any existing testimony in other cases, so that "ringers" cannot be used.

#### MEDICAL BUREAU

The medical bureau proper of the company consists of a chief, an examiner and a stenographer-nurse. The men spend most of their time in the offices of the department. For any special injury the chief arranges to call in the best expert in that particular line. The company maintains an examination room where claimants are examined and sometimes emergency treatment is given. The bureau has a separate medical library, charts, skeleton, operating chair, instruments and complete surgical and examining equipment. The chief co-operates with the trial attorney in arranging the medical defense in litigated cases and with the chief of the adjustment bureau in current claims.

In the medical bureau there is a card file of all doctors with whom the company has had or may have dealings. This list is indexed by doctors and by subjects. The verbatim reports of court testimony are secured where doctors who make a practice of testifying against the company are called. The list at present contains the names of about 3000 doctors, showing their hospital and other connections and a summarized record of all the cases in which they have been interested either in making examinations or in giving treatment. The company

receives medical magazines from all parts of the world and clips these for important articles.

#### CLERICAL BUREAU

Besides the chief of the bureau, there are several clerks performing various duties in this and other bureaus. All mail is opened and dispatched in the clerical bureau. Moreover, with the exception of the special files kept in the superintendent's office, the litigation bureau and the medical bureau, all other files are kept in the clerical bureau, so that the main duties of the clerks there have to do with the making and the filing of records.

The only two permanent files in the clerical bureau are the general index and the information file. The general card index is for every person involved in any kind of accident with the company or with any other company for which reports are available. Newspaper reports and reports from other companies and claim departments in regard to fraudulent claims are included. Form 4 shows the character of the index card used. The main divisions of the classification are according to the surnames and the subdivisions according to the first names of claimants. Under each division and subdivision the cards are separated according to a tab showing the month in which each accident occurred. The cards used for males are gray; for females, pink, and for property damages, yellow.

The other permanent file referred to above, the information file, is a record of any person, connected with any company, who is known, either favorably or otherwise, to any employee of the railway; a record of the residences of all attorneys, etc. This file is divided in the following manner: (a) an index according to streets—that is, cards for the blocks numbered from 100 to 200, from 200 to 300, etc.; (b) an index by companies; (c) an index by occupation, and local trade and other organizations, and (d) an index of all employees of the Pittsburgh Railway, the Duquesne Light Company, the Beaver Valley Traction Company and the Philadelphia Company. These are arranged geographically in order that an employee may be found who lives on the same street as any claimant. The first three indices are cross-referenced with the general index file to show any case with the company in which the individuals may have been involved.

#### RECORDING OF ACCIDENTS IN CLERICAL BUREAU

In the clerical bureau there is also an accident register in the form of a loose-leaf book, run by days of the week. This book takes sheets 17 in. x 26 $\frac{3}{8}$  in., ruled alike on both sides. From left to right columns are provided to show the consecutive numbers of the accidents, the time, the car and division numbers, the location, the nature of the occurrence, the principals and their addresses, the names and numbers of the motorman and the conductor, the classification number of the accident, and the original assignment to an adjuster or an investigator. A note is made at the bottom of the sheet in regard to the weather conditions existing on the day in question.

Accident reports are made out by car crews or the safety inspectors in triplicate and forwarded to the clerical bureau, where they receive classification numbers, are checked up with the general index and the information file and then go to the chief of the adjustment bureau. The latter reads them and assigns such as he thinks should go to adjusters. The others he sends to the chief of the inspection bureau, who assigns them as he sees fit. If any information along medical lines is needed, a memorandum is sent to the medical bureau.

Probably nine-tenths of the accidents reported by crews have previously been reported by telephone by inspectors, dispatchers, or local or division superintendents. If none of these officials is met and the line is not tied up by stopping, the accident is reported over the telephone by the motorman and the conductor themselves. For instance, if a woman at 9 o'clock in the morning had an accident and this was telephoned, five copies would be made, one for the superintendent and copies to the clerical, medical and inspection bureaus. The inspection bureau would in a short time be seeing witnesses and learning the essential facts, the medical bureau would ascertain by examination or inquiry the extent of the injury, an adjuster would be informed as to the name and address of the woman in order for him to secure her statement of the occurrence, and the clerical bureau would search the records and consolidate the information secured by the other bureaus with the crew's report. Final decision as to adjustment could then be made by the chief of the adjustment bureau.

#### CARD "KINKS" IN CLERICAL BUREAU

Besides the general index file and the information file previously described, the clerical bureau of the

Case No. ....		(Show Company initials, letter and "copy")	
Date.....	191.....	Exact Time.....	M.
Principal.....			
Charge.....	Credit.....		
Remarks:.....			
File Clerk.....	Reception Room Clerk.....	This charge made by.....	
<small>INSTRUCTIONS:—This form is to be made out at the time any case is moved from one person, or from one desk, to another. Person from whose possession case is moved will be held responsible. The exact time of the movement must be shown. Initials of Company are to follow all but P. Rys. Co. case numbers, as well as subdivision or other letter. If case consists of white or yellow copy only, or if copy of Court case, same must be indicated. Cases taken from file vault must bear initials of File Clerk and cases handled in Reception Room must show initials of persons handling.</small>			
<small>THIS CARD TO BE FORWARDED TO INDEX CLERK IMMEDIATELY</small>			

#### PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 5— CHERRY CARD USED TO KEEP TRACK OF CLAIM DEPARTMENT DOCUMENTS

Pittsburgh Railways has three original card "kinks" that have been developed by the management to aid in the general smoothness of the work. These are the "cherry" card, the "reminder" card and the "reception room" card.

The cherry card was devised by Mr. Rice in order to keep track of case files and documents. One of the most troublesome office problems in claim departments is to know at any time where the records of any case are located. By the use of the cherry card, shown in Form 5, this problem is easily solved. Every time a case is moved from one person or one desk to another, one of these cards must be filled out, the person from whose possession the case is moved being held responsible for the recording of the transfer. The card provides for case number, name of principal, date, exact time of movement, name to be charged with the case data and name to be credited, remarks and spaces for initials of charging person. A constant messenger service is kept up around the department to collect all the cherry cards. These are filed by case numbers in the central file, and the clerk in charge of this can at any minute of the day tell exactly where any document is located.

The reminder card is a unique scheme to call certain things to the attention of employees at the proper time without them being burdened with constant memory in the meantime. Any employee desiring to be

reminded of any engagement to call, appointment at the company's office, letters to be expected, papers to be returned, work to be completed by a certain time, cases to keep in touch with, etc., simply reports such facts to the proper stenographer or else himself fills out a reminder card, as illustrated in Form 6. This provides for three dates on which the employee will be reminded as requested. The cards are filed in the clerical bureau according to reminder dates, and each employee at the proper time has the stated matters brought to his attention.

The reception room card furnishes information for bringing callers into a more intimate relation with the claim department and putting them into a better frame of mind by telling them in a cordial and perfectly casual way that they are expected. Each employee who expects a visitor at the company's office fills out a reception room card (see Form 7), which goes to the clerk at the desk in the reception room. Each morning this clerk sorts out the cards for appointments on that day and carries the names in his mind. When one of the expected callers arrives, he is met with the statement: "Mr. \_\_\_\_\_ is expecting you. If you will just sit down for a moment, I'll take your name right in," and he is properly impressed thereby. The re-

sponsible for recording on the cherry cards all documents that leave the vault. The record clerk has charge of the accident register. Besides these and a messenger, there are five clerks and stenographers who are located in the various bureaus but are under the supervision of the chief of the clerical department.

NOVEL LIBRARY FEATURE

A novel and original feature has recently been added to the department. A hallway, 8½ ft. x 50 ft., has been partitioned off, the walls decorated and lighting fixtures installed. The room is fitted with "Crex" rugs, bookcases, easy chairs, magazine racks and telephone, and made generally but inexpensively attractive. It is used during the day as a reception room for callers, and the framed pictures advantageously placed add attractiveness and at the same time serve to impress certain facts upon claimants. As compared with the old idea of having the first room visited by a claimant represent poverty by its bare floor and wooden furniture, this feature of reversing the impression into one of comfort, attention, courtesy and resources for defense against unfair claimants, is a distinct departure. After business hours this library-reception room is used by the members of the department as a

Case No.....	1.....	191.....
Date on which to be Reminded	2.....	191.....
	3.....	191.....
	To CHIEF OF CLERICAL BUREAU:—Please have me reminded on above date of	
Do you want Case to be sent you with this reminder?		
This Date.....	191.....	Signed.....
<small>NOTE:—Please make use of this form as a means of being reminded of engagements to call or promises to advise, calls to be made by principal at Claim Department offices, of letters to which reply is expected, of papers to be returned, of work which it is desired to complete or review by a fixed time, cases with which it is desired to keep in close touch, etc. This reminder will be placed before you on the date which you name.</small>		
<b>REMINDER FILE MEMORANDUM</b>		

PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 6—  
REMINDER CARD FOR CALLING MATTERS TO ATTENTION OF EMPLOYEES AT DESIRED TIMES

ception room clerk also keeps a daily list of all callers, showing the names, time of arrival and admission, men visited, references to other officers, time consumed in calls, case numbers or names concerned, and total number for day.

DIVISION OF LABOR IN CLERICAL BUREAU

To show the careful division of labor in the clerical bureau among the different employees, it may be noted that there is a general index clerk to handle the general index and an information clerk to look out for the information file. The classification clerk classifies all accidents according to twenty-two general divisions and 125 subdivisions and gives each one the number that shows on the accident register and in the case records. The index clerk operates the cherry-card file and the reminder-card file. The trace clerk is used to hunt up the data on past cases, locate files and number and dispatch incoming letters and memoranda. The reception room clerk receives callers, records the time and keeps the reception room card file. The photographer's clerk classifies all photographs, assignments and photographic records. The copy clerks work in the litigation bureau, and, when a suit is entered, make two copies of all documents, one going to the general attorney, one to the men in the litigation bureau and the original back to the vault. This general vault is in charge of a separate file clerk, who is re-

<b>PITTSBURGH RAILWAYS COMPANY</b>			
<b>CLAIM DEPARTMENT</b>			
No.....	This Date.....	1913	
Mr.....	will call to see Mr.....		
(Day of Week)	(Date)	1913	(Time) M.
For.....	Principal.....		
Signed.....		No Record of Call to.....	
Called.....	(Date)	(Date)	(Date)

PITTSBURGH RAILWAYS CLAIM DEPARTMENT—FORM 7—  
RECEPTION ROOM CARD NOTIFYING RECEPTION ROOM CLERK OF EXPECTED CALLERS

place in which to work, read, study, lounge or meet their friends. Hereafter the various meetings of the department will be held here.

GENERAL FACILITIES

The department occupies fifteen rooms and vaults, all neatly and attractively equipped and maintained. All filing and other equipment is modern and sanitary. Washstands, individual towels, sanitary water coolers and drinking cups, shoe shining cabinets, telephone booths, scientific lighting fixtures and general neatness serve to impress employees and others that this is a modern business organization which gives and demands respect. Intercommunicating telephone equipment with a loud-speaking master station in the superintendent's office allows him to get in instantaneous touch with any bureau or all of them at once.

The library of the Bureau of Railway Economics, Washington, D. C., has recently prepared an exceptionally complete list of references in current periodicals to the jitney bus and to regulatory measures that have been introduced to curb the irresponsible factors in the movement. There are about 140 articles indexed in the list, of which nearly 40 per cent are from the ELECTRIC RAILWAY JOURNAL. The bibliography is dated July 15 and is in mimeograph form, a limited number of copies being available for distribution.

# Employees Receive Increase in Chicago

Reduction in Number of Years to Reach Maximum Wages Also Made by Decision — James M. Sheean, the Company's Representative, Files Dissenting Opinion

Mayor Thompson and State's Attorney Hoyne, representing the majority of the Chicago Board of Arbitration, handed down an award on July 16 granting a uniform increase of the maximum and minimum wage of 3 cents for the first year and 4 cents for the second year of the contract, and also a reduction of the graduated scale from a five-year to a four-year term. Employees outside of the train service also received substantial increases, and the award includes some concessions in the working conditions. Attorney James M. Sheean, representative of the surface lines, filed a dissenting opinion which shows that, despite the preponderance of evidence presented by the railway companies tending to show that the demands of the employees were excessive, the majority of the board of arbitration granted wage increases and improvements in working conditions. One compensating fact in the decision is that the city must share 55 per cent in the increased operating expenses and that the employees' demand that a graduated scale be abolished was not sustained but reduced from a five-year to a four-year term.

## FINDINGS ON SEVEN QUESTIONS SUBMITTED

The decisions of the board of arbitration regarding the seven questions submitted are as follows:

To Question 1—Percentage of straight runs and consecutive hours in which swing runs shall be completed. The arbiters decided that all runs on Sundays should be straight time and should not exceed nine hours.

To Question 2—Hours of service, including week days, Sundays and holidays, for employees other than trainmen provided for in the agreement. The arbiters decided that the existing system should be continued except as it might be modified by the other points decided in this arbitration.

To Question 3—Number of years to receive maximum wage scale and wages for all trainmen, including trainmen on cinder, sprinkler, supply and other cars. The arbiters decided that during the period fixed by this award the following scale of wages should govern:

FIRST YEAR OF CONTRACT				
	Old Scale, Cents	Offered by Company, Cents	Demanded by Men, Cents	Award, Cents
First year:				
First three months.....	23	25	33	26
Second three months.....	25	26	33	28
Second six months.....	26	27	33	29
Second year:				
First six months.....	27	28	36	31
Second six months.....	28	29	36	31
Third year.....	29	29½	36	32
Fourth year.....	30	30	36	33
Fifth year.....	31	31	36	35
Sixth year and thereafter..	32	32	36	..

SECOND YEAR OF CONTRACT				
	Old Scale, Cents	Offered by Company, Cents	Demanded by Men, Cents	Tentative Draft of Award, Cents
First year:				
First three months.....	23	25½	33	27
Second three months.....	25	26½	33	29
Second six months.....	26	27½	33	30
Second year:				
First six months.....	27	28½	36	32
Second six months.....	28	29½	36	32
Third year.....	29	30	36	33
Fourth year.....	30	30½	36	34
Fifth year.....	31	31	36	36
Sixth year and thereafter..	32	32	36	..

The scale of wages shown in the foregoing table also applies to motormen of sprinklers, cinder, supply, mail and other cars. Trolley boys or conductors on sprinkler, cinder, supply, mail and other cars will receive a wage of \$2.30 per day. All men working on snow plows and

on snow sweepers will have a wage rate of 36 cents per hour. The wages of other employees decided by the board of arbitration are as follows:

	Month
Car repair foremen (day).....	\$125
Car repair foremen (night).....	110
Receivers.....	105
Tunnel and bridge men.....	75
Flag and crossing men.....	65

Mechanics in west side shops not under union contract will get a 3 cent an hour increase.

Car repairers, motor repairers, inspectors, dopers and body repairers will receive \$2.40 in the first year of service, \$2.70 in the second year, and \$3 in the third year.

Car placers, \$2.40 in the first year of service, after that \$2.75 a day.

Cleaners, janitors, washers and other line men, \$2.10 a day in the first year of service and \$2.40 thereafter.

To Question 5—Allowance for turning-in time. The arbiters decided that all trainmen should be allowed to have seven minutes after finishing the day's run for turn-in time, which was an increase of two minutes.

To Question 6—Seniority and efficiency with men outside of train service. The arbitrators found that in all cases where men were laid off to reduce the force, this should be done according to seniority primarily, but consideration might be given to their capacity and fitness. When these men are again put to work they should be reinstated according to their seniority standing at the time they were laid off.

To Question 7—Night car hours and wages. The arbitrators found that the men operating night cars should receive \$3 per night for eight hours or less, and all-night car runs should be straight and not more than eight hours. The night-car wages and hours specified in this award become effective on Jan. 1, 1916.

## DISSENTING OPINION OF JAMES M. SHEEAN, THE COMPANY'S REPRESENTATIVE

"I dissent from the award made by the majority of the board.

"My position throughout this arbitration has been that the employees are entitled to a fair wage fully commensurate with the work performed, but I submit that these men are already paid not only a fair wage but a liberal wage when the wages in the same employment and the living conditions in other large cities are taken into consideration, or when comparison is made of annual earnings of these men with the earnings in any comparable line of work in Chicago.

"The evidence in this case shows beyond all question that the wage scale paid the trainmen in Chicago, taking into account the bonus time, including time for meals allowed, is higher than the wage scale in any other large city east of the Rocky Mountains. The scale in Chicago, taking into account the bonus time allowed the men, gives a higher average wage than that paid in any of the twenty cities the wage scales of which were submitted to the board of arbitration.

"Sixty per cent of the trainmen in the employ of the company are now receiving the maximum rate of 32 cents per hour, and their average earnings are in excess of \$1,000 per annum. Many of these men are now earning in excess of \$100 per month, or more than \$1,200 per annum. Compare these earnings with the

earnings of carpenters in Chicago, who are employed only about 160 days a year, and whose earnings are about \$800 per year.

"This situation is shown by the following extract from a letter dated April 23, 1915, written by John A. Metz, president of the carpenters' arbitration board, to the State board of arbitration:

"Now, a few years ago the average carpenter worked about 200 days per year, but now by reason of the evolution in the building industry, this average is cut down so that the average carpenter now earns little more than \$800 per year."

"The same basis of annual earnings applies also to the other building trades in Chicago.

"Or, take the compensation received by men employed by the city. The evidence shows that the average monthly wage of 4589 employees upon the payrolls of Chicago for the month of May, 1914, including such men as foremen in the street department, officers in the health department, laborers, motor drivers, etc., was \$55.18.

"The evidence in this case shows and, in fact, there is no dispute, that the cost of living in Chicago is materially lower than the cost of living in such cities as New York, Boston and Philadelphia, although the wages paid trainmen in Chicago are higher than the wages paid trainmen in any of those cities.

"The evidence is also uncontradicted that the cost of living since the last award three years ago has not increased as fast as the wages of the employees. The record shows that the wages of the trainmen have increased during the past three years 9.2 per cent, while the cost of living, according to the statement submitted by Mr. Mahon in 1912, and compared with a similar statement filed by him in this arbitration, has increased only 5.34 per cent.

"In 1909 the men voluntarily agreed with the companies upon a five-year scale. This was submitted to arbitration in 1912 and again fixed at the period of five years. Experienced operating men called on behalf of the company stated that the best results from every standpoint were obtained from a five-year scale and that the purpose of this scale was to compensate the men for their gradually increasing efficiency and give them a reward for remaining in the service.

"Evidence introduced shows that the average length of the scale in twenty of the principal cities of the United States is over five years. In fact, a graduated scale for teachers in force in our public schools ranges from five years to ten years. Notwithstanding this, however, the majority of the board reduced the scale from five years to four years.

"Prior to 1912 there was a limited night car service in effect on the north and west sides of the city. These men worked six hours and were paid a bonus or extra rate for this service. No such arrangement has ever existed on the south side. The effect of the night car bonus was to penalize and make still more costly an unprofitable service. The result was that on the south side lines, where no penalty was imposed, the night car service developed to a far greater extent than on the north and west sides.

"In the 1912 arbitration the night car bonus was abolished throughout the city, and Judge Carter in discussing this question, in his opinion, said:

"Extra pay or a bonus for night car service has been in force for years on the north and west side lines of this city, but it has not been on the south side lines in recent years, or to any substantial extent since electricity was introduced as a motive power. Whatever might be said in justification of this plan in the days when horse cars were in use, I can find no evi-

dence in this record that furnishes a valid reason why the men who operate the cars between twelve o'clock midnight and six in the morning under the present operating conditions, should receive more pay than the men who operate the cars at other hours of the twenty-four. Electricity so lights up the streets that it is practically as easy for the motorman to see the track ahead of him at night as in the daytime. Then, too, the evidence shows that the character of the traffic during the night in recent years has changed materially. I am of the opinion that greater skill and experience is required in the operation of cars during the rush hours of the morning and evening than for the operation of night cars.'

"The majority of the board, however, has restored the old plan of paying a bonus for the operation of night cars. The result of this will be to impose a heavy additional burden upon the company and in such a way as to retard rather than to develop this class of service.

"The majority of the board has also given a corresponding increase to the carhouse men and shop men. The evidence in the record shows that the pay already received by these men is materially in excess of the wages now being paid even by the steam roads for the same class of service. The majority of the board has also, by its ruling, still further increased the bonus or dead time allowance for which the men are at present paid, and which already amounts to more than \$1,000,000 per annum. All of these matters must be taken into account in determining the actual pay which the employees of the company will receive under this award, and the actual amount as shown is very materially in excess of the actual figures appearing in the scale.

"Common observation and experience show that the present is no time for drastic wage increases in any business. This is particularly true with reference to the company, which has been affected to a greater degree than most institutions by the general financial and industrial depression now existing in Chicago. Last year the receipts fell more than \$500,000 below the receipts of the preceding year, and during the first five months of the present year the company's receipts have dropped more than \$600,000 below the receipts for the same period last year.

"The company is carrying fewer passengers this year than last year, and its receipts per car-hour have decreased accordingly. On the other hand, as a result of the graduated scale under which the men are now working, their wages are automatically increased the longer they remain in the service, so that the company is now facing not only a heavy deficit in its gross receipts and decreasing receipts per car-hour, but a constantly increasing wage.

"In the face of this, however, the majority of the board has not only shortened the scale from five years to four years, which in itself operates to increase the wages of the men, but has further increased the maximum wage per hour during the first year of the new contract from 32 cents to 35 cents, and during the second year of the contract from 32 cents to 36 cents. The maximum demand of the men in 1912 was 35 cents an hour, and the maximum demand at this time was 36 cents an hour. In other words, the men have been given substantially all they asked for, yet no one will seriously contend that the men in making a demand for 36 cents an hour expected to receive that amount, or anything like that amount.

"It must not be forgotten that the situation with the company is very different from that of a manufacturing concern, or even that of a steam road. An increase in the wages among the employees of manufacturing con-

cerns means an added cost to the manufactured product. An increase in wages to the employees of our great stores means only that the purchaser will pay an increased price for the articles purchased, and even a steam road has some opportunity to increase its rates; but not so with the company.

"The fare received by the company for the service rendered by it is 5 cents and no more. The company's compensation is fixed. On the other hand, the cost of rendering the service, the increasing cost of wages, the increasing expense of maintenance and operation are constantly narrowing the margin left for the return upon capital.

"Recognizing, as I do, that the service rendered by the company is the joint product of labor and capital, and believing, as I do, that both labor and capital should have a fair return, it has seemed to me that this award so unfairly increases the proportion of the one at the expense of the other that its result must be to make Chicago an unattractive field for capital.

"Chicago needs capital and must compete with other cities in procuring capital for its development, and in the last analysis the determining factor will be the fairness or unfairness with which investments already made in this city are treated.

"One difficulty with which the arbitrators have had to contend was lack of time to enable the board to take up and properly analyze this record, which contains a vast amount of facts, figures and details. We have had but four conferences in this entire matter, and at only two of these conferences were the merits of any of the men's demands discussed, and then only those with reference to wages and length of the scale for trainmen. No discussion whatever was had with reference to the other six propositions submitted to the board of arbitration.

"The agreement under which this arbitration is had provides that the board shall meet and organize, set the time and place for hearings, and continue 'until all evidence and arguments have been heard and rulings rendered.' This means that whatever evidence was heard should be submitted before the board at a regular meeting, at which all parties were represented. Contrary to this, and to all established principles of arbitration, the Mayor, against my protest and the protest of Mr. Hoyne, the representative of the men, saw fit to call in some 200 employees whose wages were directly involved in the arbitration, and questioned some of them himself, and had others questioned by representatives of the corporation counsel's office with reference to the issues involved in this arbitration—all without the principals being present or represented.

"In the case of Moshier vs. Shear, 102 Ill., 173, our Supreme Court said:

"After being selected, it is the duty of an arbitrator, like a juror, to act fairly and impartially between the parties and on the evidence adduced before them on the trial, and entirely independent of all outside influences, and what will be misconduct on the part of a juror will, as a general rule, be such on the part of an arbitrator. Neither has a right to learn facts except as brought to his attention on the trial. It is gross misconduct for either to seek evidence or the opinions of others in regard to the case, or anything material to its decision in another mode."

"The company, in view of the great public interest involved and the possible effects of such course upon the best interests and welfare of this community, has decided not to avail itself of its legal rights in this particular.

"I have endeavored to state my views frankly. I cannot concur in this award. I cannot concur in the

method by which the award was reached; but, notwithstanding this, the company which I represent, wishes it distinctly understood that this award will be accepted and faithfully carried out. The company has stood, and will continue to stand, for the principle of arbitration, regardless of whether the outcome in any particular arbitration favors one side or the other."

(Signed) JAMES M. SHEEAN.

#### STATEMENT BY CHICAGO SURFACE LINES

As an aftermath to the arbitration award the Chicago Surface Lines ran an advertisement in each of the Chicago papers under the caption, "Car Men Win." In this the company accepts the victory of the employees "like a good sport" and takes advantage of this propitious occasion to take up the question of complaints, and asks the public to criticise and commend. The text of this advertisement is so unusual that it is printed in full as follows:

#### CAR MEN WIN

In the most sweeping award ever made by an arbitration board, our employees have just won an increase in wages which makes them by far the most highly-paid street railway men in the United States.

This award has imposed an enormous additional burden upon the company—approximately \$1,500,000 per year. We have accepted the award and shall carry out its provisions faithfully. This company always has stood for and will continue to stand for arbitration, regardless of whether the outcome in any particular instance favors one side or the other.

#### WHAT THE RESULT SHOULD BE

The men have been given substantially everything that they asked for—and far more than they expected.

This removes all possibility of complaint on the part of the men that they are not being fairly treated by the company, or that they are not getting a fair share and more than a fair share of the joint product of labor and capital.

There should be, and there will be, a better feeling on the part of the men toward both the public and the company. This ought to bring about, among other things, better service to the public.

#### WHERE THE PUBLIC COMES IN

Four-fifths of the complaints received by the company have to do with the treatment of the public by our employees—complaints involving the personal equation—such as discourtesy, running by passengers, starting too quickly, not waiting for passengers at transfer points, etc.

Every complaint of this nature should now be eliminated. We shall appeal to every man in the train service to co-operate with the management in every way possible to give a better service than ever before, and particularly to be mindful at all times to extend to our passengers every courtesy and consideration to which they are entitled. We believe that the great majority of our men will respond loyally to this appeal.

#### THE PUBLIC MUST HELP

We ask the public to keep us advised constantly of the kind of treatment they are receiving from our employees.

A part of the service for which the public pays is courtesy and consideration on the part of the trainmen. These are just as essential to good service as keeping the cars on regular schedule.

We therefore ask the public to help us improve the service along these lines—first by calling our attention to acts of courtesy or consideration for the welfare of passengers which they consider worthy of mention; and, second, by calling our attention to every act of discourtesy or lack of consideration.

*If the public will co-operate with us fully in this regard, we will undertake to see that credit is given where credit is due and that all complaints are investigated promptly and the proper remedies applied.*

#### EFFECT ON OTHER CHICAGO LINES

It has been decided that the award to the employees of the surface lines will not affect the negotiations between the Elevated Railways of Chicago and its employees. By a separate agreement this company consented to arbitrate all disputed questions with its employees and that Mayor Thompson should act as umpire. Negotiations to eliminate some of the minor problems are being conducted by President Britton I. Budd and the union officials. Mayor Thompson will not return from a trip to the Coast until early in August, hence it will be at least until that time before actual arbitration hearings can be conducted. In the meantime the company is collecting data, but as yet neither it nor the employees have announced the names of their representatives on the board of arbitration. Practically all the questions which were submitted to the surface lines' board will be taken up in the arbitration of the elevated railways' difficulties, but in addi-



tion to these many other classes of employees are involved, therefore the evidence to be presented will be more complicated.

By prior agreement the Chicago & West Towns Railway will accept the award granted the employees of the Chicago Surface Lines in so far as it affects the question of wages and the term of contract. In this agreement working conditions were considered as a local problem and will be disposed of this week in a conference between General Manager F. L. Butler and representatives of the employees. Approximately 230 employees will be affected.

The Evanston Railway Company, Evanston, Ill., also by prior agreement with the employees, is bound to accept the Chicago Surface Lines' arbitration award in so far as wages and term of contract are concerned. The working conditions in this case were also considered a local problem and will be negotiated as quickly as possible. Forty-five employees will be affected.

### Advertising Car in Boston

For the purpose of stimulating traffic during the summer months the Boston Elevated Company is conducting an interesting publicity campaign that includes some original ideas. The most unusual feature is a single-truck car on each side of which are carried three large oil paintings more than 6 ft. square that are both striking and artistic.

These paintings advertise points of interest in the vicinity of Boston reached by lines of the Elevated Railway Company and connecting companies. The pic-

among other attractions three performing elephants that were purchased by Boston's school children and given to the city. These have been used for the subject in the picture advertising that resort. Norumbega Park on the Charles River is represented by a young couple paddling a canoe, together with a circular insert showing a brightly costumed dancer in the spotlight on the stage of the open-air theater.

Two children playing in the sand on the beach at Marine Park, South Boston, is the principle subject of another painting, in which there is inserted a striking picture showing the brilliantly hued tropical fish that are exhibited at the aquarium included in this park. Another picture advertises Lexington Park and shows a young couple dancing in the pavilion and contains in one corner a picture of the head of a buffalo of the zoo. On each side of the car in the central square is a large map showing points of interest that may be conveniently reached by short trolley trips and indicating the route and connection by small lines in the usual style of map drawings.

The car is illuminated by a row of overhead lights at night and although put in operation for the first time Tuesday, July 13, has already attracted a great deal of attention and resulted in extensive newspaper notices.

Besides the advertising car the company is publishing a series of small 1-in. single-column display advertisements on the front page of the Boston daily papers. These advertisements are run every Sunday and every other day on week days in each of the papers. They call attention to places of interest in short, pithy sentences in simple, direct language.

#### Animals, Birds and Fishes

Interesting collection of birds and animals may be found at Franklin Park, Norumbega Park, Lexington Park and Middlesex Fells. A remarkable collection of brilliant hued fish may be found at the Marine Park Aquarium. These are all delightful places for spending a summer afternoon or evening.

#### CHILDREN'S OUTINGS

Take the children to see the animals and birds at Franklin Park, Norumbega Park and Lexington Park and the fishes at Marine Park. These parks are beautiful, cool and safe for children.

#### GO TO THE WOODS

There are many beautiful tracts of woodland within a few miles of Boston famous for their charm, including Middlesex Fells, Stony Brook Reservation, Norumbega Park, Blue Hills, Dorchester Park and Lexington Park.

TYPICAL CARDS CARRIED IN BOSTON DAILY PAPERS

tures are done in poster style by Fred C. Sanborn, a well-known decorative artist of Boston, and are of a higher order of artistic excellence than is ordinarily found in advertising paintings. Out-of-door life and attractions, that make a strong appeal to most people during the summer months, furnish the theme for each of the paintings, and the work has been done with a few strong, harmonious colors that produce a highly decorative effect and compel attention.

Franklin Park, a city-owned recreation park, contains

The company is also using large 5-ft. x 7-ft. printed posters mounted upon upward of 150 billboards owned by the company on different parts of the system. These posters enumerate various points of interest on the company's and connecting lines and announce the attractions to be found at each place. The posters are changed monthly.

The newspaper and billboard advertising campaign was begun about June 1 and will be continued during the months of extensive pleasure riding.



ADVERTISING CAR USED IN BOSTON TO STIMULATE SUMMER TRAFFIC

ANNUAL CONVENTION  
SAN FRANCISCO  
OCTOBER 4 to 8, 1915

# American Association News

ANNUAL CONVENTION  
SAN FRANCISCO  
OCTOBER 4 TO 8, 1915

Director of Transportation McConaughy Gives Further Details Regarding Convention Trains — Manila Company Section Meeting—T. & T. Association Committee Discusses Uniform Definitions

## CONVENTION TRAINS

In connection with the distribution of detailed information regarding the Red and Blue Specials (tour trains) and the White Special (one-way train) which will be given in circulars to be mailed on July 26, H. G. McConaughy, director of transportation, calls attention to the following points:

Each special is limited as to the number of passengers, consequently it is most important for those who intend joining any of the tours to make their reservations immediately upon receipt of the itineraries. The requests already received from railway officials assure the success of the convention. The fact that arrangements have been made in cities en route for meetings with officials of the local railway companies makes this an exceptional opportunity for Railway Association publicity and gives the manufacturer and his representatives an opportunity of making new friends and renewing old acquaintanceships.

The members of the Railway Association and those of the Manufacturers' Association should keep in mind that this is the first opportunity that these associations have had to visit, as associations, the member companies in the Far West.

The transportation committee hopes that the railway officials and manufacturers will divide the men whom they contemplate sending between the Red and the Blue special trains, and that the members of both associations will take their families with them. Special arrangements have been made for the comfort and convenience of ladies and children. For the convenience of the members hotel accommodations en route (but not including San Francisco) have been provided for and the cost included in the prices of the tours.

Members and guests living in cities and towns not shown in the itineraries can make transportation arrangements from and to their home towns on any of the tours.

Information regarding costs or routing can be obtained by addressing the director of transportation, Suite 1002, 165 Broadway, New York City.

## MANILA COMPANY SECTION

The regular meeting of the joint A. E. R. A. and N. E. L. A. company section No. 5 was held in Manila on June 1.

W. A. Seten of the electrical department presented a paper entitled "How to Increase the Sale of Electric Appliances, or Getting Business for the Electric Department," and W. D. Calfee, night carhouse foreman, presented one on "Personal Efficiency." After the discussion of the papers, C. N. Duffy, vice-president Manila Electric Railroad & Light Company, announced that the company will award substantial cash prizes for the best three papers read before the company section during the calendar year 1915, under conditions to be determined by the section. Company officials and managers of departments are not eligible to compete. The secretary, W. A. Smith, announced the program for the July meeting, consisting of papers on "How a Claim Agent Earns His Salary," "The Electric Motor vs. All Comers," and "The Necessity of Shouldering Your Own Responsibility." The names of several leaders in the discussion of each paper were also announced.

In his paper Mr. Calfee first quoted Harrington Emerson's definition of personal efficiency as "the mental and physical ability to find and take the best, easiest and quickest way to the desirable things of life." He then proceeded to apply this to the practical work of the railway man, stating that exact knowledge, guesswork and efficiency will not pull together. "Precision," said he, "is impossible without prevision." The railway man should get the best papers and magazines on his particular business and see what is being done elsewhere, whether his own practice is up to standard or not. The personal efficiency of an individual is affected by his environment, his aptitude and his mental attitude. When men realize that efficiency never has to go begging for advancement, and that the man who masters his trade goes to the top, we will see more efficient men. Personal efficiency is also personal independence. Mr. Calfee's paper illustrated the principle of efficiency and it brought out a lively discussion.

## T. & T. ASSOCIATION COMMITTEE ON UNIFORM DEFINITIONS

A meeting of the committee to develop uniform definitions of the American Electric Railway Transportation & Traffic Association was held in New York on July 13. Further consideration was given to the definitions in pursuance of the plans made at the meeting on June 25. H. C. Donecker, the chairman, and William C. Greenough were present. Additional work on the definitions will be done by the members of the committee by correspondence.

## Pamphlet Issued by Secretaries' Society

The Society of Technical Associations' Secretaries, to the formation of which reference was made in earlier issues of the ELECTRIC RAILWAY JOURNAL, has issued a pamphlet containing the proceedings of the meeting held in New York on Feb. 27, 1915. Membership in this society is open only to individual secretaries of technical associations, but for all practical purposes the result is the same as if the associations were members, with the advantage that official action is not necessary in connection with the deliberations of the society. Harry D. Vought, secretary New York Railroad Club, is president; F. L. Bishop, secretary Society for the Promotion of Engineering Education, is first vice-president; Charles W. Hunt, secretary American Society of Civil Engineers, is second vice-president, and Bradley Stoughton, secretary American Institute of Mining Engineers, 33 West Thirty-ninth Street, New York, is secretary. The names of E. B. Burritt, secretary American Electric Railway Association; F. L. Hutchinson, secretary American Institute of Electrical Engineers; C. W. Rice, secretary American Society Mechanical Engineers, and Edgar Marburg, secretary American Society for Testing Materials, appear in the list of twenty-three charter members.

The Leuk-Leukerbad electric railway in Switzerland was put in operation on July 3. It is 6½ miles in length and construction was begun in 1912. The road cost \$600,000 to build.

## COMMUNICATION

## The Jitney vs. the Trolley

SARANAC LAKE, N. Y., July 7, 1915.

To the Editors:

James E. Hewes' paper "Jitney Bus Competition," an abstract of which appeared in your July 3 issue, will without doubt be taken by the jitney interests as sure proof that the bus is a cheaper method of city transportation than the trolley car. However, cost of operation per car-mile is not the only factor to be considered. Earning capacity is one of as great if not greater importance. Otherwise the Ford jitney would surely drive out the trolley and would as surely be driven out in turn by the jitney motorcycle or side car.

Even assuming Mr. Hewes' figure of 21.8 cents per bus-mile and his sixty-seat trolley car that operates at 27.3 cents per car-mile, including taxes and fixed charges (the average figure for the United States as obtained from the last census report) it can be shown that the bus is the more expensive to operate. Let  $N$  represent the number of car-miles operated on the system per hour for eighteen hours daily and three hours for the rush period when all the seats of the car will be required. Then for three hours a day the bus will have to operate three times as many car-miles as the trolley, due to its small seating capacity of twenty-two. For the whole day the bus operating charges in cents will be  $21.8(60/22 \times 3N + 15N) = 505N$ . For the trolley the costs will be  $27.3 \times 18N = 492N$ , which gives the trolley a saving of  $13N$  cents a day. If during the rush period more car-miles an hour are run, as is usually the case, or if for more than three hours at least 37 per cent of the seating capacity of the trolley is used, then the saving will be still more marked, as I have used figures that give the bus every advantage.

As is so often the case, London has been cited as an illustration of the profitable operation of buses. Referring to the ELECTRIC RAILWAY JOURNAL for May 8, page 869, we find actual working figures as given by three British municipalities 32 cents, 25.4 cents and 28.8 cents per bus-mile. "Authentic figures lower than this are not available. The London bus company refuses to give its costs because of competition." These figures would not seem to indicate that bus operation in England was as profitable as supposed, although London, because of its narrow and congested streets, offers an exceptional field for the bus.

The estimate of 21.8 cents per bus-mile, as given in Mr. Hewes' paper, seems low in the light of English experience. Taking the figures given in the article on cost of bus operation in the ELECTRIC RAILWAY JOURNAL for Feb. 27, page 414, and changing them to conform with values given by Mr. Hewes for first cost of bus and for cost of gasoline, there is obtained an average of 24.9 cents per bus-mile for nineteen companies. Accordingly 21.8 cents per bus-mile seems very optimistic.

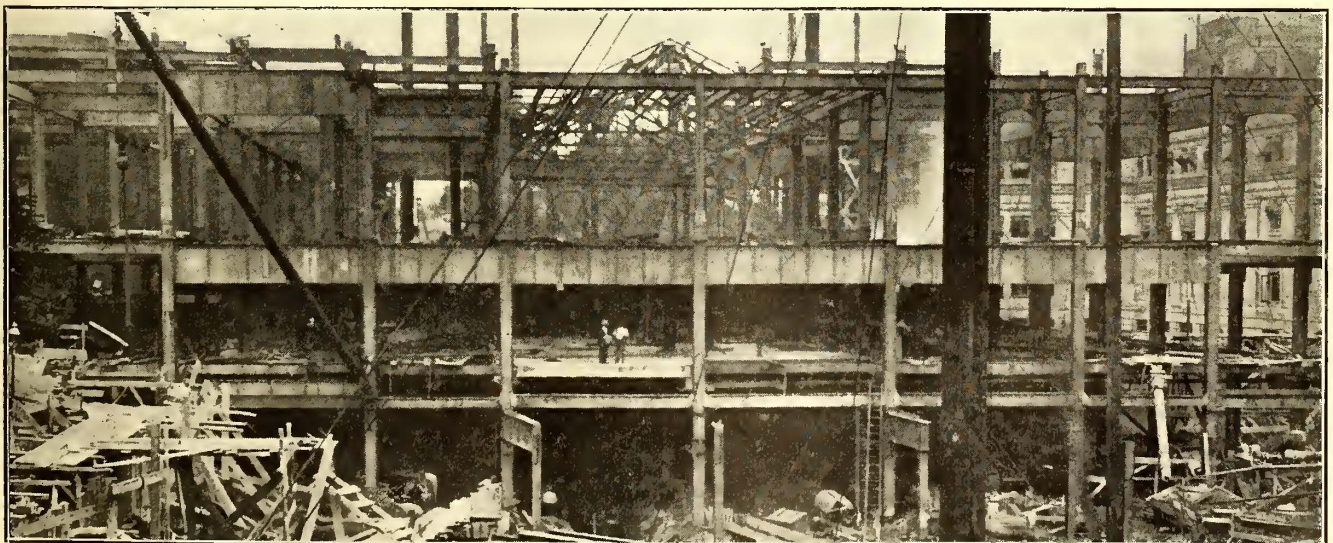
Likewise in taking \$35,200 as the cost of a trolley car ready to run a high figure has been used, except for interurban service. In the case of Massachusetts, where the percentage of interurbans is low, and where capitalization represents actual costs because of regulation, there appears a total cost of construction and real estate of \$194,677,690 for 7208 cars equipped with motors ready to run. This gives a cost of \$27,000 per car.

In the light of these facts the 5-cent motor-bus companies should have some difficulty in proving their case of more economical operation than the trolley. And since the several recent failures of motor-bus companies capital ought to require more than guess-work figures before investing. F. DEWEY EVERETT.

## Newark Terminal Cornerstone Laying

On July 20 the cornerstone of the \$5,000,000 terminal, which is under erection in Newark for the Public Service Corporation of New Jersey, was laid by President Thomas N. McCarter with appropriate ceremonies in the presence of a distinguished audience. The plan of this terminal was fully described in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 28, 1914, page 1190, and an illustrated progress report was given on page 793 of the issue for April 24, 1915. After depositing a dash of mortar with a silver trowel and rapping the great stone with a mason's mallet Mr. McCarter said: "I have truly laid the cornerstone of this building which, when completed, it is hoped will serve this community and others for years to come." Music for the occasion was furnished by a large band of trainmen of the Essex division of the Public Service Railway.

After the exercises at the building site the 200 or more guests were served with luncheon at a near-by restaurant and brief addresses were made by Mr. McCarter, Mayor Raymond, Senator Austen Colgate, ex-Senator James Smith and ex-Governor Franklin Murphy. At the luncheon were also other prominent public men and financiers, making a remarkable local civic gathering.



NEWARK TERMINAL—PARK PLACE TERMINAL, SHOWING GENERAL REAR VIEW OF BUILDING

# Equipment and Its Maintenance

Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

(Contributions from the Men in the Field Are Solicited and Will be Paid for at Special Rates.)

## Portable Car Testing Set

BY D. D. EWING, ASSISTANT PROFESSOR OF ELECTRICAL ENGINEERING, PURDUE UNIVERSITY

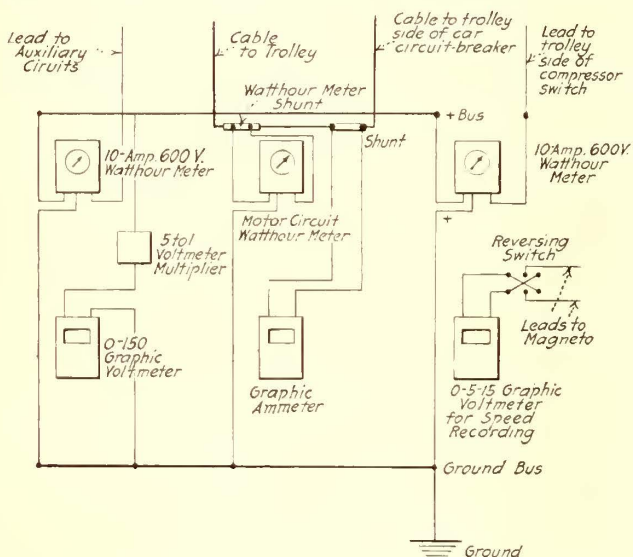
A convenient and compact car-testing set has been used at Purdue University in making a number of tests on electric cars within the last couple of years. This set, which was designed for compactness, portability and convenience of connection, consists of three graphic recording instruments and three watt-hour meters mounted on a suitable test stand. The wiring, a simplified diagram of which is given below, is placed on the back of the board upon which are mounted the watt-

By means of flexible couplings the chart-driving rolls of all three meters can be mechanically coupled together thus insuring synchronous chart movements. The ammeter is provided with several shunts, that shunt being selected for a given test which will give on the car starting current an indication over about three-fourths of the meter scale.

The magneto generator which forms part of the speed-recording apparatus is of the low voltage d.c. type. It is mounted on the truck and is chain-driven from a sprocket wheel mounted on an extension of one of the car axles. This method of magneto drive has proved successful for car speeds as high as 70 m.p.h. The speed-recording apparatus is also quite accurate. During tests the accuracy is occasionally checked by timing the distance between mile-posts with a stop watch. In all of the tests that have been made so far the two methods have given results that have agreed very closely.

Sangamo railway-type watt-hour meters with special reset dials are used. These dials have a high large-hand speed and the large hand may be reset at the end of each run without interfering with the small-hand dial records. The meter which is used to measure the energy input to the motor circuit is provided with several shunts, the shunt used in a given test depending on the capacity of the electrical equipment of the car under test. As shown in the wiring diagram, one of the 10-amp meters is used to measure the input to the air-compressor motor and the other the input to the remaining auxiliary circuits. Obviously the meter connected in the compressor circuit might be used to measure the energy input to any other auxiliary circuit.

Data taken with this set enable accurate conclusions to be drawn relative to the adequacy and efficiency of the electrical equipment of the cars and distribution system of an electric railway.



CAR-TESTING SET—DIAGRAM OF CONNECTIONS FOR METERS AND SWITCHES

hour meters. The graphic meters are mounted on a spring-suspended shelf. Felt pads are fastened to the bottoms of the stand legs to further minimize vibration. The stand is of such size that it may readily be placed in the baggage compartment of an interurban passenger car, thus permitting tests to be made on the car while it is operating in regular service. When used in testing city cars, a section of the car in which the stand is placed is blocked off to prevent passengers from getting in the way of the test crew and to keep them away from the live circuits.

Esterline graphic meters are used. One graphic voltmeter is used to measure the voltage between trolley and ground, and another, in connection with a magneto generator, is used to measure the speed of the car. As usually connected the graphic ammeter measures the motor-circuit current only, although the connections can easily be arranged so that it measures the total car current. By means of a system of change gears in the chart drive, ten chart speeds, ranging from  $\frac{3}{4}$  in. per hour to 12 in. per minute can be secured. While the timing with the higher speeds is not at all accurate these speeds are of particular value in studying "notching up" operations and starting-resistance adjustments.

## An Inexpensive Method of Treating Boiler Feed Water

BY T. R. CRUMLEY, SUPERINTENDENT OF MOTIVE POWER EVANSVILLE RAILWAYS

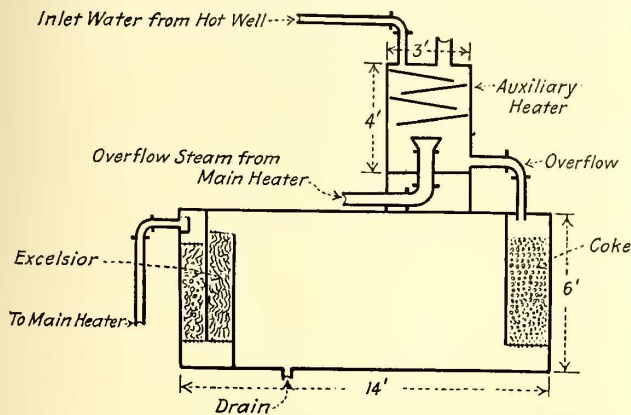
The Hatfield power house, which furnishes a part of the power used by the Evansville Railways, is equipped with a barometric type of condenser, an open type of feed-water heater and two 400-hp. Babcock & Wilcox water-tube boilers. The water for condensing purposes was originally secured from a small stream, but several months ago it became necessary to abandon this stream and to drive wells in order to secure an adequate supply of condensing water. Due to an increase in the station load, the feed-water heater became too small and it was possible to heat the boiler feed water to a temperature of only 170 deg. Fahr. A part of the exhaust steam entering the heater was not condensed.

Soon after the wells were placed in operation trouble was experienced from an excessive amount of scale deposited in the boilers. A chemical analysis of the water was made in order to determine the kinds and amounts of scale-forming impurities contained, and the amounts

and kinds of chemical reagents required to precipitate these impurities before the water entered the boilers. This analysis proved that the water was very hard, the principal impurities being the carbonates and sulphates of magnesium and lime. It was further determined that the necessary amounts of chemical reagents required to soften the water were as follows: 1.56 lb. hydrated lime per 1000 gal., and 0.2 lb. soda ash per 1000 gal.

As it was not considered advisable to install an expensive softening plant at this time, it was decided to build a tank in which to treat the water used for boiler purposes. This tank, shown in the accompanying diagram, was built of tongued-and-grooved cypress 2 in. thick. It is 14 ft. long, 6 ft. wide and 6 ft. deep. In order to utilize the surplus exhaust steam not condensed in the hot-water treater, it was also decided to build a small auxiliary heater, also shown in the diagram. This auxiliary heater serves the double purpose of increasing the temperature of the water at the time it receives chemical treatment, thereby making the treatment much more effective, and also raising the final temperature of the water entering the boilers.

The auxiliary heater was constructed of ¼-in. x 2-in. x 2-in. angle iron and No. 12 gage galvanized sheet iron. The surplus steam from the main heater enters at the bottom of the auxiliary heater and circulates through and around perforated, removable trays. The water from the hot well is pumped by means of a small tank pump into the top of the auxiliary heater, where it is distributed over and filters through the perforated



HOME-MADE PLANT FOR TREATING BOILER FEED WATER

trays, thereby coming in contact with the steam. The water leaves the auxiliary heater at a temperature of 170 deg. Fahr., and falls by gravity into the treating tank. It is first caused to filter through a chamber packed with coke from which it passes into the main section of the tank. This chamber has a capacity equivalent to a two-hour supply for the boilers, so that the water is circulating very slowly at this point and time is secured to allow complete precipitation to take place. The water passes from this settling chamber through two small chambers packed with excelsior which catches the precipitated particles still suspended in the water. The water then falls by gravity into the main heater, where it is heated to a temperature of 205 deg. Fahr.

The soda ash is fed into the water as it enters the small tank pump, which pumps it into the auxiliary heater, and the lime is fed at the point where the water leaves the auxiliary heater. Both chemicals are fed by means of small pumps connected to the valve stem rocker arms of the boiler-feed pumps, so that the amount of chemicals used is proportioned to the amount of water fed into the boilers.

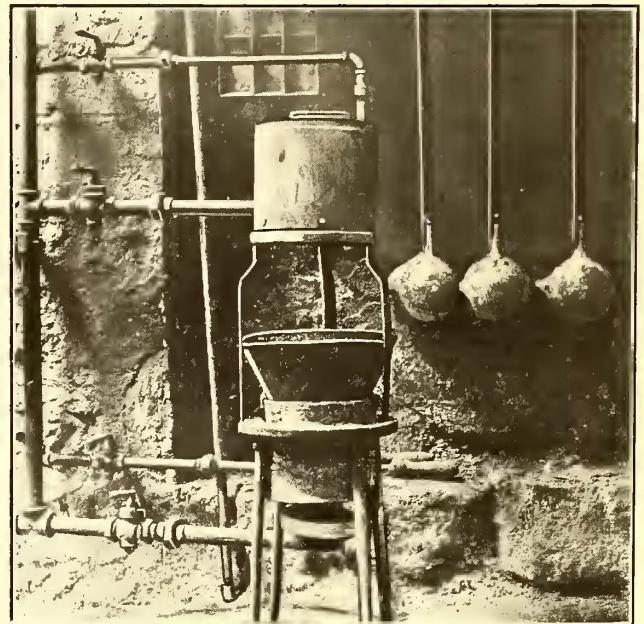
The work of building the treating tank, auxiliary

heater and chemical pumps was done by C. O. Maxwell, chief engineer, at a cost of approximately \$160. The temperature of the water entering the boilers has been raised from 170 deg. Fahr. to 205 deg. Fahr., which represents a saving of 3½ per cent in fuel. A much greater saving has been effected, due to the decreased maintenance of pumps, piping and boilers. This treatment has almost eliminated the scale formed in boilers and is costing us less than 1 cent per 1000 gal.

### Bearing-Babbitting Furnace

BY J. C. DONOVAN, MASTER MECHANIC UNION ELECTRIC COMPANY, DUBUQUE, IOWA

A gas bearing-babbitting furnace which has proved particularly valuable in reducing the costs of first quality bearings is being used in the shops of the Union Electric Company, of Dubuque, Ia. As shown in the accompanying illustration, the furnace consists of two parts. The upper surrounding shield contains a cylindrical burner over which old bearings are set to melt the babbitt. The melted babbitt falls into the lower



DUBUQUE RAILWAY—BEARING-BABBITTING FURNACE

pot, which is heated by a circular gas burner. The usual method of pouring the babbitt into the bearing mold is followed.

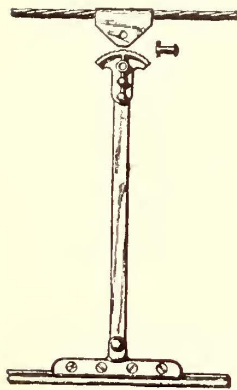
As is also shown in the illustration, air and gas are fed through mixers to each burner, insuring a quick, hot flame. The hot flame in direct contact with the babbitt metal in the old bearing consumes all combustible foreign matter and insures that only clean babbitt falls into the melting pot below. In addition to the foregoing advantage the hot flame insures a minimum loss in babbitt through oxidation.

The Union Railway, which operates street surface cars in the Bronx, New York City, has notified the Public Service Commission for the First District that it has completed the standardization of bumpers on its cars. The improvement was made at the request of the commission after a collision on the 149th Street line in September, 1914, when some persons were injured. The seriousness of the accident was due to a difference in the height of the bumpers on each car, permitting one car to crush the dashboard of the other.

## A New Type of Catenary Hanger

BY W. H. CREVISTON, ILLINOIS TRACTION SYSTEM

Recently the Illinois Traction System tested a new type of catenary trolley hanger invented by C. H. Robertson, one of the oldest motormen on this road. The claim is made that this hanger, which is shown in

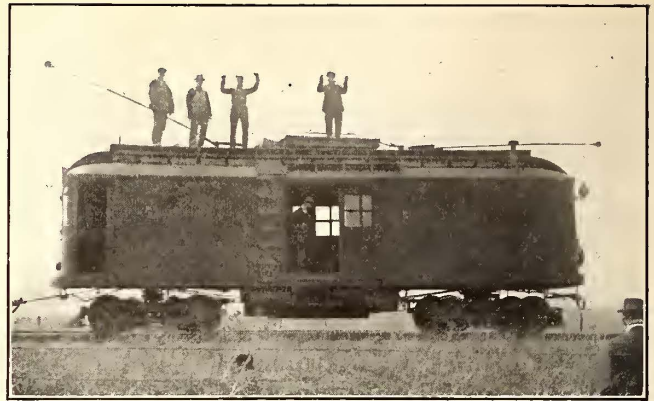


SAFETY TROLLEY  
HANGER

one of the accompanying illustrations, will catch or lock the broken ends of the trolley wire to the messenger. This prevents the rest of the hangers from sliding along the messenger, a condition which frequently results in wrenching the mast-arms from the poles or in tearing down the trolley-wire suspension. As shown in one of the illustrations, the top of the hanger is an arc with teeth which grip the messenger when the angle of the hanger is changed from the vertical. The trolley ear is pivoted to the hanger, thus when the wire breaks the hanger swings from the vertical position and brings the clamp into play.

Where an ear is not pivoted to the hanger it is held in a vertical position, and a strain on the trolley wire slips the hangers along the messenger.

The halftone illustrations show a test made on one of the lines of the railway. In this test the trolley wire was cut at an ascending grade in the track so that the pull on the wire would be greater than that exerted by the weight of the wire only. Approximately  $\frac{1}{2}$  mile of five-point catenary construction was equipped with the new type of hangers and the trolley wire was cut between the third and fourth hangers between mast-arms. As will be noted in one of the halftone illustrations, when the ends of the trolley wire were again raised approximately to their original position, they were only about 12 in. apart. In another of the illustrations the cut wire is shown swinging, while the trolley beyond the first two hangers each side of the cut is approximately at normal position. In other words, the first hanger on each side of the break took practically all of the strain, while the second hangers beyond were found



SAFETY TROLLEY HANGER—BROKEN TROLLEY WIRE HELD  
IN ORIGINAL POSITION

to be very little, if any, out of their normal position. Aside from the effect of the hangers retaining about their normal position on the messenger, the swinging position of the trolley wire is such as to eliminate a ground and also permits trains to operate under the break. Line repairs may also be easily made since there is no damage to the rest of the catenary construction, and the ends of the broken wire when restored to their normal position are only a short distance apart. These clinch hangers are manufactured by McConkie & Robertson of Peoria, Ill.

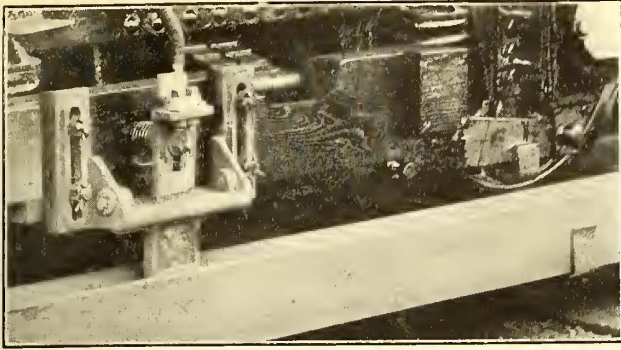
## Novel Contact Rail Installation in England

There will shortly be placed in commission on the division between Manchester and Bury, Lancashire & Yorkshire Railway, a novel form of 1200-volt third-rail contact system which is the invention of the general manager of the company, J. A. F. Aspinall of Liverpool. The distance between Manchester and Bury is  $9\frac{1}{2}$  miles. A reference to this installation, noted on page 62 of the issue of the ELECTRIC RAILWAY JOURNAL for July 10, was made by H. M. Hobart in connection with the discussion of contact systems at the recent Deer Park convention of the American Institute of Electrical Engineers.

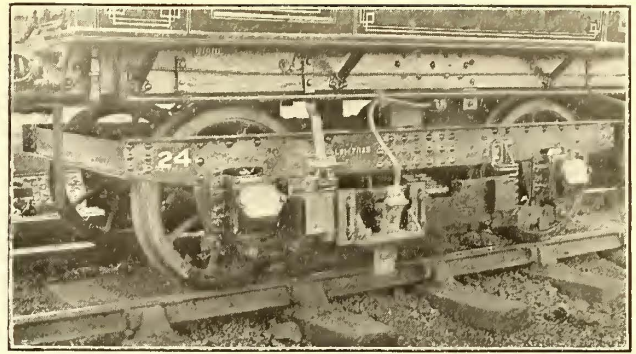
The essential features of the invention are clearly shown in the accompanying illustrations, the most novel



SAFETY TROLLEY HANGER—CUT TROLLEY WIRE HELD BY HANGER



NOVEL CONTACT RAIL SYSTEM—ASPINALL PROTECTED THIRD-RAIL, MANCHESTER & BURY RAILWAY



NOVEL CONTACT RAIL SYSTEM—FORM OF SHOE FOR ASPINALL PROTECTED THIRD-RAIL

ones having to do with the side bearing of the contact device upon the rail and the method of surrounding the rail with wood guards.

Referring to the cross-sectional view, which shows the preferred form of contact rail, it will be noted that a channel form of rail is used with a head sufficiently thick to provide a wide contact surface on the side. The form of rail was selected to provide a low center of gravity to prevent overturning even when the rail is not fastened down. While any form of rail can be used, this one is also well adapted to inclosing with protecting wood guards.

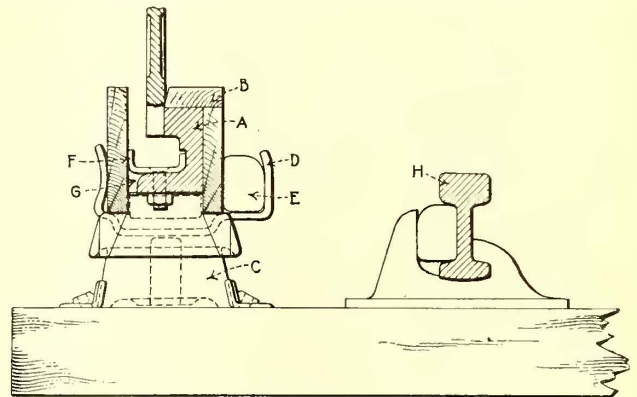
The contact rail is set upon insulators provided with lugs to prevent lateral movement. It is almost entirely inclosed with boards of Australian Karri timber which cannot be set on fire. The only openings around the rail are a slot at one side of the cover for the accommodation of the current collector, and drainage holes, as *G*, are provided to prevent accumulation of water in the groove formed between the guard and the collector rail. There is not a nail or bolt anywhere in the protecting guards.

The angle-shaped guard, *B* in the illustration, rests directly against the rail surface, but the invention covers insulation therefrom if such be found necessary. The guard on the slot side is spaced away from the rail by means of a wooden filler block, termed by Mr. Aspinall a packing or distance piece. Over the rail base is a bent metal distance piece, *F*, secured in place as shown. The guards are attached to the collector rails without bolts by means of detachable metal clamps, *D*, placed between insulators. In connection with these are used wooden keys, *E*, preferably similar to those used in fastening the running rails in their chairs. In the diagram one of the running rails is shown at *H*,

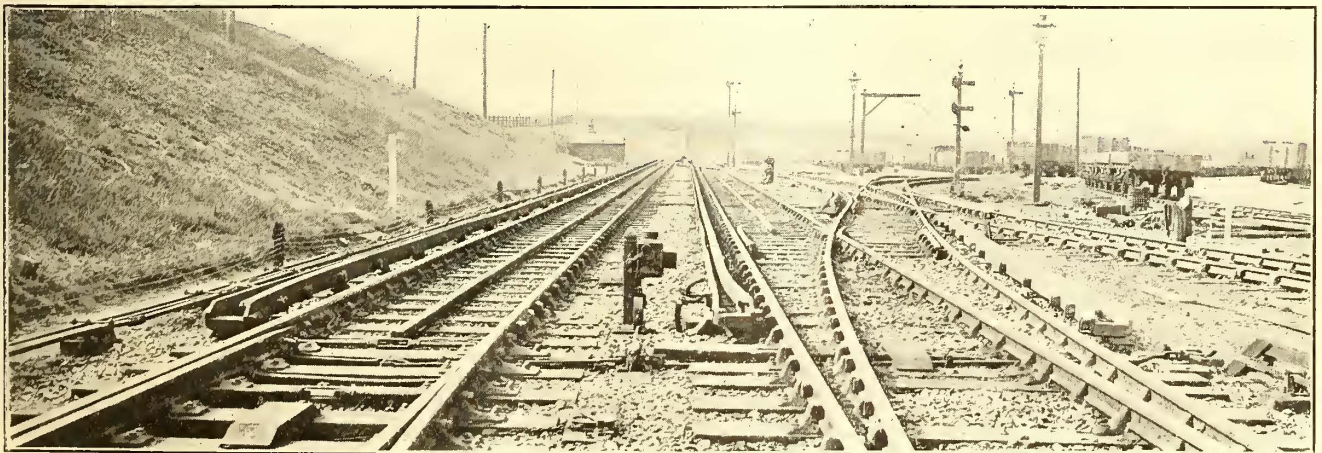
with the wedge holding it in its chair. The relation of the running and conductor rails, in regard to heights and spacing, are incidentally brought out in this figure.

The contact device, which with its mounting is shown in the accompanying halftones, is hinged and is pressed against the contact rail by means of a coiled spring. The method of mounting upon an insulating support is clearly shown. The halftones also show details of the protected rail with approaches, and an unprotected fourth-rail used for the return, as in standard British practice.

The advantages of this novel construction over the usual one appear to be that very complete protection can be furnished and provision can easily be made for considerable vertical variations in the relative positions of rail and collector. Under the climatic conditions found in England difficulties with sleet ac-



NOVEL CONTACT RAIL SYSTEM—CROSS-SECTIONS OF PROTECTED THIRD-RAIL, "A," AND RUNNING RAIL, "H"



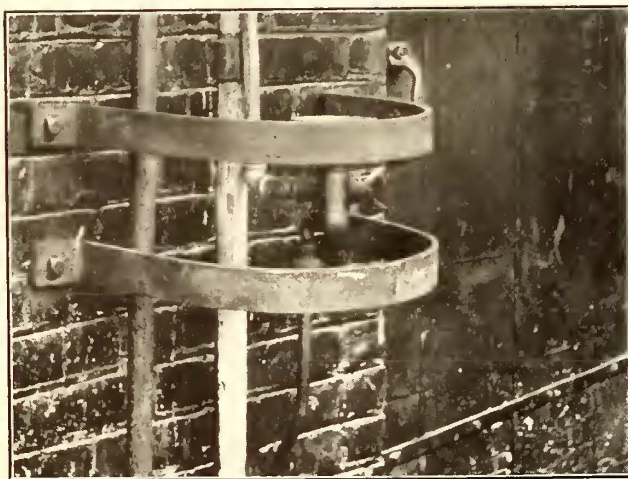
NOVEL CONTACT RAIL SYSTEM—ASPINALL PROTECTED THIRD-RAIL WITH ENTERING RAMP FOR SHOE AND THE RETURN FOURTH-RAIL CONSISTING OF A PLAIN RECTANGULAR BAR

cumulations are not anticipated. The simplicity of the construction is such that the ordinary trackman or "plate layer" can keep the contact rail in order, with the exception of the bonding.

The Lancashire & Yorkshire Railway was the earliest main line in England to be electrified. Third-rail, with 600 volts, was used on the original installation between Liverpool and Southport where a very heavy service was operated. The average distance between stops is 1.32 miles and the schedule speed 30 m.p.h. This section has been operated electrically for many years. Mr. Aspinall has long been interested in the employment of higher voltages and in 1913 put into operation an experimental 4-mile, 3500-volt, d.c. line with overhead conductor, between Bury and Holcombe Brook. The operation was satisfactory but problems connected with tunnels and bridges prevented the extension of the experimental line and the 1200-volt third-rail was selected for the present electrification. These facts are mentioned to indicate that the chosen construction was adopted after long experience with electrical operation under local conditions.

### Inexpensive Drinking-Fountain Guard

In the new shop of the Holyoke (Mass.) Street Railway a sanitary drinking fountain is located in the repair shop between doors leading into the stockroom and the forge department. To guard the "bubbler" from injury in the handling of material, two  $\frac{3}{8}$ -in. x 2-in. straps of wrought iron have been installed, as shown



DRINKING FOUNTAIN GUARD AT HOLYOKE (MASS.) STREET RAILWAY SHOPS

in the accompanying illustration. The straps are  $6\frac{1}{2}$  in. apart on centers, which gives ample room for manipulating the spring valve controlling the fountain. They are bolted through the shop wall and protect the piping as well as the fountain, besides safeguarding the clothing of the men passing through the busy aisle in which the fountain is located.

### Paste Filler for Commutator Slots

Commutator life on the lines of the Indianapolis & Cincinnati Traction Company has been materially increased by applying an insulating-paste filler in the commutator slots of the single-phase motors the company uses. Before a motor is returned to service and after it has undergone repairs the grooves between the commutator segments made by the slotting machine are filled with a mixture of dental plaster of paris and hard-

cooked starch in parts one-half each by weight. This is made into a paste by adding gum shellac and stirring to a uniform consistency, after which it is spread over the commutator bars, particular attention being given to fill the slots. Experience of the last four years has shown that this paste filler prevents carbon and copper dust from collecting in the slots. The paste is a fair insulator, hence eliminates the destruction of the edges of the commutator bars caused by arcing, a condition which occurs after a motor has long been in service and copper dust has collected in the slots.

### Improvements in Des Moines Interurban Cars

Recent improvement in the cars of the Inter-Urban Railway Company of Des Moines, Iowa, have done much to eliminate difficulties experienced in the past. Perhaps the most important of these, made principally for the comfort of patrons, is the provision of a separate baggage compartment. In the past the baggage and express was loaded in the smoking compartment. When baggage shipments were heavy this entailed discomfort to the passengers, and at the same time the baggage and express matter was under the control of no one. This was also true of mail bags which were transported in this compartment. When the full capacity of the baggage compartment was not required, folding seats which were placed along the sides of the car were lowered for the use of passengers. When baggage and express



VIEW OF DES MOINES INTERURBAN CAR, SHOWING AIR-OPERATED LOCOMOTIVE BELL

haulage was heavy these seats were not available and passengers were required to stand or to use the baggage for seats.

The Inter-Urban Railway passenger cars are 54 ft. 5 in. in length. A space 23 ft. 9 in. long serves as the main passenger compartment, and on the original cars the baggage and smoking compartment was 13 ft. 10 in. long. In the remodeled car the main compartment has been maintained at approximately the same length, while 8 ft.  $\frac{1}{2}$  in. has been allotted to the baggage and 8 ft. 2 in. to the smoking compartment. The extra length was obtained by eliminating the motorman's compartment, the front end of the car serving as a cab as well as a baggage compartment. By this arrangement baggage, express matter and mail is put under the control of the motorman.

The electrical equipment of these cars includes GE-73-C motors with a 2.12 to 1 gear ratio obtained by



using a twenty-four-tooth pinion and a fifty-one-tooth gear. These motors are rated at 55 m.p.h. at 600 volts and they are controlled through GE Type M control. To make the removal of dust which collected on the reversers and contactors of this equipment an easy task, they were varnished with a mixture of orange shellac and oxalic acid. This provided a smooth, hard surface which was much more easily cleaned than the bare metal.

During the Iowa winters considerable trouble has been experienced with snow collecting in the contactor boxes. This was obviated by providing an asbestos-board bottom in the boxes with an opening across the end away from the motorman's position. This arrangement permitted the snow which collected in the contact boxes to be drawn from them by the air suction created when the car was in motion.

A setting and tripping switch in the motormen's cabs has been substituted for the relay. This has been found to be a more dependable device and furnishes better protection to the motors. Solid fingers on the reversers have been replaced by split fingers and more satisfactory results have been obtained. Also, a piece of fiber inserted between the forward and reverse segments has been found advantageous because it permits the fingers to slide more easily when the reverser is being used.

The laws of Iowa provide that a bell must be sounded continuously whenever a train passes a highway crossing. To conform to this meant to place a burden on the motorman, which this company believed diverted his attention from his other duties. In order to relieve him, all cars have been provided with air-operated standard locomotive bells. As shown in the accompanying illustration, these bells are mounted above the motorman's cab, and they weigh, complete with air ringer, approximately 29 lb. A rather interesting feature in connection with the bells is the use of windshields in front of them. This was found necessary to reduce the air pressure required to ring the bell, and it has also been found that the shield tends to diffuse the sound to better advantage.

## Rear Wheel Fenders for New York Buses

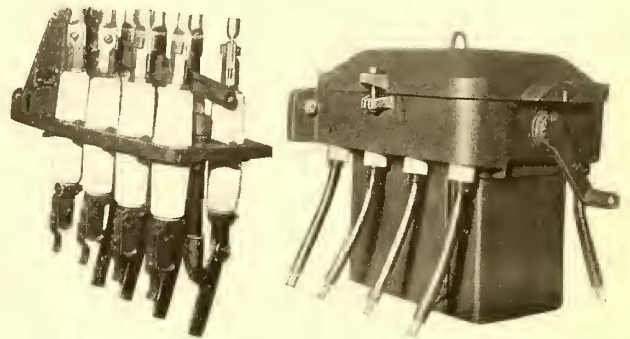
Long wooden safety fenders have been hung beneath the bodies of all motor buses operated by the Fifth Avenue Coach Company, New York City. These are located on either side of the buses, between the front and rear wheels, and curve outward toward the rear, so that rear wheels of each vehicle are thoroughly protected. Oddly enough, the majority of accidents to pedestrians in the streets of both New York and London on account of the motor bus have been rear-wheel accidents. People have a way of waiting for the front wheels of the bus to pass them and then heedlessly walking into the path of the rear wheels. In New York all classes of bus accidents are surprisingly few, the record last year being on the basis of one pedestrian injured to more than 1,500,000 miles of service. This excellent showing is largely due to the fact that the company is exceedingly careful in the selection and training of its chauffeurs, so that avoidable accidents to pedestrians have been almost wholly eliminated. With the installation of the fenders it is believed that mishaps to persons in the streets will be practically a thing of the past. These fenders, it may be said, were provided on the company's own initiative, its safety record having been such that its equipment has never been unfavorably criticised by the public authorities. The new fender is of the same type as that recently adopted by the London bus company with successful results.

## Oil Knife Switches

An extensive line of oil switches for voltages up to 7500 has recently been brought out by the Westinghouse Electric & Manufacturing Company. These are non-automatic and are suited for a wide range of application, being made for indoor service in switchboard-mounting, direct wall-mounting, and remote-control styles, and for outdoor service on poles or in subway.

The direct wall-mounting style is particularly adaptable to motor installations on account of the facility with which it may be mounted on any support convenient to the motor operator. The lever and handle extend outward over the oil tank so that the switch may readily be mounted against a wall, post or other vertical support. The remote-control wall or pipe-mounting style allows the switch to be mounted at a convenient point away from the switchboard and operated from the switchboard or other point.

The outdoor oil switch is particularly adapted for controlling lines entering buildings, branch feeders from the main lines, sectionalizing feeders, or any of the numerous purposes for which an outdoor type of switch



INDOOR TYPE OF OIL KNIFE SWITCH WITH TANK REMOVED, AND OUTDOOR SWITCH FOR POLE MOUNTING

may be utilized on distribution systems. The subway-type oil switch is for mounting in places where a switch may be required to be operated submerged. It is made with two, three or four poles, and either single or double throw, and is designed for voltages up to 4500 and capacities up to 200 amp.

Characteristic features of this type of switch are: Knife-blade contacts submerged in oil; live parts carried on insulating supports, affording a high quality of permanent insulation between adjacent poles and between the frame and live parts; small space required for mounting; accessibility of parts for purpose of inspection and repair; inclosure of all live metal parts, and low first cost. Knife-blade contacts are used because they insure the best contact for low temperature rise in a non-automatic switch. Each contact jaw has attached to it an arcing piece which takes the final break, thus preventing any burning of jaws. These arcing pieces are inexpensive and readily replaced when worn or burnt away.

With the exception of the 1500-volt switches, the contacts are mounted on all-porcelain insulation. In switches for 7500 volts and above the insulation is of the pillar porcelain type, similar to that of the best accepted standard form of circuit-breaker construction. In the 4500-volt type up to 200 amp. the contacts are mounted on a sturdy horizontal porcelain base, with molded porcelain barriers between all live parts. In general this form of construction gives these switches the same characteristics ordinarily looked for only in the highest grades of oil circuit-breaker construction, but these are obtained at a more moderate price than could apply to the non-automatic form of oil circuit-breaker.

## Prepayment Car Apparatus

Since the United States Circuit Court of Appeals for the Second Circuit rendered an adverse decision on certain patents of the Prepayment Car Sales Company and the Supreme Court of the United States declined to review this decision, there has been considerable interest about the future plans of the company. An announcement on this point has now been made by Thomas W. Casey, president of the Prepayment Car Sales Company. According to Mr. Casey, while this decision was unfavorable, it was on two patents only and in one district only. The company believes these patents still valid, and it is expecting to have them adjudicated in other districts.

The Prepayment Car Sales Company will make certain changes in its organization, and in future will devote itself to the patent features of its business only, and after Sept. 1 the manufacture and sale of door and step operating mechanism will be carried on by the National Pneumatic Company.

The company's business began, of course, with the development of the "pay-as-you-enter" car in Montreal some ten years ago. The idea was introduced in the United States shortly after. At first it met with considerable opposition but soon proved very popular. Later, other patents were secured, notably those of the Pay-Within Car Company and rights for prepayment cars under the door and step mechanism patents of the National Pneumatic Company. During late years, therefore, the company's business has consisted in the issue of licenses to use its basic patents covering the location arranged for the conductor in relation to the entry and exit of passengers and also in the sale of mechanism for controlling the operation of the doors and steps, etc.

According to Mr. Casey, the only patents so far litigated have been those covering the location arranged for the conductor in relation to the entry and exit of passengers. The many advantages of the prepayment car have been evidenced by its almost universal adoption in one form or another, and while many companies feel that the electric railway industry owes a heavy debt to those who originated and introduced the idea, whether the basic patents will stand all the tests of legal validity or not, in justice to all, it will be the policy of the company not to accept royalties under these patents on any cars hereinafter put in service until the basic patents have been finally declared valid. In the meantime the mechanism, which has heretofore been manufactured for the Prepayment Car Sales Company by the National Pneumatic Company will be sold direct by the National Pneumatic Company for prepayment cars of all types, just as that company has sold mechanism in the past for elevated, subway and interurban cars. While the company has no right to guarantee against the basic prepayment patents which are still owned by the Prepayment Car Sales Company, its customers will be on the same basis, so far as this fact is concerned, as customers of competitors.

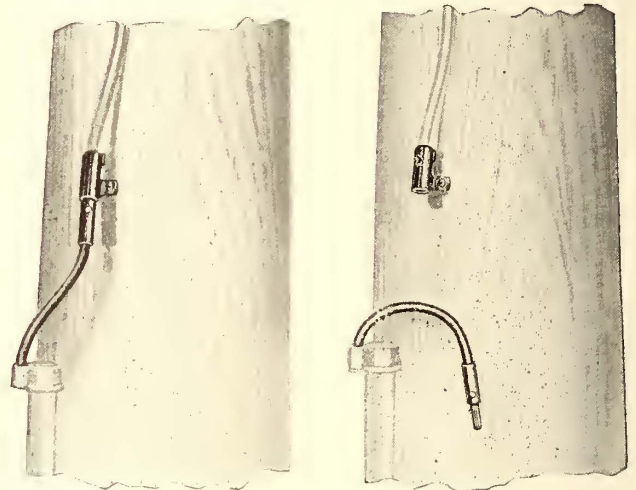
The National Pneumatic Company is well known as manufacturer of pneumatic door devices used so largely on subway, elevated and interurban railways, as well as manual door and step operating mechanism for electric railway cars, and it is said that the company is in a position to continue this work on a very large scale. The development of the prepayment car opened a new field for door mechanisms, and these will now be available on the conditions already described.

To carry out the new plan, which will be put in effect on Sept. 1, Mr. Casey will be elected a director and also vice-president and manager of sales of the National Pneumatic Company. Harold Rowntree will

continue as president of the company and P. R. Forman as general manager and engineer.

## Ground-Wire Disconnecter

A new ground-wire disconnecter is being manufactured by the Electric Service Supplies Company, Philadelphia, Pa., which eliminates the element of danger to linemen involved by grounded connections on a pole line. It is well known that lightning disturbances, owing to their relatively high frequency, will not travel far along a line in order to reach a lightning arrester and so be dissipated to earth. It is, therefore, self-evident that in order to afford maximum protection to apparatus lightning arresters should be installed as close to the apparatus as possible. This has been advocated for years. With transformers it is usually done by installing arresters to protect every transformer, or to protect every transformer whose capacity is above a certain minimum, arresters being installed on the transformer



GROUND-WIRE DISCONNECTER IN CONNECTED AND DISCONNECTED POSITIONS

pole and grounded at this pole. In such cases the ground wire presents an element of danger for a lineman, who must, for example, climb the pole on a wet night to replace a blown transformer fuse, because he may accidentally cross himself with the lightning-arrester ground wire and with a live wire or live piece of apparatus.

To avoid this danger the Garton-Daniels ground-wire disconnecter has been designed. It consists of a brass casting that is screwed to the side of the pole. At the top a lug is provided into which a No. 4 or No. 6 solid wire running from the lightning arrester may be soldered. At the bottom another lug is provided into which a split brass plug slides. This plug is furnished with 12 in. of No. 6 flexible copper cable, the free end being soldered into a standard brass cap screwed to the end of the lightning-arrester ground pipe. With this method the ground pipe, as shown, is usually extended 8 ft. or 10 ft. up the pole to prevent the plug being withdrawn by any unauthorized person. A lineman who desires to work on the pole top for any reason simply pulls out the plug as he ascends, thereby disconnecting the upper wire and lightning arresters from ground, and so rendering work on the pole comparatively safe.

These ground-wire disconnecters are very useful where lightning arresters are tested by connecting them between opposite phase wires. The pulling of the plug disconnects the ground terminals of the arrester from earth, making unnecessary the removal of the ground wire from the ground binding post to prevent momentarily grounding one phase of the system while making the test.

# News of Electric Railways

## WILKES-BARRE ARBITRATORS REPORT FINDING

### Employees Receive Increase of 9½ Per Cent—Sliding Scale Based on Profit Sharing Adopted for Two Years

The Wilkes-Barre board of arbitrators, Samuel D. Warriener for the Wilkes-Barre (Pa.) Railway, Thomas D. Shea for the Street Car Men's Union, and Dr. John Price Jackson of the State Department of Labor, as umpire, made public its findings on July 10. The previous history of this case was published in the *ELECTRIC RAILWAY JOURNAL* of April 10. Under the award the men have secured an increase in wages of about 9.5 per cent and a sliding scale based on a profit-sharing plan during the fiscal years of 1916 and 1917. If, instead of resorting to a strike last April to enforce impossible demands, the men had accepted the compromise offer of 26 cents per hour, they could have avoided the loss of nine days' work, besides the loss of revenue to the company and the inconvenience experienced by the general public. The award seems clearly to establish the fact that the claims of the company were fully sustained by the majority of the arbitration board.

The wages to be paid for a period of the three years beginning with Jan. 1, 1915, to motormen and conductors, in lieu of the present flat rate of 24 cents per hour, are to be: First-year men, 24 cents per hour; second-year men, 25 cents per hour; third-year men, 26 cents per hour; fourth-year men, 26½ cents per hour, and fifth-year men, 26¾ cents per hour. Moreover, the motormen and conductors are to participate in the increased passenger revenue received by the Wilkes-Barre Railway per car-hour in 1916 and 1917 in the following manner: The passenger revenue per car-hour for the fiscal year ended Dec. 31, 1914, which was \$2.78, is to be the basis. For each 2½ cents of passenger revenue per car-hour in excess of this basis received by the company during the current fiscal year, each motorman and conductor shall receive an additional compensation of one-fourth of 1 cent per hour for his services during the next fiscal year.

The arbitrators state that the wages paid to trolley employees in the region adjacent to Wilkes-Barre show many conflicting discrepancies. An effort was made to adjust the wages of the Wilkes-Barre Railway employees in such a manner as to take into consideration the averages of the wages paid to employees of other companies of the same class and operating under the same conditions, and to award a reasonable increase over and above these averages. The testimony regarding the increase in living conditions was of so conflicting a nature as to be of little value, but it is felt the proportional increase awarded fairly not only represents comparative conditions of labor, but also gives weight to the increased cost of living reasonably to be expected during the period of the present contract.

## RAILROADS FILE MAIL PAY CLAIMS

### New England Roads Seek to Recover from Government Large Losses Caused by Acts of Postal Department

Alleging that they have lost large sums through carrying the mails under the present system of weights and that their compensation at the present rate fixed per mile is unreasonable, unjust and confiscatory and hence unconstitutional and void, seven New England roads filed printed petitions on July 17 in the Court of Claims in Washington in an effort to obtain from the government the sums of money which they contend they have lost in the last six years by reason of the postmaster-general's alleged arbitrary mandates and the operation of the present system.

The roads filing these petitions and the amounts claimed from the government are as follows: New York, New Haven & Hartford, \$4,524,713; Boston & Maine, \$3,676,823; Maine Central, \$1,839,740; Bangor & Aroostook, \$490,194; New York, Ontario & Western, \$305,000; Sandy River & Rangeley Lakes, \$30,968, and Bridgeton & Saco River, \$13,425; total, \$10,880,865. This is an average annual loss of \$1,813,477 for the last six years.

The petitions filed by these New England railroads claim: (1) That the annual increase of mail has not been paid for at all; (2) that the carrying of the parcel post has been without adequate compensation, and (3) that the deficiency created by loss of mail compensation must be made up from the freight, passenger and express receipts. Two causes of action are set up in the petitions filed, one with respect to the system of quadrennial weighing, declared to be illegal, and the other with respect to the rate of pay per mile and the increasingly expensive demands made from time to time by the postmaster-general upon the railroads for facilities, for which no adequate compensation has been made.

With respect to the weighing of the mails every four years as a basis for the mail payments to them, the railroads assert that such weighing has been done exclusively by the post-office department and that they have been prohibited from fully inspecting and verifying such weighing. They repeatedly requested and demanded of the postmaster-general that the mails carried be weighed annually or that the weights be taken at the beginning and end of the four-year period and averaged, but such demands were "ignored and refused." With regard to the effect of the parcel post law on them, these railroads point out that the increased mail resulting from these packages has not been included in any weights ascertained by the department and no compensation has been paid them for it upon any basis of weight. Regarding the acts of the postmaster-general by which they allege that their burdens have been increased, the railroads allege that he has from time to time during the existence of outstanding quadrennial contracts made large additions thereto and increased requirements therein; he has made greater and more expensive demands for rooms and equipment for handling the mails and carrying them to post-offices, and he has made other illegal and onerous exactions.

## SAFETY CONDITIONS IN BOSTON SUBWAYS

### An Interesting Report Just Rendered to the Public Service Commission by William L. Puffer

In accordance with a vote of the Massachusetts Public Service Commission resulting from the accident to the electrical distribution system of the New York subway on Jan. 6, 1915, an investigation of the conditions of safety on the subway and rapid transit lines of the Boston Elevated Railway has been completed by William L. Puffer, consulting engineer, Boston, who has addressed an extended report to the board on the subject.

At the outset of his report the author states that early in his investigation he was informed by M. C. Brush, second vice-president, that a conference of officials was held immediately after the New York accident as to the possibility of a similar accident in the Boston subways and tunnels. As a result of the studies then made and also of certain suggestions made by Mr. Puffer during his examination a number of the recommendations in his report have been adopted and others are under advisement. In acknowledging this, Mr. Puffer says: "A report of this kind must necessarily appear critical and perhaps unfriendly because it cannot go into all details of the good things so self-evident in the service and equipment which continuously and safely transports thousands of passengers." After contrasting the conditions in New York and Boston, the report points out that in the latter city the liability of the system to derangement is diminished by the radial character of the service, the shorter distance between stations, and the fact that there are several power houses feeding energy toward the city from different directions, and generally over more than one route.

Regular inspections bearing upon the prompt elimination of combustible materials and rubbish are recommended, with the storage of such combustibles as may be absolutely necessary for operation at stated places where thorough automatic fire protection can be had. All permanent

construction should be fireproof, and combustible rubbish from construction or repair work removed at once.

The author commends the block signal installations in the Cambridge and Boylston Street subways and states that that of the Washington Street tunnel, while not the equal of the two former, was fully up to date at the time of its installation and able to give a fair degree of safety. The automatic train stop is used in these tunnels and is desirable. In place of the simple home signals used in the East Boston tunnel, Mr. Puffer recommends the installation of a system similar to that in the Boylston Street subway, extending through all stations from portal to portal. The report states that all of the apparatus relating to signals and train stops on the rapid transit lines appears to be of the best kind, well installed and carefully maintained.

The report recommends the reconstruction of the lighting distribution center at Boylston Street, in the Tremont Street subway, which contains three large transformers for the supply of emergency lighting in a large portion of the subways and tunnels of the city, the transformers being placed in an air-tight fireproof room with the exception of an outdoor smoke vent. Transformer oil drains and the inclosing of all high-voltage circuits in ducts are advised, with abandonment of the chamber as a workroom and storeroom, and the removal of all combustibles to a special room provided with automatic sprinklers or otherwise protected against fire.

The report recommends that efforts be made to devise a scheme whereby the third-rail can be provided with a suitable insulating and protecting cover. The author holds that the location of the bare third-rail about 19 in. to one side of and 6 in. above the running rail constitutes a dangerous obstruction in case of a hurried exit of a carload of passengers from a train, even assuming the tunnel lights were of full brilliancy. Experience at New York with the covered third-rail is cited as proof of its success, although the author realizes the difficulties of designing a covering and contact shoe suitable for all engineering and operating requirements. He believes it possible to lower the third-rail 2 in. and set it about 3 in. farther away from the running rail. Then the present walks if raised a few inches would become a very efficient cover for the rail and at the same time serve as a walkway. Should it be found too costly to provide a covering for the third-rail, the report recommends that all woodwork in the floors of all cars to be operated by third-rail power be replaced with non-combustible materials until such time as all-metal cars can be used. It also recommends that all third-rail section switches not now situated at stations be provided with remote-control from the same point or points where the switches are located for the sections adjacent to the stations.

In connection with the other conductors, the report emphasizes the undesirability of grouping lead-covered cables, on account of the susceptibility of such coverings to melting at relatively low temperature in case of breakdown. Such breakdowns are not serious when they occur in a properly constructed duct line, but are serious as well as more liable in manholes where the unprotected cables may be injured when resting on sharp corners, or by careless handling. In future installations it is desirable that no power cables be placed in subways other than actual connections to third-rails, trolley wires and switches, but much can be done in the way of prevention, such as separation of the different types of service by considerable distances, much greater use of concrete or earthen barriers, better protection and support where there is a change of level of cables, removal of pipes or other conductors from the vicinity of cables. The mechanical protection of all splices and exposed cables by wrappings and split tiles is recommended. It also favors a separation of ground return cables from feeders and highly commends the practice of the Boston company in making but slight cross-connections between the lead sheathings. Small rubber-covered wires used in signal, lighting and telephone service need classified separation for service continuity, but are not factors that are to be considered of moment in relation to safety.

The continuous use of the ventilating fans originally installed for subway service at Boston has been found unnecessary, except in the East Boston tunnel, which passes

beneath Boston Harbor. The report recommends the reversal of the direction of air flow in the latter tunnel so that air will be forced in emergencies from stalled cars toward the stations, and the provision of remote-control for fan motors. Distant control from one or more points on each side of the fan and a reserve source of power are advised.

The frequent installation of telephone stations with blue-light markers and duplicate circuits placed near the subway roofs is also advised, the lamps to burn constantly. The report also recommends the clearer marking of exits and the use of fastenings at the gratings and doors of emergency exits which can be opened without any special skill, knowledge or strength. The present provision for emergency lighting of subways and tunnels is commended, but it is suggested that some of the older installations can be improved, both as to the location of lighting cables and safety from interruption by accidents. Two red tail lights are recommended for all cars and trains entering subways, with the exception of certain short loops. Special oil or storage-battery lighting in the cars has been carefully considered, but where the distances are so short seem unnecessary, provided the emergency lights and the blue-light markers are intelligently planned and installed. The clearer indication of the location of fire protection apparatus is favored, with the use of entirely fireproof car construction in the East Boston tunnel and in all new rolling stock equipment for tunnel service, with the provision of non-combustible flooring for wooden or partly wooden cars in the Washington Street tunnel, together with the use of automatic stops in the East Boston tunnel and other minor improvements.

#### BOARD REPORTS ON GRADE CROSSINGS

##### Interurban Line in Los Angeles Should Elevate or Depress Tracks—City Line Should Use Viaducts or Subways in Business Districts

The Board of Public Utilities of Los Angeles, Cal., has issued a report dealing with grade crossing elimination, transportation and congestion. The report concludes that the problem as it concerns electric carriers is brought down to this: (1) Interurban railway to be elevated or depressed, as the particular locality requires, and to be removed from the street surface, such elevated or depressed tracks to lead to suitable terminals or to a loop subway with no terminal; (2) viaducts at all principal thoroughfares across the industrial district to accommodate vehicles and street cars, and (3) street railways to use viaducts across the industrial district, subways through the congested retail district and rerouting. The conditions necessitating such expenditures are said to be not chargeable to any one party and the costs should be distributed among the interests affected.

In regard to the interurban system of the Pacific Electric Railway, the report states that as long as the company is occupying the city streets, it would seem that the public right for such use could, on demand, require that all cars should accept local passengers and stop at all intersecting streets in order to provide for the fullest accommodation of the local public.

Continuing, it says: "This would inconvenience and seriously interfere with the interurban traffic for which this road is primarily designed. The province of the interurban lines is to connect the interurban population and freight with the city. Cars of 35 to 40 tons, geared for high speed, cannot be operated economically or safely on the surface of the streets, calling for stops at every corner; they should reach the city limits in the shortest space of time and with as few stops as possible. This can never be accomplished while interurban lines occupy the surface of the city streets, alone or jointly with the local city lines, at least in the congested parts of the city. They should be required to elevate or depress all lines, above or below the street surface, throughout the congested district, with liberal allowance for increase in the area of this district, or, better still, to the city limits; or to use a private right-of-way involving few grade crossings of streets or other

railroads. There are no serious difficulties presented as to physical construction, and the money saved in the operation of these cars through the congested district, the economy in operation and maintenance—especially in the renewals to the surface of streets, cheaper roadbed construction and freedom from accidents due to surface conditions—would pay a fair rental and interest on the cost of construction.”

Many of the troubles of the local Los Angeles Railway are said to be due to the blocking and congestion of traffic by the interurban cars in the congested district and to the numerous railroad crossings that have to be flagged. It is believed that studies now under way for rerouting and subways would solve the remaining congestion.

#### MINNEAPOLIS LINE WANTS NEW FRANCHISE

##### Street Railway Takes Initiative—Asks for Valuation and Proposes Transportation at Cost

On June 8 C. G. Goodrich, president Minneapolis (Minn.) Street Railway, addressed a letter to the City Council of Minneapolis asking that steps be taken for the renewal of its franchise, which still has eight years to run. The request was referred to the special committee on street railway matters, which was instructed to negotiate with the railway for the purpose of drawing up a franchise ordinance to be submitted to the people.

The committee met on July 14 for its first formal session, at which time a letter was submitted from Mr. Goodrich briefly outlining the franchise features which he deemed fundamental. In general outline the plan closely resembles the one which has been in operation in Cleveland for four years and is known as the “transportation at cost” plan. Though not worked out in detail, the suggested plan contemplates: 1. A fair valuation upon the company's property. 2. Assurance of a fair and reasonable return to the company upon this valuation. 3. The turning over to the city of the net surplus earnings after this charge has been taken out; the city's portion to be used, after it has sufficiently accumulated, in the reduction of fares or for other transportation purposes as the city may determine.

The plan also embodied the following statements relative to purchase, improvements and depreciation:

“The enabling act which was passed by the last Legislature permits the city to enter into an agreement that will give it the right to purchase at the end of any five or ten-year period. This company has no objection to giving the city this right to purchase at any time upon reasonable notice and on a fair basis to be agreed upon.

“At the present time there is a strong demand for the building of new lines and the extension of old lines to keep pace with the city's growth. Such new lines and extensions will require additional cars and power-house equipment, and this demand will continue naturally every year. The money expended for such necessary improvements can be added to the value agreed upon.

“Funds should be set aside for depreciation and renewals, as this is as much to the interest of the city as it is to the company, for the highest state of efficiency can only be obtained by maintaining the property in the best possible physical condition.”

#### RHODE ISLAND MEN TO ARBITRATE

The strike inaugurated at midnight on July 14 by the Street Car Men's Union against the Rhode Island Company, Providence, R. I., when the officers of the latter corporation refused to accept as arbitrators three men named by the union, was ended at 1.15 a. m. on July 17, when an arbitration agreement was signed by both parties to the controversy and the men were ordered back to work. All the cars were in operation on the morning of July 17 after the two-day tie-up of practically all service in Rhode Island.

On July 15 Mayor Gainer offered his services to both parties in an endeavor to bring them together in the matter of arbitrators. After a series of conferences with the Mayor the union men withdrew their ultimatum regarding arbitrators, and, adopting as their own the proposal made by the trustees of the Rhode Island Company on July 14, suggested that the board of arbitration be made up of one

man appointed by the union, one man appointed by the Rhode Island Company, and Mayor Gainer, who should be the chairman.

On July 20 the board of arbitration was agreed upon as follows: Mayor Gainer, chairman; Michael J. Houlihan, representative for the company, and Henry T. Baldwin, representative for the union. Public hearings will begin on July 26. When all evidence is in, the board must report within thirty days.

The questions to be arbitrated are the rate of wages to be paid by the company to all members of the association and the determination of the number of hours, if any, to be guaranteed extra men for a minimum day's work. It is specifically provided in the agreement that the arbitrators shall have no right to fix any scale of wages made conditional upon any co-operative plan or upon any plan based upon future earnings of the company, and that the wage scale, as fixed by the board, shall date back and become effective as of June 1, 1915.

The board of directors of the company met on July 17 and passed a resolution approving the action of President A. E. Potter during the events leading up to the declaration and the ending of the strike.

#### ELECTROLYSIS TESTS IN LORAIN, OHIO

The suit of the Cleveland, Southwestern & Columbus Railway against the city of Lorain, Ohio, filed some time ago in Common Pleas Court at Elyria to prevent the enforcement of an electrolysis ordinance passed by the City Council, was recently withdrawn, since extensive tests showed that its road was now being operated well within the ordinance requirements. When the ordinance was passed it seemed likely that changes entailing the expenditure of a large amount of money would be necessary to put the equipment in shape to comply with all the requirements. Later the company concluded that such changes as were shown to be necessary would result in a saving to itself as well as a benefit to the city. The changes were, therefore, made, and the real outlay proved to be comparatively small in the end.

The tests, covering a period from April 19 to April 27, 1915, were made by A. P. Lewis, representing the Cleveland, Southwestern & Columbus Railway; Albert F. Ganz of Stevens Institute of Technology, representing the Logan Natural Gas & Fuel Company; Samuel S. Wyer, consulting engineer of Columbus, Ohio; Elam Miller and H. S. Warren, New York, representing the American Telephone & Telegraph Company, and E. S. True, Chicago, representing the general group of Bell Telephone Companies. Mr. Herrick represented the Lake Shore Electric Railway in the tests and E. W. Moore, F. W. Coen and Mr. Herrick were present at a number of the conferences. The interests indicated above joined in making the tests.

The ordinance requires among other things that all metallic conductors forming parts of current-carrying circuits be insulated from the ground wherever it was practical to so insulate them; that the average potential difference during any ten consecutive minutes between any two points 1000 ft. apart on such metallic conductors should not exceed 1 volt, and that the average potential difference between any two points more than 1000 ft. apart should not exceed 7 volts; that insulated potential wires be installed from an adequate number of points on the insulated metallic conductors, together with voltmeters, so arranged that the potential differences between these points on the metallic conductors could be readily and accurately measured. Very careful tests were made with respect to these points and the voltage drop of the tracks was noted for various distances on all the lines in the city. The data were all gathered in a report that was submitted to the interested parties.

#### NEW FRANCHISE GRANTED IN CLEVELAND

The franchise granted the Cleveland & Youngstown Railroad by the city of Cleveland last week provides specifically for the entrance of any interurban railways whose tracks may be crossed by the tracks of the new company. It is understood that this means that any interurban road that desires access to the central part of the city by means of its tracks may build to it for that purpose. The company

is required to co-operate with such roads in every way possible when they wish to use its tracks for this purpose, or make any change that may be found necessary. It is said to be the purpose of the company to provide a double track to be operated at high speed for the accommodation of the interurban lines. If terms for this service cannot be agreed upon between the interested companies it is provided that the matter shall be submitted to a board of arbitration.

The city reserves the right to use a strip of land approximately 50 ft. wide at the present location of East Twenty-third Street for a subway for street railway traffic, but the company may build over it and use it as may be necessary for its own benefit above the point required by this reservation.

It is the intention of the company to build a joint steam and interurban passenger station at a point near the business district where land has already been acquired for the purpose, but the amended franchise passed has little to say about this. In fact the greater part of it applies to the freight terminal, over which there was rather bitter contention.

The Citizens' Referendum League, an organization recently formed, is preparing petitions for a referendum vote on both this franchise and the one granted at the same time to the Cleveland, Akron & Canton Terminal Railroad, which is planning to build a four-track electrically operated freight subway under East Fifty-fifth Street from the lake to the southern city limits. Friends of the referendum movement claim both companies have been allowed too much liberty in the franchises and that the city has failed to provide for proper supervision of operation, especially as respects the Cleveland, Akron & Canton Terminal Railroad. They also oppose the franchise to the Cleveland & Youngstown Railroad on the ground that it is closing too many streets where its freight terminal is to be established.

#### COURT REFUSES TRANSIT DELAY

Judge Sulzberger on July 17, after a hearing in Common Pleas Court, refused an injunction asked by David E. Dallam, a real estate dealer, to restrain the city of Philadelphia from issuing bonds for \$6,000,000 authorized for the Broad Street subway and Frankford elevated systems. The court, however, issued a cautionary order holding the litigation *in statu quo* until after a decision of the State Public Service Commission, which will hold a special meeting on the project at Harrisburg on July 26.

City Solicitor Ryan said no actual work would be commenced under Director Taylor's plans until a decision was obtained from the commission. Judge Sulzberger, however, ruled that the Department of Transit may proceed with its advertisement for bids, Mr. Ryan asking that these preliminaries be not interfered with, as such a condition would deter bidders and tend to raise prices because of a suggestion of uncertainty.

As the preliminary step incident to the construction of the Broad Street subway, Director Taylor on July 14 awarded the contract for the building of a sewer under Buttonwood Street, between Thirteenth and Broad Streets. The work is to begin on Aug. 4 and must be completed in two months. The building of the sewer was said to be in no way affected by the taxpayer's bill in equity attacking the legality of the \$6,000,000 loan. Separate proceedings would be necessary to stop the construction of the sewer.

#### TOLEDO FRANCHISE CONFERENCE CONTINUED

In the discussion of the proposed Toledo Railways & Light Company franchise at Toledo, Ohio, Henry L. Doherty, chairman of the board of directors, told the special franchise committee of the City Council on July 16 that the two points in the present draft which will make it difficult to secure funds for improvements, are the time for making a valuation and the requirement that the company accept bonds as part payment for the property. He said that conditions are bad at this time and he doubted whether it would be possible to raise \$2,000,000 for that purpose under the conditions proposed in the franchise. When questioned for his reason for objecting to the acceptance of bonds in part payment for the property, Mr. Doherty suggested that the committee consult with some of the

local brokers for a reply. He proposed that the clause giving the city an option to purchase the property be eliminated from the draft altogether. Members of the committee agreed to consider this. Mr. Doherty said further that he could not see how the company could be termed a "going concern" unless some value is placed on the franchise. The committee objects to allowing anything for the franchise in case the city decides to purchase the property.

At a conference on the day previous clauses in which changes are to be made were discussed and in some cases agreements were reached. Mr. Doherty insisted that the question of valuation of the property should be settled before going any further, but some of the members argued that this should be among the last things to be considered. Mr. Doherty objected to extending the 3-cent fare privilege which is now allowed for the benefit of workers. Member Dotson conceded the point that the city should make good any losses the company might suffer from an unreasonably low fare during the try-out periods. Mr. Doherty then suggested that these periods should not be too long, as the company might be bankrupted before their termination, when a settlement with the city could be made.

#### OLD ALBANY CONTRACT RENEWED

On July 20 C. F. Hewitt, general manager United Traction Company, Albany, N. Y., renewed the old working and wage agreement with the employees, under the same terms as to working conditions and wages, for a period of one year from July 1, 1915.

The demand of the United Traction Company employees that they receive the runs of the members of the Brotherhood of Locomotive Engineers operating Hudson Valley Railway cars over United Traction Company's rails between Waterford and Troy, N. Y., has been deferred until after the annual convention of the Amalgamated Association to be held in Rochester, N. Y., commencing on Sept. 13. At this time it is expected that the convention will appoint a committee to confer with a committee from the Brotherhood of Locomotive Engineers to adjust the situation satisfactorily between the two unions and relieve the United Traction Company of responsibility in the matter.

The settlement of the matter in this manner is considered a complete victory for the company, as it won all of the points at issue in the recent controversy.

#### NO CONSENTS NEEDED IN CLEVELAND

According to a decision of the Ohio Supreme Court, rendered on July 20, the Cleveland (Ohio) Railway may now build tracks on any street in Cleveland on which Council may authorize it to do so, without the consents of owners of abutting property. Under this decision the provision of the city's new charter, conferring this power on the City Council, supersedes the State law as far as Cleveland is concerned, although it does not change matters in cities and towns which have no charters or whose charters do not contain this provision. This was the case of Charles F. Brush and others against the city and the Cleveland Railway to prevent the invasion of a section of Euclid Avenue, locally known as "Millionaires' Row." The case of residents of Reading Road, Cincinnati, against the city of Cincinnati and the Cincinnati Traction Company, resulted in a decision in their favor, since Cincinnati has no charter.

The Cleveland Railway began the construction of tracks on Euclid Avenue, between East Twenty-second and East Fortieth Streets, at 4 a. m. on July 21. About three weeks will be required to complete the track. The company has not announced details of car routing when this section is placed in operation, but it is probable that all regular Euclid Avenue cars will be routed over it, while Wade Park cars and some others may continue to go over the Prospect Avenue track. Euclid Avenue cars will save about five minutes in running time by going over the new track, it is estimated. There is a possibility that the Prospect Avenue track may be extended from East Fortieth Street over Carnegie Avenue to East Fifty-fifth Street, but this has not yet been definitely decided.

**New Electrification Project Reported.**—It is reported that it is proposed to electrify the Schomburg & Aurora Railway, which extends from near Bond Lake to near Lloydtown, Ont. Part of the material has been ordered.

**Rehearing Denied in Ulster & Delaware Case.**—The first step in the appeal from the recent decision of the Public Service Commission for the Second District of New York denying the Ulster & Delaware Railroad permission to raise its mileage rate above the 2-cent maximum set by the Legislature, as noted in the *ELECTRIC RAILWAY JOURNAL* of July 17, was taken on July 16 when the commission formally denied the company's application for rehearing.

**Commissioner Disfavors Civic Car Line Shops.**—In reply to a request for an estimate of cost, Works Commissioner Harris on July 16 reported to the Board of Control that in his opinion it would be unwise to proceed with the establishment of civic car line shops in Toronto. He did not think the city could build cars as economically as a private company serving the whole of Canada. The reply was not considered satisfactory and the matter was referred for more details.

**Change in Name of Oregon Commission.**—On July 1 the name of the Railroad Commission of Oregon was officially changed to the Oregon Public Service Commission. Recognizing that the name "Public Service Commission" more correctly defines the powers possessed by this branch of the State service, the Legislature last winter passed an act providing for a change of name on July 1. There is no change in the jurisdiction of the commission. The commission has established an office in Portland.

**Company Presents New Franchise in Waukegan.**—The Chicago & Milwaukee Electric Railroad, Highwood, Ill., has presented a new franchise to the city of Waukegan, Ill. In this franchise it agrees to pay all back taxes but asks to be relieved of building the loop in the North Side residence districts within a period of one year. According to the franchise there must be at least three through cars in each direction. The company asks to be allowed to assume the franchise of the Waukegan, Fox Lake & Western Railway on certain streets until its expiration.

**Iowa Section of N. E. L. A. to Meet at Dubuque.**—The 1916 convention of the Iowa section of the National Electric Light Association is to be held in Dubuque instead of Ames, as previously announced. The former selection has been declared void on account of the illegal inclusion of votes by class "C" members, the choice of Dubuque being later made by a mail canvass among the qualified voters. It is considered probable that the Iowa District Gas Association and the Iowa Street and Interurban Association will hold their conventions at the same time and place.

**Car Tax Proposed in Kansas City.**—An ordinance has been introduced in the City Council taxing street cars of the Metropolitan Street Railway, Kansas City, Mo., \$60 each a year. The measure is intended to become operative in case the reorganization of the street car system is effected, in which event the income to the city under the present "peace agreement" would cease. The city now receives 8 per cent of the company's gross income. Last year this amounted to \$430,000, which paid the company's taxes, \$274,000 and left about \$160,000. Under the new franchise the city would receive no cash from the car fares until all revenue above 6 per cent, by being put into extensions and improvements, had raised the physical value of the property to \$30,000,000.

**Company Appeals Against Forced Extensions.**—Counsel J. B. Howe of the Puget Sound Traction, Light & Power Company, Seattle, Wash., has filed in the Federal Court a formal appeal from a decision recently rendered by Federal Judge Frank H. Rudkin upon the company's application for an injunction against the Public Service Commission enforcing its order to extend its Alki Point, Fauntleroy Park and Ballard Beach lines beyond the termini provided by the company's charter. The company contends that the order violates the provision of the federal constitution forbidding the impairment of contract obligations, and also that it deprives it of vested rights without due process of law, for the reason that to comply with the order will mean a large financial loss upon these lines that cannot be offset by the operation of its other lines.

## Financial and Corporate

### ANNUAL REPORT

#### American Railways

The board of directors of the American Railways, Philadelphia, Pa., has changed the end of the fiscal year from June 30 to Dec. 31. For this reason the annual report recently issued shows only the operations for the six months to Dec. 31, 1914, as compared to the similar six months of the preceding year.

The total number of passengers carried was 54,461,989, a decrease of 837,941, or 1.51 per cent. The gross receipts of the subsidiary companies were \$2,881,875.21, a decrease of \$5,523.80, or 0.19 per cent. After payment of all operating expenses, interest and taxes, the net income was \$294,087. Dividends were paid amounting to \$254,615, leaving a balance of \$39,472 to be added to surplus.

The subsidiary companies spent on maintenance of track, roadway and equipment, including sums set apart to cover depreciation, an amount equal to 18.81 per cent of the gross receipts. There was charged out of earnings to payments into sinking funds \$19,554 and also paid and retired \$15,000 of maturing car trust certificates, series A. Taxes accruing to state and federal governments amounted to \$134,813, or 4.67 per cent of the gross receipts. An amount of \$997,875 was expended for new capital purposes during the period.

In discussing individual companies the report notes that the Altoona & Logan Valley Electric Railway, Altoona, Pa., secured gross receipts of \$319,335, a decrease of \$16,119, or 5 per cent. Net receipts were \$118,208, a decrease of only \$5,285, a saving of \$10,834 having been effected in operating expenses. The receipts of the Bridgeton & Millville Traction Company, Bridgeton, N. J., were reduced more than 7 per cent by the curtailment in general business. The gross receipts of the Chicago & Joliet Electric Railway, Joliet, Ill., were \$306,181, a gain of \$2,007, while the net receipts decreased \$5,338. There was a slight falling off in the gross receipts of the railway, electric light and gas departments of the Lynchburg Traction & Light Company, Lynchburg, Va. Altogether it was but \$2,088, or less than 1 per cent. The operating expenses in all three departments increased \$24,817. There was set aside for reserve for depreciation of way and structures and equipment an additional sum of about 5.5 per cent of the gross receipts.

The Ohio Valley Electric Railway, Huntington, W. Va., reports gross receipts of \$358,848, an increase of \$30,356, or about 8.5 per cent. The railway earnings increased \$12,222 and the lighting earnings \$18,134. The gross receipts of the Peoples Railway, Dayton, Ohio, were \$221,819, as compared to \$243,681 in the prior period, a loss of 10 per cent. The net receipts increased \$4,886. This reduction in operating cost was brought about largely by reason of improvement made in the operation of the power house. The Roanoke Railway & Electric Company, Roanoke, Va., had gross business of \$321,977, an increase of \$8,812, or about 2.75 per cent. There was a net increase in lighting customers of 421 and a gain of 125 hp. in motors. The gross receipts of the Scranton (Pa.) Railway were \$760,274, an increase of \$18,395, or about 2.5 per cent. The Springfield (Ohio) Railway reported gross receipts of \$178,405, a loss of \$17,682, or 9 per cent.

#### LUMP VALUATION CRITICISED

The Missouri Public Utilities Commission was temporarily enjoined by Judge A. S. Van Valkenburgh of the United States District Court on July 7 from lowering the rates of the Springfield Gas & Electric Company, a subsidiary of the Federal Light & Traction Company. The practice of state commissions in making a lump valuation of a public utility property, and fixing a rate on this valuation without going into details, received a blow from the decision.

As reported in the *ELECTRIC RAILWAY JOURNAL* of July 11, 1914, page 87, the commission placed a valuation of \$300,000 on the property of the company used in electric service, ordered a reduction of 30 per cent in rates and

held that 7 per cent was an adequate return on the investment as fixed. The restraining order is now granted evidently on the assumption that the valuation made by the commission was not in all respects a fair one, and the findings of the commission not made as required by law. An indemnifying bond is required of the company to protect consumers in case the courts finally uphold the rates as made by the commission.

In its decision granting the temporary injunction the court said: "The court has been embarrassed in its review by the form of the decision of the commission and its findings, which enumerate in general terms the items included but fail to specify the amount allowed for each. It may be doubted whether a decision and findings which state nothing but the total valuation fixed by the commission, without showing the amount allowed for each item included, would be a compliance with the manifest purpose of the law to permit the parties to test in court the questions involved." A determination of the merits of the case will be reserved for final hearing.

TAX VALUES SET IN WEST VIRGINIA

The announcement of the State Board of Public Works of West Virginia, made on July 19, showing the valuation of public properties for tax purposes, indicates an increase of \$1,135,000 in the valuation of electric railway and power lines over the figures for 1914. The list of roads, with the valuations that have been fixed by the State board for 1915, follow:

Appalachian Power Company.....	\$240,000
Charleston Interurban Railroad.....	1,150,000
City Railway (Wheeling).....	400,000
Charleston-Dunbar Traction Company.....	160,000
East Liverpool Traction & Light Company.....	210,000
Elkins Electric Railway.....	25,000
Fairmont & Mannington Railroad.....	400,000
Grafton Light & Power Company.....	130,000
Lewisburg & Ronceverte Electric Railway.....	40,000
Monongahela Valley Traction Company.....	5,000,000
Morgantown & Pittsburgh Railway.....	6,000
Morgantown & Wheeling Railway.....	175,000
Newell Bridge & Railway Company.....	125,000
Ohio Valley Electric Railway.....	1,075,000
Panhandle Traction Company.....	650,000
Parkersburg & Marietta Interurban Railway.....	1,000,000
Princeton Power Company.....	100,000
Stebenville, Wellsburg & Weirton Railway.....	350,000
South Morgantown Traction Company.....	35,000
Tyler Traction Company.....	225,000
Union Traction Company.....	110,000
Wheeling Traction Company.....	2,000,000
Wellsburg, Bethany & Washington Railway.....	40,000
West Virginia Traction & Electric Company (Wheeling).....	1,100,000
West Virginia Traction & Electric Company (Morgantown).....	425,000
Total assessments.....	\$15,171,000

LOSS IN INDIANA VALUATIONS

The report of the Indiana State Board of Tax Commissioners shows a loss in electric railroad valuations of \$188,347 over the 1914 totals. A large part of the decrease, however, resulted from changes in classification of the mileage reports of Indianapolis properties because of conditions made necessary by State regulation. The following shows the increase of values placed on electric railroad properties in Indiana for the past seven years: 1909, \$21,536,041; 1910, \$22,376,238; 1911, \$23,524,951; 1912, \$24,703,253; 1913, \$25,701,134; 1914, \$27,173,747; 1915, \$26,985,400. The losses and gains in the trackage of the interurban roads are published in detail in the following table:

	1914, Miles	1915, Miles	Loss, Miles	Gain, Miles
Main track.....	2,137.25	2,087.20	50.05	...
Second main.....	91.65	148.02	...	56.37
Side track.....	108.50	109.77	...	1.27
Rolling stock.....	2,214.98	2,164.93	50.05	...
Totals.....	4,552.38	4,509.92	100.10	57.64

Some of the tax officials believed that some of the decrease in the electric railroad valuations might be attributed to jitney bus service in some of the cities, but it is probable that this is more or less a negligible consideration this year.

Chatham, Wallaceburg & Lake Erie Railway, Chatham, Ont.—The Hydro-Electric Power Commission of Ontario is negotiating with the Canadian Northern Railway for the purchase of the Chatham, Wallaceburg & Lake Erie Railway, which runs from Erie Beach to Wallaceburg.

Chicago (Ill.) Surface Lines.—The Illinois Public Utilities Commission has granted the application of the Chicago City Railway for permission to issue first mortgage 5 per cent gold bonds to the amount of \$1,492,000. Permission has also been granted to the Calumet & South Chicago Railway to issue bonds of a similar character to a total amount of \$500,000.

Detroit, Almont & Northern Railroad, Detroit, Mich.—An amount of \$400,000 of first mortgage 6 per cent gold bonds of the Detroit, Almont & Northern Railroad, dated Feb. 1, 1915, is being offered by Eversz & Company, Chicago, at par and interest. The bonds are guaranteed and assumed as a direct obligation, by endorsement, by the Detroit United Railway.

Gary & Interurban Railroad, Gary, Ind.—Plans are being worked out for the financial relief of the Gary & Interurban Railroad. The City Council has refused to allow the line a straight 5-cent fare and insists that the 3-cent rate be maintained. It is said that the refusal of the Council to allow the increase will be brought to the attention of the Indiana Public Service Commission. There is some probability that the road will go before the commission and give up its Gary franchise. The company defaulted on its interest payments Jan. 1. Previous references to the condition of this company were made in the ELECTRIC RAILWAY JOURNAL of Jan. 9 and March 6.

Kansas City Railway & Light Company, Kansas City, Mo.—The committee of which John B. Dennis is chairman, has notified holders of certificates of deposit representing the 6 per cent five-year collateral gold notes of the Kansas City Railway & Light Company, due on Sept. 1, 1912, that the time in which depositors of such notes will be entitled to receive new securities or cash pursuant to a sale or a plan of reorganization of the company, or have the deposited notes or the proceeds thereof returned to them, has been extended for one year from Aug. 15, 1915.

Lancaster & York Furnace Street Railway, Millersville, Pa.—The Lancaster & York Furnace Street Railway has defaulted the July 1 interest payment of \$2,750 on its \$150,000 of first mortgage 5 per cent twenty-year gold bonds. It is reported that the failure of the company's bankers, Woelpper, Crawford & Company, Philadelphia, was the cause of the default.

London & Port Stanley Railway, London, Ont.—The lease of the London & Port Stanley Railway to the Père Marquette Railway terminated on June 30, on which date the property passed under the control of the Port Stanley Railway Commission. This is now operating the line as part of the proposed system of radial railways to be controlled and operated under the jurisdiction of the Hydro-Electric Power Commission of Ontario. The formal opening of the road as an electric carrier was set for July 22.

Merrill Railway & Lighting Company, Merrill, Wis.—The Merrill Railway & Lighting Company has announced that it will surrender its charter on account of not being able to operate except as a losing proposition. No cars are at present running.

Montreal (Que.) Tramways.—It is reported that the Montreal Tramways will issue \$1,000,000 of new common stock which will be offered for sale to present stockholders at the par value thereof.

Rock Island Southern Railway, Rock Island, Ill.—The Rock Island Southern Railway, which operates the electric line from Monmouth to Rock Island, is to be reorganized and have its bonded indebtedness readjusted. On July 1 the "north line" was unable to pay interest due and also faced necessary repairs and extensions. A meeting of a number of bondholders was held and a plan of adjustment decided upon, request for approval being sent to other bondholders. In an interview, A. Walsh, president of the line, said: "I am confident that the plan of readjustment will be of great advantage to Monmouth. It will put the north line in excellent financial condition and in a position where it can give even better service than heretofore. Every bondholder is fully protected in the full amount of his holdings. For each \$1,000 bond he receives a new first mortgage bond for \$400, first preferred stock for \$600 and \$100 of bonus common stock. This common stock is given from that



held by the present stockholders. The value to Monmouth which is to come from this readjustment will be in many added improvements to the property, especially to the terminals at Rock Island. There will be added some electric locomotives to take the place of the present steam locomotives, thus increasing freight facilities and the general service." A complaint by minority stockholders was noted in the ELECTRIC RAILWAY JOURNAL of May 1.

**San Joaquin Light & Power Corporation, Bakersville, Cal.**—The San Joaquin Light & Power Corporation has filed a supplemental application with the California Railroad Commission, asking for authority to pledge a portion of the \$1,582,000 of 6 per cent bonds which it was recently authorized to sell. The corporation proposes to pledge a portion of these bonds as collateral security for short-term notes of \$809,000. It is proposed by the corporation that the new notes shall run for a period not to exceed two years, and that the money received therefrom shall be used to pay off the two-year collateral trust notes of the company which mature on Aug. 1, 1915.

**Springfield (Mass.) Street Railway.**—It is reported that plans for merging the Springfield Street Railway and the Worcester Consolidated Street Railway, which according to reports have been under consideration for the last five months, will probably materialize this year. It is believed that the plan under consideration is to consolidate the two companies into one large system with one set of officers and to establish a large general office in either Springfield or Worcester. These two companies are now owned and controlled by the New England Investment & Security Company, which is the holding company for nearly all the trolley lines formerly owned and operated by the New York, New Haven & Hartford Railroad in Massachusetts.

**Tidewater Southern Railway, Stockton, Cal.**—It is reported that the Tidewater Southern Railway has sold \$100,000 of bonds to banks at Modesta and others, which has enabled it to commence construction to Turlock. In November, 1914, the company was operating 33.5 miles of single track between Stockton and Modesta.

**Toledo, Ann Arbor & Jackson Railroad, Toledo, Ohio.**—Application has been made to the Public Utilities Commission of both Ohio and Michigan by the Toledo, Ann Arbor & Jackson Railroad for permission to issue \$385,000 of bonds. The company is laying track between Deerfield and Dundee and it is reported that a freight service may be established between Toledo and Detroit, as well as an inter-urban passenger business.

**Tri-State Railway & Electric Company, East Liverpool, Ohio.**—The Tri-State Railway & Electric Company has received permission from the Ohio Public Utilities Commission to sell its property in Ohio, a section of track in Steubenville, to the Steubenville Railway for \$9,000. The latter company has been authorized to issue capital stock for that amount to pay for the track.

**United Gas & Electric Corporation, New York, N. Y.**—Through the purchase of \$1,000,000 of its \$5,500,000 of three-year 6 per cent notes, the sale of which was noted in the ELECTRIC RAILWAY JOURNAL of March 6, the United Gas & Electric Corporation has anticipated the retirement of \$500,000 of the notes on July 1, 1916, and \$500,000 on Jan. 1, 1917, as provided in the indenture covering the notes.

**United Railways of St. Louis, St. Louis, Mo.**—The quarterly report of the United Railways of St. Louis for the three months ending June 30, filed on July 15 with City Register Witter, shows the street cars carried about 2,160,000 more passengers in that quarter than in the previous three months. The statement also shows that the cars carried about 5,000,000 less than in the corresponding three months of last year, which was before the jitneys began to operate in St. Louis. Officials familiar with the conditions assert that a portion of the 5,000,000 decrease in passengers was due to the operation of jitneys and the remainder was due to business conditions. The increase in the last quarter indicates that the business of the jitneys is decreasing and that general business is becoming more active. The cars made a total of 1,535,366 trips and traveled 9,699,118 miles in the last three months. A total of 54,522,328 full-fare passengers were carried and 1,112,985 half-fare, making a total of 55,635,313 passengers. The total num-

ber of passengers transported in the preceding three months was 53,475,810. The number in the corresponding three months last year was 61,959,691.

**DIVIDENDS DECLARED**

- American Railways, Philadelphia, Pa., quarterly, 1¼ per cent, preferred.
- Columbus Railway, Power & Light Company, Columbus, Ohio, quarterly, 1¼ per cent, preferred and common.
- Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., quarterly, 1½ per cent, preferred; quarterly, 1 per cent, common.
- Grand Rapids (Mich.) Railway, quarterly, 1¼ per cent, preferred.
- Lewiston, Augusta & Waterville Street Railway, Lewiston, Maine, quarterly, 1½ per cent, preferred.
- Montreal (Que.) Tramways, quarterly, 2½ per cent.
- Philadelphia Company, Pittsburgh, Pa., 5 per cent, preferred.
- West Penn Railways, Pittsburgh, Pa., quarterly, 1¼ per cent, preferred.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

AMERICAN RAILWAYS, PHILADELPHIA, PA.					
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '15	\$444,033	.....	.....	.....	.....
1 " " '14	477,789	.....	.....	.....	.....
6 " " '15	2,575,604	.....	.....	.....	.....
6 " " '14	2,673,349	.....	.....	.....	.....
BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.					
1m., May, '15	\$77,502	*\$64,276	\$13,226	\$17,124	†\$3,763
1 " " '14	86,037	*70,610	15,427	17,014	†1,294
11 " " '15	\$72,665	*779,974	92,691	189,462	†95,236
11 " " '14	908,492	*790,687	117,805	187,778	†68,106
CONNECTICUT COMPANY, NEW HAVEN, CONN.					
1m., May, '15	\$687,528	*\$455,724	\$231,804	\$104,964	†\$163,238
1 " " '14	720,692	*474,825	245,867	93,368	†174,014
11 " " '15	7,274,970	*5,265,413	2,009,557	1,087,674	†1,174,493
11 " " '14	7,347,174	*5,353,249	1,993,925	984,003	†1,248,673
FORT WAYNE & NORTHERN INDIANA TRACTION COMPANY, FORT WAYNE, IND.					
1m., May, '15	\$141,502	\$82,278	\$59,224	\$54,608	†\$4,896
1 " " '14	154,514	92,192	62,322	53,953	†8,727
5 " " '15	707,782	406,383	301,399	268,479	†\$34,519
5 " " '14	761,209	438,809	322,400	259,455	†\$64,225
KENTUCKY TRACTION & TERMINAL COMPANY, LEXINGTON, KY.					
1m., May, '15	\$66,220	\$35,035	\$31,185	\$19,758	†\$14,135
1 " " '14	68,091	36,163	31,928	20,639	†14,093
11 " " '15	738,410	393,342	345,068	219,507	†158,825
11 " " '14	707,261	374,284	332,977	225,501	†137,769
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.					
1m., May, '15	\$61,014	*\$37,677	\$23,337	\$15,611	\$7,726
1 " " '14	58,572	*37,390	21,182	15,660	5,522
12 " " '15	698,453	*459,753	238,700	187,112	51,588
12 " " '14	679,179	*455,935	223,244	184,116	39,128
NEW YORK (N. Y.) RAILWAYS					
1m., May, '15	\$1,138,652	\$714,040	\$424,612	\$357,179	†\$107,748
1 " " '14	1,199,849	766,741	433,108	348,800	†118,904
11 " " '15	12,265,626	7,843,631	4,421,995	4,100,368	†\$801,915
11 " " '14	12,684,866	8,066,814	4,618,052	4,089,333	†\$97,482
NEW YORK & STAMFORD RAILWAY, PORT CHESTER, N. Y.					
1m., May, '15	\$32,228	*\$25,953	\$6,275	\$7,991	†\$1,676
1 " " '14	33,451	*25,326	8,125	7,964	†188
11 " " '15	340,796	*281,903	58,893	87,052	†\$27,746
11 " " '14	334,509	*273,526	60,983	85,265	†\$23,866
NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.					
1m., May, '15	\$43,000	*\$41,199	\$1,801	\$5,976	†\$4,104
1 " " '14	39,230	*38,737	493	4,806	†\$3,878
11 " " '15	409,509	*476,644	†67,133	69,584	†\$134,985
11 " " '14	364,644	*518,802	†154,158	61,966	†\$210,818
RHODE ISLAND COMPANY, PROVIDENCE, R. I.					
1m., May, '15	\$404,577	*\$321,295	\$83,282	\$117,558	†\$33,436
1 " " '14	487,066	*302,726	184,280	111,264	†\$73,891
11 " " '15	4,668,386	*3,629,383	1,039,003	1,296,807	†\$163,108
11 " " '14	4,891,423	*3,603,923	1,287,500	1,191,963	†\$213,254
VIRGINIA RAILWAY & POWER COMPANY, RICHMOND, VA.					
1m., May, '15	\$407,694	\$203,572	\$204,122	\$136,683	†\$74,451
1 " " '14	433,496	203,492	230,004	135,672	†100,764
11 " " '15	4,679,421	2,263,584	2,415,837	1,499,170	†\$991,010
11 " " '14	4,717,587	2,252,466	2,465,121	1,479,631	†1,062,667
WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.					
1m., May, '15	\$22,644	*\$22,036	\$608	\$1,464	†\$836
1 " " '14	23,516	*18,542	4,974	1,110	†3,872
11 " " '15	235,700	*246,828	11,128	14,633	†\$25,635
11 " " '14	228,579	*233,330	†4,751	12,208	†\$16,764

\*Includes taxes. †Deficit. ‡Includes non-operating income.

# Traffic and Transportation

## TRAVELS WITH THE JITNEY

### Philadelphia Ordinance Enjoined—Union Men in Norwalk Petition for Jitney Control—Jackson Company Affected by Competition

A preliminary injunction restraining the Mayor, Councils and other city authorities of Philadelphia from enforcing the jitney ordinance was granted on July 15 by Judge Sulzberger. The injunction holds until Sept. 20, when the Court of Common Pleas No. 1 may be applied to for a further hearing by either the city or the jitney operators. In the meanwhile, the court decrees, both sides may gather further evidence which will aid in arriving at a just decision on the whole question. Judge Sulzberger stated that the operation of the ordinance involves serious danger to the jitney, and would at least cut the business from 100 to 40 per cent, but that if the ordinance is declared valid, the delay will not have caused the city any pecuniary loss. A committee of three has been appointed to confer with Director Porter and agree on a set of temporary traffic regulations during the term of the temporary injunction.

Two of Philadelphia's jitney organizations, representing more than 700 operators, have decided to issue strip tickets at six for a quarter. They will be accepted in lieu of 5-cent fares by drivers of all cars operated by members of the Auto Service Association and the South Philadelphia Jitney Owners' Association. The only organization which has not signified its intention to issue strip tickets is the Jitney Association, whose president has announced that he would put the question up to his associates.

A committee representing the Norwalk Division of the Amalgamated Association of Street and Electric Railway Employees of America has petitioned the Council on behalf of the union that favorable action be taken on an ordinance presented by them to control and regulate the jitney business in Norwalk, Conn. The ordinance is strict and provides for annual fees of \$100 and \$200, fixed routes with transfers and indemnity bonds of \$10,000. The ordinance was tabled for consideration at a future meeting of representatives of the union, jitney drivers and Council.

The draft of a jitney ordinance, submitted by Commissioner Arthur R. Denman to the Board of Works of Newark, N. J., on July 15 and laid over for further discussion, provides that car owners or licensees must report to the board the route and hours of service of each jitney, seating capacity, and what other facts may be required, as often as the board may so demand. The board receives the power to designate routes and hours of service, which shall not be less than ten hours daily; terminal points and the fixing of regulations for turning at the terminal.

B. W. Arnold, superintendent of traffic Chicago, Ottawa & Peoria Railway, Ottawa, Ill., has presented a copy of the Joliet ordinance to the La Salle City Council, with the request that they adopt it or some similar measure to regulate jitney buses. Mr. Arnold gave a short talk to the Council, in which he said that the interurban company had spent almost \$25,000 for paving in the twin cities, La Salle and Peru, in two years. He also said the company had an annual payroll of \$24,000 in La Salle and Peru. He asked that the jitney buses be licensed, forced to pay a fee of \$200 per year and compelled to publish and maintain a regular schedule. The petition was referred to a committee for investigation.

H. H. Davell, chairman of the board of governors of the Maryland Autobus Protective Association, formed to adopt some method of perfecting the jitney system in Baltimore, states that the association aims to amalgamate all the jitney service into one large corporation. It is stated that 300 buses can be put on the streets. Immediate steps are to be taken in the courts to test the validity of the ordinance just passed whereby each jitney owner will be required to pay an annual license of \$25 a seat.

One hundred and twenty-six jitneys have succeeded in passing municipal inspection in Portland, Ore., according to Municipal Jitney Inspector Gallup. Cars are being examined at the rate of twenty-five per day. The State Supreme Court has taken under advisement the suit instigated

by A. A. Thielke against Mayor Albee of Portland, to restrain enforcement of an ordinance regulating jitney buses in Portland. The ordinance was attacked in the Circuit Court on the ground that it was submitted to the people under a city ordinance, instead of under a State law; that it was discriminatory, gave the Public Utilities Commission arbitrary power, and violated the federal constitution, in that it would permit property to be taken without due process of law.

According to the report of L. H. Bean, general manager Tacoma Railway & Power Company, the jitney buses operating in Tacoma, Wash., have cut down the company's revenues \$70,000 for the first half of 1915. The city of Tacoma will lose \$1,500 in its share of gross receipts for this period. The police department in Tacoma has been instructed by Commissioner of Public Utilities Mills to arrest jitney passengers and drivers who violate the anti-smoking ordinance recently passed by the Council. This ordinance affects street cars and jitney buses alike and is being rigidly enforced on the cars.

The Jackson Light & Traction Company, Jackson, Miss., has filed with the City Commission an earnest protest against the insufficient character of ordinances regulating jitney traffic, and the unfair competition it has been forced to meet since the jitney became popular. In a letter to the commission Manager Raymond H. Smith insists that all jitneys should be placed under bond, in order to guarantee damages in case of accidents, and offers to furnish bonds for each street car operated by his system.

Some time since the commission passed an ordinance regulating jitney traffic, but Manager Smith says that it is not in any sense a regulation; that jitneys are not required to carry signs showing the routes they cover; they do not cover regular routes, it being their custom to traverse the busiest sections of the streets, turning around directly in front of trolley cars where people are waiting to pick up passengers, withdrawing the jitneys from service whenever they feel like it and otherwise avoiding the responsibilities of a common carrier.

Manager Smith admits that the jitneys have cut heavily into the revenues of the street railway and advises the commission that the company has been compelled to ship some of its larger cars out of town, to cut down the number of cars operated and to discontinue the services of a number of employees.

Automobile owners operating a jitney line between Texas City and Galveston, Tex., have filed two suits in the Fifty-fifth District Court at Galveston asking for an injunction to prevent city officials of Galveston from enforcing an ordinance adopted on April 9, regulating the operation of motor buses in that city. It is claimed by the plaintiffs that they are immune from provisions of the ordinance because their buses are not operated between points in Galveston or to any designated point within Galveston.

A petition for an election to recall Mayor Tyra and Police Commissioner Hudleston of Fort Worth, Tex., has been prepared by the jitney men of Fort Worth and will be presented to the City Commissioners within a few days. The petition, signed by about 3000 voters, is a result of the jitney ordinance now being enforced.

The Savannah AutoBus Company, with an authorized capital of \$250,000, has been incorporated by Savannah men for the purpose of operating autobuses on Savannah streets. The company has asked for a charter and will begin operations in August with ten buses of a capacity of thirty-five passengers each. There will be definite routes and schedules for the vehicles.

An ordinance has been passed by the Minneapolis (Minn.) City Council for the purpose of regulating jitneys in that city and signed by Mayor Nye. The ordinance provides for a license fee of \$15 a year for each car, indemnity bonds from \$5,000 to \$10,000, regular routes and schedules, with a limit of two passengers above seating capacity, inspection of cars and other regulations. It will take effect on Aug. 1.

Jitney bus owners in Flint, Mich., have obtained a temporary injunction restraining the city from enforcing the new jitney ordinance. It was asserted that the \$5,000 to \$20,000 bond and \$25 license fee were excessive. There are 151 jitney buses in Flint, sixty in service continually. The others operate only during rush hours.

**HALT FOR KANSAS CITY JITNEYS**

**Buses of Jitney Corporation Seized on Note—Touring Cars Decreasing—One Line Raises Fare to 10 Cents**

The jitney transportation situation is rapidly coming to a head in Kansas City, Mo. The Studebaker Corporation on July 18 took possession of fifteen buses furnished by it on a forty-bus order from the Kansas City Jitney Transportation Company, for failure of the company to meet a note due on a first mortgage. The National Jitney Association is quiescent, the offices are closed and no definite plans in hand. The White Star line of buses, embracing thirteen cars, individually owned and co-operating on schedules, began on the night of July 19 at the rush hour to charge 10 cents instead of the previous 5 cents a trip. Many individual buses have been eliminated, and the touring cars now in service on routes number only about sixty.

The embarrassment of the Kansas City Jitney Transportation Company is a serious blow to the industry. Its president is W. H. Miller, the leader of the movement in the West. Mr. Miller said of the situation: "We are now working on a plan of reorganization, and hope to get the buses back soon. We are compiling statistics of operation and management which will show where we have fallen short of the profitable operating plan."

It is said that the trouble was caused by large overhead expenses, as well as by the obvious difficulties encountered where a transportation company must hire men to collect money and handle expensive machinery. An officer of the Studebaker branch at Kansas City said that the buses were in good condition, showing 14,000 to 15,000 miles in the three months since they were put in service. He expressed confidence that jitney buses would pay at 5-cent fares when individually owned and carefully handled.

The White Star line owners have had a smaller overhead than the organized company, but they were glad of the chance to increase the fare to 10 cents. Their cars are mostly of the more expensive types. They confine themselves to routes to the southeastern part of the city. They admit only buses to their organization, contending that the touring cars are profitable only for popular priced livery service.

One local livery service, the outgrowth of the split between the private owners and the company organized by Mr. Miller, is said to be making good profits. It now has the stand and the telephones vacated when the Kansas City Jitney Transportation Company gave up its downtown headquarters.

The national association seems falling to pieces because of the failure of the local associations to pay dues for the support of the offices and to carry on the organization work. The National Indemnity Exchange, an insurance organization formed to protect jitneys, has not yet qualified, but may get its license soon.

**JITNEY MOVEMENT IN OHIO**

**Jitneys Used in Many Ohio Cities—Meeting Ordinance and Regulatory Restrictions**

The operation of jitney buses in Ohio is perhaps more extensive than might be anticipated. They have made little headway, however, in the largest cities.

In Columbus their operation seems to have been fairly successful. There operators have provided themselves with large cars with longitudinal seats. They operate over certain streets on regular schedules and sell tickets at the rate of six for 25 cents.

Toledo bus owners have asked the City Council to allow them to receive and discharge passengers at the same points at which the street cars stop. Up to the present time they have been compelled to observe the traffic rules and make stops at the safety zones, which are about 100 ft. from the street crossings.

Twenty-two bus operators paid the license fee required by the ordinance recently passed by Council at Youngstown, although the payment was made under protest. Operators in that city must obey the traffic ordinance.

In Lorain the bus operators have formed the Lorain Jitney Association and are now endeavoring to establish

a schedule on the streets occupied by car lines, so they may have a five-minute headway. The street railway company recently inaugurated a ten-minute service and found that a gain of patronage was the result.

At Ashtabula thirty buses were put out of business on July 13 by the decision of Common Pleas Judge A. G. Reynold sustaining the regulatory ordinance passed by the City Council some time ago. The ordinance fixed an annual tax of \$25 and required a bond of from \$3,000 to \$5,000, depending upon the size of the car. The jitney owners consider the ordinance prohibitive.

For a time quite a number of buses were operated in Cleveland, but for the most part they consisted of disreputable cars that people would not patronize. Since no one came forward with money to furnish the right kind of cars, it must appear to be a losing proposition in the face of the low street railway fare. Little comment is now heard in regard to the matter.

The Mahoning & Shenango Railway & Light Company brought matters to a climax at Youngstown on July 18 by refusing all jitneys entrance to Idora Park, which is owned and controlled by railway interests. An admission fee was also charged all visitors who entered the park in vehicles other than street cars. Those who paid, however, received street railway tickets for the return home. Owners of jitney buses retaliated by having three park employees arrested on the charge of violating Sunday closing laws. Vice-President Randall Montgomery of the company signed bonds for the employees and then announced that every jitney bus would be stopped and every store closed in Youngstown next Sunday unless the suits against the men are dropped. The fight between the railway and the jitneys promises interesting developments in the enforcement of the blue laws.

On July 19 the Ohio Electric Railway requested the city of Lima to return \$5,000 which it had deposited for the right to transport passengers to intercity points. The company says its business has shown a decline of 50 per cent at that point since jitney buses began operation within the city limits, and that as a consequence there must be reduced service until regulatory ordinances are adopted.

**BRIDGE TRAFFIC IN NEW YORK**

The Public Service Commission for the First District of New York has received from the bridge department the result of the annual count of passengers using the East River bridges in one period of twenty-four hours. The count was made on Nov. 5, 1914, from midnight to midnight. It shows a total traffic in both directions over all bridges of 763,982, which is an increase of 20,090 over the previous year. This is a gain of about 3 per cent, and much smaller than the gain of 1913 over 1912, which was more than 12 per cent. The Williamsburg Bridge still continues in the lead, carrying more passengers than the old Brooklyn Bridge. The latter is the only one of the four bridges which shows a positive falling off in the number of passengers using it. The figures include passengers in surface and elevated cars, in all kinds of vehicles, and pedestrians using the promenade. The following table shows the number of passengers passing in each direction over the four bridges:

	Williamsburg	Brooklyn	Queensboro	Manhattan
Eastbound .....	162,859	151,334	45,915	26,591
Westbound .....	164,275	142,372	43,932	25,804
Totals .....	327,134	293,706	89,847	52,395
Total traffic: 1912, 659,591; 1913, 742,992; 1914, 763,082.				

The Brooklyn Bridge led all other bridges in traffic until the Center Street loop subway was opened in August, 1913, and connected with the elevated lines passing over the Williamsburg Bridge. This resulted in a large increase of the traffic over the Williamsburg Bridge.

**Rockland Transfer Petition Granted.**—The petition of the selectmen of Rockland for free transfer privilege on the Bay State Street Railway, Boston, Mass., has been granted by the Public Service Commission, with the understanding the company may soon ask for a readjustment of fares.

**Near-Side Stop Approved for New Bedford.**—The Massachusetts Public Service Commission has approved a regulation, passed by the Board of Aldermen on Oct. 22, 1914, that

near-side stops be used in New Bedford after Aug. 1. The commission also approved the clause requiring a safety stop to be installed on all street cars passing Bedford and County Streets.

**Wage Increase Granted in Waterville.**—It was announced on July 16 by Manager Patterson of the Waterville, Fairfield & Oakland Street Railway that a general advance of 1 cent per hour had been made in the pay of all men employed on the system. Bonuses for efficiency make a possible increase beyond this of about \$1 per week.

**Petition for Fare Increase Withdrawn.**—The Berkshire (Mass.) Street Railway has withdrawn its petition for a 6-cent fare over certain of its lines and a readjustment of its fare limits. The company is studying some other systems of fare arrangements and needed more than the three remaining months of life of the petition to complete its investigations. Ultimately another petition will be filed with the commission.

**Good June Record in Louisville.**—The Louisville (Ky.) Railway is holding up before its trainmen for their emulation in future months the excellent June record, in which only two collisions between cars were reported. These collisions were inconsequential and concerned bumping together of empties in the carhouses. During the same month the mileage was 963,939 car-miles for the city lines and 210,156 car-miles for the interurban lines, or a total of 1,173,095 car-miles.

**Teaching Patrons in Elgin.**—Patrons are being taught how to board street cars properly in Elgin, Ill., an experiment having been inaugurated on the Grove Avenue line. A white line has been painted a few feet from the track, and the patrons are asked to stay within this space and to line up in the same orderly way in which they approach a ticket window. There has been successful regulation of taxis and other motor vehicles in Elgin by the City Council, and the street railway wishes to carry the safety campaign further.

**Tariff Supplement Issued to Cover Cummins' Amendment.**—The baggage committee of the Central Electric Traffic Association at its recent meeting in Fort Wayne, Ind., decided to issue a supplement to the tariff in compliance with the Cummins' amendment to the interstate commerce act. Under the new system persons desiring to check for interstate movement baggage that is valued at more than \$100, will be required to pay an insurance fee. Persons who refuse to sign the slip giving the valuation cannot check their baggage.

**Railroad Asks for Rescission of Service Order.**—The Hocking Valley Railroad, Columbus, Ohio, filed a petition with the Ohio Public Utilities Commission on July 7, asking that the order requiring electric car service between Jackson and Hamden be rescinded. The following day the original complainants filed charges to the effect that the company is not now complying with the order, that steam cars are being used instead of electric cars and that they stop at the stations instead of in the center of the towns, as in the past. Previous reference to this order was made in the *ELECTRIC RAILWAY JOURNAL* of April 17.

**New Summer Car Being Tried in Toronto.**—The Toronto (Ont.) Railway is trying out a new type of summer car in compliance with the order of the Ontario Railway Board to place fifty new cars, which are to be approved by the board, the Toronto Railway and the city engineer. The new car is fitted with longitudinal seats on the devil-strip side and cross-seats on the open side. Instead of the side steps there is a wire grilling to protect the public. Passengers enter at the rear platform and leave by the front door as in the winter cars. Of the fifty cars included in the board's order, twenty have already been built on the plan previously in use, except that they are 3 in. wider. These cars, which are the widest that it is possible to operate on the present lines, will have to be changed if this test car meets with approval.

**Accidents Have Decreased in Detroit.**—W. E. Cann, chairman of the general safety board of the Detroit (Mich.) United Railway, in reporting the progress of the safety campaign to the safety committeemen, stated recently that

since the organization of the movement there has been a continual decrease in the number of accidents. The number of collisions has decreased more than 40 per cent; running over steam and street railway crossings, nearly 50 per cent; derailments, more than 10 per cent, and platform accidents to passengers, nearly 40 per cent. The only marked increase in accidents are those where automobiles have been struck, and Mr. Cann takes the position that it is entirely reasonable to lay the burden of this increase upon the increased number of automobiles and the carelessness of the drivers.

**Fillmore Street Hill Operation for the "Movies."**—Moving pictures have been made illustrating the operation of two-car trains on the United Railroads of San Francisco Fillmore Street hill line and are being shown with a popular "News of the Week" series in Pacific Coast cities. The reels start out with the diagrams of the cable connection details and safety devices, and show in proper order the methods of coupling, signaling and operating the trains. The most striking feature is the operation over the hill of two two-car trains coupled together and counterbalanced by a single two-car train. The four cars are stopped and held stationary on the 25.4 per cent grade. The underlying idea of the film is the advertisement of the absolute safety of the hill line since the recent installation of new safety devices.

**Mr. Harmon Reports Accident Decrease.**—James Harmon, general claim agent of the Insull lines in Indiana, while in New Albany on July 16 gave out a statement to the effect that the accident roll of the Louisville & Northern Railway & Lighting Company, the Louisville & Southern Indiana Traction Company and the Interstate Public Service Company, altogether making about 120 miles, and the Columbus (Ind.) city lines as well, showed a decrease of seventy accidents for the first six months of 1915, as compared with the last half of 1914. This decrease in casualties is attributed practically altogether to the safety-first efforts which have been made by the companies listed. The list for the last six months contains two fatalities resulting from an accident on the Louisville & Southern line, an accident, however, which was caused by reckless driving of the victim's automobile.

**Skip-Stop to Be Tried in Chicago.**—Plans have been carefully perfected by the Chicago (Ill.) Surface Lines for the installation of an experimental skip-stop line on North Clark Street, one of the heavy trunk lines out of the loop district to the north side of the city. This line is 10.7 miles in length, and the skip-stop schedule will begin about 0.5 mile outside of the loop district. The Chicago plan differs from that adopted in Cleveland and Kansas City in that the stops were designated as a result of a traffic survey. The total number of 120 stops on this line will be reduced to seventy, and it is contemplated that the skip-stop schedule will reduce the running time fifteen minutes for each round trip. All stops will be designated by a white band painted around the company's tubular-steel poles. If the experiment proves satisfactory, the skip-stop idea will be extended to other lines.

**Pension System Established for Third Avenue Employees.**—Frederick W. Whitridge, president Third Avenue Railway, New York, has announced the establishment of a pension scheme for the employees of the company and its subsidiaries. Pensions to be granted will range from \$20 to \$40 a month, the amount being based in part on the length of service and in part on the monthly pay received by the employee. Only those employees will be eligible who become members of the Third Avenue Railway Employees' Association and whose membership is continuous up to the time of the granting of the pension. The money for the payment of the pensions will be obtained by applying the interest of funds of the benefit association, and from the treasury of the Third Avenue system, which will pay whatever additional sum may be necessary. Any employee who has reached the age of seventy years, whether incapacitated or not, and who has been in continuous service of the system for at least twenty years will be entitled to a pension. Provision also is made for pensions for employees who have reached the age of sixty-five who have been incapacitated after being in the service for twenty years.

## Personal Mention

**Mr. Thomas Lynch**, formerly superintendent of employment of the Detroit (Mich.) United Railway, has been appointed superintendent of trainmen's records. Mr. Lynch has been employed by the company continuously for thirty-five years.

**Mr. Francis X. Disney**, Elmira, N. Y., has been named secretary of the Public Service Commission for the Second District of New York, to succeed Mr. Frank H. Mott, whose selection for the counselship is elsewhere noted. Mr. Disney has been assistant secretary for the last two years.

**Mr. Ledyard P. Hale**, counsel for the Public Service Commission for the Second District of New York since its organization, has received a leave of absence without pay until Sept. 1 on account of the press of his duties as chairman of the public utility committee of the constitutional convention.

**Mr. E. R. Giaque**, formerly carhouse foreman at the Fourteenth carhouse of the Detroit (Mich.) United Railway, has been made assistant superintendent of the Fourteenth, Crosstown and West Warren lines to succeed Mr. Albert Bath, who has been appointed superintendent of these lines.

**Mr. Arthur F. Brown** has been appointed superintendent of employment of the Detroit (Mich.) United Railway. He has been in the company's employ for twenty years in various capacities, serving as inspector, carhouse foreman, chief inspector, assistant superintendent of both city and interurban divisions, and for the last twelve years as superintendent of various city lines.

**Mr. Frank H. Mott**, Jamestown, N. Y., formerly a deputy attorney-general and for the last two years secretary of the Public Service Commission for the Second District of New York, has been named counsel of the commission during the leave of absence until Sept. 1 of Ledyard P. Hale, noted elsewhere in this column. It is understood that upon Mr. Hale's return Mr. Mott will resume his private practice of law.

**Mr. Albert Bath** has been appointed superintendent of the Fourteenth, Crosstown and West Warren lines of the Detroit (Mich.) United Railway, to succeed Mr. Arthur F. Brown, whose appointment as superintendent of employment is elsewhere noted. Mr. Bath had been assistant superintendent of these lines for the last five years, previously for three years being employed as night and day carhouse foreman at various carhouses.

**Mr. J. D. Cornell** has been appointed traffic manager of the Joplin & Pittsburgh Railway, with headquarters at Kansas City, Mo. Mr. Cornell in 1904 was attached to the Southwestern Tariff Committee at St. Louis, and later as an adjuster traveled over much of the territory. Five years ago he took up electric railway traffic specialization, when he went to the Rock Island Southern Railroad as general freight and traffic agent to develop the traffic industry of that composite line, which handled freight chiefly by steam trains and passengers by electric.

**Mr. Walter Jackson**, associate editor *ELECTRIC RAILWAY JOURNAL*, has been appointed business manager of this publication. Mr. Jackson was born in 1882. He left public school at the age of thirteen, but entered the Cooper Union Night Schools within the following year, graduating therefrom as bachelor of science. In 1903, following service with several machinery companies, he joined the editorial staff of this paper. In connection with his editorial work, Mr. Jackson has traveled extensively, including several trips abroad. He has also acted as consulting editor with the McGraw-Hill Book Company in addition to preparing for that firm a "Handbook of Electrical Methods" and "Electric Car Maintenance."

**Mr. G. R. G. Conway**, for the last four years chief engineer of the British Columbia Electric Railway, Vancouver, B. C., has resigned that position to take up work as general consulting engineer, with offices in Toronto. In connection with his new engineering work Mr. Conway has been appointed consulting engineer for the British Colum-

bia Electric Railway. Mr. Conway's term of service with this company covered a period of very rapid development, during which he carried out for the company many large undertakings. Among these were the construction of the great dam at the outlet of Lake Coquitlam; the enlargement of the company's existing power house on the North Arm of the Inlet, and the construction of the new No. 2 power house, increasing the output of the Coquitlam-Buntzen hydraulic project to more than 85,000 hp.; the construction of a 130-ft. dam on the Jordan River, Vancouver Island, and the consequent enlargement of the Jordan River power plant to a capacity of 20,000 hp.; the construction of a steam auxiliary plant at Brentwood Bay; the enlargement of the Vancouver steam auxiliary plant, and the laying of many extensions of lines on both the mainland and the island. Mr. Conway received his early training in Great Britain. There he was connected with many large engineering projects and performed important work for the cities of Birmingham and Aberdeen. Later he went to Mexico, where he carried out engineering projects for the Monterey Railway, Light & Power Company. Mr. Conway is a member of numerous engineering organizations in Europe and America, and has contributed many valuable addresses and papers for the records of these societies. The retirement of Mr. Conway was marked by a dinner tendered him by officials of the company at the Hotel Vancouver, Vancouver, on June 26. Mr. George Kidd, general manager, presided and read a cablegram from the London board expressing regret at the retirement of Mr. Conway and appreciation of his work for the company. The office staff presented Mr. Conway with a mounted solid silver rose bowl.

**Mr. William A. Del Mar** has resigned from the electrical engineering department of the New York Central & Hudson River Railroad to accept a position on Aug. 2 as assistant electrical engineer of the Interborough Rapid Transit Company of New York. Mr. Del Mar has been connected with the New York Central Railroad since 1904, engaged in technical problems connected with the electrification. He has also taken a prominent part in committee work with various technical associations, particularly in connection with standardization, being a member of the A. I. E. E. standard committee in 1914 and 1915, chairman of the 1914 railway standard committee which prepared the Institute's present railway standards, chairman of the 1915 wire and cable committee which is engaged in the standardization of cable stranding, and a member of the 1914 wire and cable sub-committee which prepared the wire and cable standards. He has also been chairman for the past three years of the wire and cable committee of the Association of Railway Electrical Engineers. The specifications of this committee have been adopted largely by the American Electric Railway Association and the American Society for Testing Materials. He has also been secretary of the joint rubber insulation committee and has contributed papers on the question of standardization, as well as upon other subjects, to the columns of this paper and to those of the *Electrical World*. Mr. Del Mar is a native of San Francisco, where he was born on Dec. 15, 1880. He went to Europe in 1887 owing to the desire of his father, who is the author of numerous historical books, to be near the libraries and archaeological collections of Europe. He was educated in France and England, and was graduated in 1900 from the City and Guilds' College of London. After coming to this country he joined the testing department of the General Electric Company in 1900, and in 1902 entered the engineering forces of the Manhattan Railway, where he remained until he became associated with the engineering force of the New York Central Railroad. He is the author of "Electric Power Conductors" and of some of the sections in Penders' "American Electrical Engineers' Handbook" and is a member of the A. I. E. E., the A. E. R. A. and the A. R. E. E., and is an associate member of the I. E. E. of England.

### OBITUARY

**Louis F. Beckert**, a salesman with the Westinghouse Electric & Manufacturing Company, died on July 7 in Pittsburgh. Mr. Beckert was born in Pittsburgh in 1886, and he was graduated from Pennsylvania State College in 1907.

# Construction News

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

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

## RECENT INCORPORATIONS

**Peoria & Chillicothe Electric Railway, Peoria, Ill.**—Incorporated in Illinois to build an interurban railway from Peoria to Chillicothe, 18 miles. Incorporators: E. A. Mitchell, E. V. Mattice, John F. Lynch, Chillicothe, and A. C. Black, Peoria.

**\*South Brownsville Street Railway, South Brownsville, Pa.**—Application will be made by this company for a charter to construct an electric railway from Brownsville to South Brownsville. Among those interested are W. E. Moore, J. S. Jenks, H. L. Mitchell, D. I. McCahill and E. T. Brashear.

**\*Mitchell Street Car & Interurban Railway, Mitchell, S. D.**—Incorporated in North Dakota to construct an electric railway. Plans are being made to construct three miles of city line this year. Capital stock, \$200,000. Incorporators: O. F. Cassem and A. N. Hill, Mitchell, and D. N. Hill, Lake Hills, Iowa.

## FRANCHISES

**Los Angeles, Cal.**—The Pacific Electric Railway has received an ordinance from the Council of Los Angeles granting permission to discontinue service and remove the tracks on its Colgrove Line on Santa Monica Boulevard approximately 150 ft. east of the center line on Avery Street; thence northwesterly over private property and intersecting streets, to a point in Vermont Avenue north of Sunset Boulevard; thence northerly along Vermont Avenue to a connection with its Hollywood Line at Vermont Avenue and Hollywood Boulevard.

**Bridgeport, Conn.**—The Connecticut Company has asked the Council for a franchise to relocate its tracks on North Avenue from North Main Street to Trumbull Road, Bridgeport.

**Amherst, Mass.**—The Holyoke Street Railway has asked the Council of Amherst for a franchise to extend its tracks on South Pleasant Street to land which the company bought last year for the erection of a new power house and carhouse.

**Wakefield, Mass.**—The Bay State Street Railway has asked the Council for a franchise to alter and relocate its tracks on Main Street, Wakefield.

**Pontiac, Mich.**—The Detroit, Pontiac & Owosso Railway has received a franchise from the Council to construct a railway in Pontiac, with the choice of Oakland Street, Baldwin Street, Elizabeth Lake Avenue and Huron Street. [June 19, '15.]

**Buffalo, N. Y.**—The International Railway has asked the Council for a franchise to lay special tracks on Ohio Street, Buffalo, for the accommodation of travelers on lake boats.

**Cleveland, Ohio.**—The Cleveland, Akron & Canton Terminal Railway has received a franchise from the Council to construct a subway under East Fifty-fifth Street from the lake to the southerly limits of the city. This is part of a plan to construct a railway from Cleveland along the old Ohio Canal to Dresden. [May 8, '15.]

**Columbus, Ohio.**—The East Linden Electric Railway has asked the Council for a twenty-five-year franchise for the construction of its line over two sections of the city. The first begins at Hayes Avenue and Leonard Avenue and extends via Hayes Avenue, Mount Vernon Avenue and Champion Avenue to Long Street. The second begins at the corporation line where it cuts Hudson Street, extending west on Hudson Street to Neil Avenue, North on Neil Avenue to Dodridge Street and thence west to the Olen-tangy River. [June 12, '15.]

**St. Clair, Pa.**—The Eastern Pennsylvania Railways and the Schuylkill Electric Railway have received a franchise to construct an electric railway in St. Clair, which will connect the southern part with the northern part of Schuylkill County.

## TRACK AND ROADWAY

**Little Rock Railway & Electric Company, Little Rock, Ark.**—Plans are being made to widen and strengthen the bridge across the Arkansas River so as to enable it to carry street car traffic. The cost of reconstruction will be about \$290,000, of which the county will pay \$100,000, the railway \$100,000 and the Main Street property owners \$90,000.

**Eureka, Cal.**—Surveys have been begun on the proposed railway from Eureka to Klamath Falls, Ore., and it is expected that construction will be begun soon. [Feb. 27, '15.]

**Pacific Electric Railway, Los Angeles, Cal.**—Work has been begun by this company reconstructing its track on American Avenue, Long Beach, from Sixth Street to Anaheim Street.

**San Francisco-Oakland Terminal Railways, San Francisco, Cal.**—This company will be asked by the West Berkeley Improvement Club to extend its Sixth Street line from University Avenue north to the town line.

**Santa Barbara & Suburban Railroad, Santa Barbara, Cal.**—Work has been begun on the 2600-ft. extension planned by this company on the "Riviera." The Municipal Improvement Company has been awarded the contract, which includes the first 900 ft.

**Connecticut Company, New Haven, Conn.**—Work will be begun at once by this company laying new track on East Main Street from Broad Street to the city line and on West Main Street from Maple Street to the city line in Meriden. The company will use 80-lb. rail on East Main Street and 95-lb. rail on West Main Street.

**Wilmington & Philadelphia Traction Company, Wilmington, Del.**—Material has been received and work will soon be begun on the extension of this company's Washington Street line to Concord Avenue and the Boulevard.

**Idaho Railway, Light & Power Company, Boise, Idaho.**—The properties of this company have been purchased by the Electric Investment Company.

**Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill.**—This company is improving its park and fair ground line, lowering the tracks to a new street pavement level, placing a modern curve at the east end of the park and building a new bridge over a small stream.

**East St. Louis & Suburban Railway, East St. Louis, Ill.**—Operation has been begun on the extension of this company's Lansdowne Avenue line from Twenty-fifth Street and Lynch Avenue to Jones Park, St. Louis.

**Pekin (Ill.) Municipal Railway.**—Operation has been begun on the Court Street line of this railway. [Nov. 21, '15.]

**Evansville (Ind.) Railways.**—Operation was begun on July 4 on the Bellemeade extension of this company's line.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—This company will lay new track on State Boulevard, Fort Wayne, and will move the track in front of the Indiana Home for Feeble Minded Youth from the north side to the south side of the street. Preparations are being made for the paving of State Boulevard. The company will expend \$20,000 on these improvements.

**Fort Dodge, Des Moines & Southern Railroads, Boone, Iowa.**—This company has purchased its own right-of-way into Des Moines and construction will be begun at once. The company has acquired a strip of land from Swanwood, 1 mile north of the city limits, to Brooks Street, East Des Moines.

**Worcester & Warren Street Railway, Worcester, Mass.**—The Council of West Brookfield has ordered this company to relocate its tracks on West Main Street to meet the requirements of the town.

**Hannibal Railway & Electric Company, Hannibal, Mo.**—Work has been begun by this company relaying its tracks on South Maple Avenue from Broadway to Lyon Street, Hannibal, with 70-lb. rails.

**Reno (Nev.) Traction Company.**—Work has been begun by this company on an extension of its line from Fourth Street to the race track. The branch will not be a permanent line but will be constructed to take care of the heavy traffic during the race meet.

**International Railway, Buffalo, N. Y.**—Announcement has been made that work on the tracks of this company in Allen Street and Virginia Street for the Connecticut Belt and Hoyt Street car service will be completed within a short time. New rails have been laid, switches installed and the pavement repaired. About \$10,000 is being spent on this undertaking. New track is also to be laid in various parts of the city and a considerable amount of paving work is being done.

**New York State Railway, Rochester, N. Y.**—The Public Service Commission for the second district of New York has approved the extension of this company's lines from Rochester to Greece to connect the company's tracks with a loop crossing Dewey Avenue, Greece, and crossing the tracks of the Kodak branch of the New York Central Railroad. The tracks will be built for about 1800 ft. from the present terminus of the lines to Little Ridge Road, connect with the Dewey Avenue extension and thence extend by a loop back to the south-bound tracks as now existing. The tracks will run through the center of Dewey Avenue, and will cross at grade Knickerbocker Avenue, Avis Avenue, Pullman Avenue, Steko Street and Palm Street and the tracks of the Kodak branch of the New York Central Railroad.

**New York State Railways, Syracuse, N. Y.**—This company plans to expend \$200,000 for trackage improvements in Syracuse.

**Black River Traction Company, Watertown, N. Y.**—This company will lay new double track on its line on lower State Street, Watertown. Wooden ties and stone ballast will be used.

**Piedmont Railway & Electric Company, Burlington, N. C.**—It is reported that this company may extend its lines to Elon College.

**East Village & Harbor Traction Company, Ashtabula, Ohio.**—Surveys will be begun at once of this company's proposed line in Ashtabula. In connection with the road a steel and concrete bridge will be constructed across the Ashtabula River at the foot of Main Street. Mark E. Copeland, Cleveland, is interested. [Sept. 19, '14.]

**\*Cincinnati, Ohio.**—Plans are being considered for the formation of a new interurban traction corporation, its object being to furnish an entrance into Cincinnati for the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad. The distance between Anderson's Ferry, the present terminus of the interurban line, and Third and Walnut Streets is about six miles and it is estimated that the cost of the road will be about \$700,000.

**Lake Shore Electric Railway, Cleveland, Ohio.**—Work has been begun by this company reconstructing its tracks from the Big Four Railway tracks in Urbana to Crystal Lake Park. The tracks will be lowered from 2 ft. to 3 ft. and a more modern curve put in entering the park.

**Oakwood Street Railway, Dayton, Ohio.**—One of the tracks being constructed by this company has been completed and work is being begun on the other. The line extends about  $\frac{3}{4}$  mile beyond the present Oakwood railway terminus. It is expected that the road will be completed and ready for operation about Aug. 1.

**Springfield (Ohio) Railway.**—This company has agreed to remove its feed wires from the trolley poles in Main Street between Grape Alley and Wittenberg Avenue so as to free the street from overhead obstruction. The feed wires will be placed in the alleys and across the streets in conduits.

**\*Henryetta, Okla.**—Plans are being considered to construct an electric railway from Henryetta to Dewar, 3 miles. Gen. Z. T. Sweeney, Columbus, Ind., is interested.

**\*Ephrata, Pa.**—A movement is being agitated for an electric railway from Sinking Spring via Denver, to Ephrata, where it will connect with lines operating to Lancaster and Lebanon, and at Sinking Spring with a line to Reading. Many landowners are willing to give the right-of-way.

**Cleveland & Erie Railway, Girard, Pa.**—A report from this company states that it is installing a sample lot of welded splice bars purchased from the Indianapolis Switch & Frog Company to be used in connection with 60-lb. A.S.C.E. rail in paved streets.

**Houston, Richmond & Western Traction Company, Houston, Tex.**—This company has awarded a contract to the Federal Bridge Company, Des Moines, Iowa, at \$56,000 to construct a bridge over the Brazos River. This is in connection with the company's proposed 30-mile railway from Houston to Richmond. E. Kennedy, Houston, is interested. [June 12, '15.]

**Ogden, Logan & Idaho Railway, Ogden, Utah.**—Announcement has been made that this company will build a new line from Ogden to Brigham City, taking a shorter route than the present one and tapping a new territory. Surveys have been completed and right-of-way is being secured. Construction has been practically completed on the company's extension to Huntsville.

**Salt Lake & Utah Railroad, Salt Lake City, Utah.**—A report from this company states that the contract has been awarded for grading and material purchased for an extension of its lines from Springville to Spanish Fork, 6 miles. Work has been begun.

**Ohio Valley Electric Railway, Huntington, W. Va.**—A contract has been awarded to the Brubaker Construction Company for the construction of an extension of this company's line on Twelfth Avenue, Huntington.

#### SHOPS AND BUILDINGS

**Aurora, Elgin & Chicago Railroad, Wheaton, Ill.**—This company announces that about Aug. 1 it will move its general offices from Wheaton to the Hotel Arthur Building, Aurora, Ill. The general offices will occupy the sixth floor and a part of the fifth floor, and the first floor of the building will be used as an interurban passenger station. All the interurban cars entering Aurora will receive and discharge their passengers at this point. These include the Aurora, Elgin & Chicago Railroad, the Joliet, Plainfield & Aurora Railway and the Chicago, Aurora & DeKalb Railroad.

**Cleveland (Ohio) Railway.**—Application has been made by this company to the building department for a permit to construct three buildings and a reservoir at Denison Avenue. W. I. Thompson & Son Company has the contract. An office building two stories high and a repair shop are included in the improvements, as well as a boiler and pump house. The cost is estimated at \$84,500.

**Corpus Christi Railway & Light Company, Corpus Christi, Tex.**—This company reports that plans are being made to construct a new carhouse at Corpus Christi with a capacity for fourteen cars.

**Milwaukee Northern Railway, Milwaukee, Wis.**—This company has completed its new \$25,000 station on Fifth Street between Wells Street and Cedar Street, Milwaukee. The structure is 70 ft. x 40 ft., one story with basement. The building is of brick, concrete and tile and the interior is finished in tile and quarter-sawed oak.

#### POWER HOUSES AND SUBSTATIONS

**Pacific Electric Railway, Los Angeles, Cal.**—This company advises that it is installing two 200-kw. motor-generator sets in its new substation at Corona, which is the terminus of a short line running from Riverside to Corona. It is estimated that the cost of the plant will be about \$20,000.

**Hutchinson (Kan.)—Interurban Railway.**—This company has purchased a double equipment of Westinghouse 35-hp. railway motors.

**Vicksburg Light & Traction Company, Vicksburg, Miss.**—A report from this company states that it has recently purchased a new 500-hp. Heine boiler to be equipped with Green chain grate stoker to replace two 250-hp. Stirling boilers equipped with Murphy stokers. The installation will be made about Sept. 1, at its plant in Vicksburg.

**St. Louis, Mo.—Morrison & McCall, purchasing agents, Chemical Building,** report that they have ordered five 125-kw. Allis-Chalmers oil engines complete with exciters and d.c. generators for use on various electric railway properties controlled by them.

**Toledo Railways & Light Company, Toledo, Ohio.**—Plans are being made by this company to build an addition to its power plant at Water Street. It is estimated that the cost will be \$2,700.

# Manufactures and Supplies

## ROLLING STOCK

Dayton & Troy Electric Railway, Dayton, Ohio, is rebuilding a car in its shops.

Toledo & Western Railroad, Toledo, Ohio, has ordered one 60-ton electric locomotive and one steel-body package freight car.

Boston (Mass.) Elevated Railway has ordered three two-way dump cars from the Universal Car & Manufacturing Company, New York, N. Y.

Morrison & McCall, St. Louis, Mo., purchasing agents, located in the Chemical Building, expect to purchase possibly five extremely light cars for their various properties.

Fort Dodge, Des Moines & Southern Railway, Boone, Iowa, will receive two new passenger cars on July 31. One car, which has a side entrance, is for the Boone-Ames line; the other, a larger car, is for the main line traffic between Fort Dodge and Des Moines.

Ogden, Logan & Idaho Railway, Ogden, Utah, noted in the *ELECTRIC RAILWAY JOURNAL* of March 20 as having ordered one 50-ton Baldwin-Westinghouse electric locomotive, is reported as having ordered an additional locomotive of the same type, to be put into service on Nov. 1.

## TRADE NOTES

Standard Paint Company, New York, N. Y., has received a gold medal at the Panama-Pacific Exposition for its cement waterproofing compound, "Impervite."

I. R. Nelson's Electrical Manufacturing & Repair Works, Newark, N. J., has appointed A. M. Leacock to represent this company in the electric railway field. Mr. Leacock has had extensive experience in the manufacture of field and armature coils, both in electric railway repair shops and with manufacturing concerns. He recently resigned as superintendent of the Electric Operations Company, Inc., where he had complete charge of the field coil department.

Electric Specialties Company, North East, Pa., has been formed for the purpose of manufacturing electric machinery and repair parts, such as commutators, trolley wheels, line material, copper, bronze and brass castings, and drop forgings in copper and steel. The plant at North East is of brick and steel construction and occupies 15,000 sq. ft. of floor space. The officers of the company are: President, G. E. Pierce; vice-president, F. B. Moorhead; treasurer, O. C. Hirtzel; secretary, N. P. Fuller.

O. T. Hirtzel, who severed his connections with the Westinghouse Electric & Manufacturing Company on Feb. 1 has been appointed treasurer of the Electric Specialties Company, North East, Pa., a new corporation described elsewhere on this page. Mr. Hirtzel has been with the Westinghouse Company since 1912 as railway supply specialist of the detail and supply department at East Pittsburgh. Prior to that he was treasurer and manager of the Eureka Company, formerly the Eureka Tempered Copper Works, since the formation of that corporation nearly twenty years ago.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received an order to equip with No. 307-V four-motor equipments and control the six cars recently ordered by the New York & Long Island Traction Company. Except for the fact that the new motors will be of the ventilated type they will be duplicates of the No. 307 motors now in service and therefore will enable the mechanical department of this company to benefit by the interchangeability of parts of the new with the old motors. The Westinghouse company has also received an order for ten a.c. two-motor equipments which are duplicates of the present No. 409 motors.

Archbold-Brady Company, Syracuse, N. Y., reports the sale of structural-steel towers for 28 miles of transmission line to be built by the Iowa Railway & Light Company, Cedar Rapids, Iowa, between Blairstown and Tama, Iowa. This will be a 66,000-volt, single-circuit, three-phase transmission line on suspension-type insulators. 48-ft. A-frame towers constructed on 440-ft. standard spans with lace-chan-

nel poles at special locations and square towers for anchoring line ends and at heavy angles will be used. The transmission line will be steel-reinforced aluminum with steel ground wires. This order was placed by S. C. Dows, purchasing agent, and J. M. Drabelle, electrical engineer.

## ADVERTISING LITERATURE

Drew Electric & Manufacturing Company, Indianapolis, Ind., has issued a folder describing its new cable insulator and splicing sleeve for underground cables. When used as an insulator in the cable sheath, this insulator, it is said, will destroy the conductivity of the sheath by dividing it into short sections and prevent it from collecting current from earth and underground structures. When used as a splicing sleeve it eliminates the danger of leakage at the splice, as the insulator will stand up against any voltage.

Lincoln Electric Company, Cleveland, Ohio, has issued a booklet on the subject of electric arc welding. This gives an excellent description of the principles involved in welding of all kinds and devotes special attention to autogenous welding with the electric arc, an analysis being made of the cost involved, both for labor and for power to produce the arc. Detailed accounts of the methods of welding various pieces of apparatus are included, together with a description of the Lincoln arc welder which is manufactured by this company.

Mitchell-Rand Manufacturing Company, New York, N. Y., manufacturer of all kinds of wax, pitch and asphalt compositions, has issued a folder describing the Columbia or "drop" method and the Kraemer and Sarnow method for testing the melting point of these substances. The difficulty in taking the melting point of such materials as mentioned above, which do not crystallize on solidifying, is the fact that there is no line of demarcation between its solid state and its liquid state. This company has endeavored, therefore, to standardize its tests so that a desirable uniformity on the various products is maintained and the user will have a standard on which to base comparisons. The folder illustrates the apparatus and describes the methods for ascertaining melting points in a way which would make recourse to a chemist or a technical expert unnecessary.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has just issued a booklet entitled "Results of Electrification" in which the history of electric operation on steam railroads is outlined briefly, descriptions of a number of the more important electrified lines being given. These descriptions are grouped under general headings covering installations for tunnels, terminals, trunk lines, mountain grades, switching service and for railroads having relatively light traffic, such as is found on the larger interurban systems. The booklet is elaborately illustrated and contains a number of tables covering important data upon the various systems described. It concludes with an interesting diagram showing the cumulative shipments of electric locomotives on a tonnage basis by the Westinghouse Electric & Manufacturing Company from 1905 to 1914, the curve showing a comparatively steady increase from an insignificant total in 1905 to approximately 24,000 tons in 1914.

## COMPANY MAY NOT ABANDON LINE

The Public Service Commission for the Second District of New York has refused to permit the Empire United Railways to abandon its line from Oswego to Seneca Hill on the east side of the Oswego River. The application is the second which the company has made to the commission since it constructed its line through Minetto to Oswego on the west side of the river. Though Commissioner Irvine finds that the population along the east side of the river is not sufficient to make the operation of the line pay, it is decided that the road should be operated for the accommodation of the residents of Seneca Hill until the proposed bridge across the river from Seneca Hill to Minetto is completed. The order of the commission suggests that the cars might be operated at a forty-minute headway or less the year round. The company receives permission to renew the application as soon as the new Minetto bridge is completed, as at that time the residents of Seneca Hill can be as readily accommodated on the west side line as on the present east side line.