

# Electric Railway Journal

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## AS TO THE HONOR OF MR. WHITRIDGE

The brilliant and valiant president of the Third Avenue Railway has had much fun at the expense of the Public Service Commission for the First District of New York, but it has been honest fun, with all the rules of fairness strictly observed, in spite of the fact that his flashing rapier was sure to make him an object of counter attack. One would expect the commission scrupulously to obey the same rules in taking a thrust at Mr. Whitridge. An incident of the recent New York strike, however, arouses the suspicion that the commission's desire to retort overcame its usual sobriety and impartiality. On the basis of an informal record of the Second District Commission, Chairman Straus accused Mr. Whitridge of causing the general strike by intentionally violating or negligently forgetting an arbitration agreement made in settlement of the Yonkers strike in 1913. The newspapers teemed with reflections on Mr. Whitridge's honor, with no apparent effort to ascertain the facts. A careful investigation of the official minutes shows a preponderance of evidence against interpreting the informal 1913 agreement as binding the parties to arbitrate all future disputes. The labor leader undoubtedly desired a permanent agreement, but Chairman Stevens, clearly wishing to repress too extensive union demands, diplomatically avoided any reference in the agreement to general future disputes, and Mr. Whitridge accepted the proposal as verbally expressed by the chairman, with a qualification regarding non-arbitrable matters. Moreover, the allegation that the 1913 agreement was to extend beyond the questions then in dispute was not made until after Mr. Whitridge left for Europe, although he met committees of the men before he left. In short, the construction now placed upon the agreement by the First District Commission is unwarranted, and the fact that the company's counsel was not allowed to enter evidence in the matter makes the arraignment of Mr. Whitridge the more unjustifiable.

## AGREEMENTS SHOULD BE FORMAL

While we insist that the informal 1913 Yonkers agreement affords no ground for impugning the probity of Mr. Whitridge, we must add that Mr. Whitridge is not blameless. The incident has a very important lesson for both commissions and corporations. Matters that call for formal and complete records should not be handled in a loose and informal manner. Public utilities and their officers must have a repute for candor, straightforwardness and fair dealing. To earn this repute it is essential that as far as the responsibility

rests with them all records of their acts should be clear, positive and conclusive. It is a good plan to have all such agreements in writing, and they should be neither evasive nor indefinite. Those just reached in the New York strike, as published last week, are good examples of the proper forms of settlement. It is pertinent to mention the recommendation now made by Chairman Straus that the law be amended so that voluntary arbitration agreements between utilities and their employees shall be recorded with the commission and enforced by it in the event of a breach. If such a law would give the commission full power to hold employees as well as utilities to these agreements, it would be a blessing. The public authorities must in time have as much power to control the acts of organized labor as they now have power to control organized capital. The public is traditionally supposed to sympathize with the under dog, and the corporations are the under dogs to-day.

## A LARGE JOB OF REMODELING

The remodeling job which is now going through the shops of the United Railway & Electric Company in Baltimore, Md., involves the revestibuling of 560 cars, with other improvements. The way in which the work has been organized is described and illustrated in a leading article in this week's issue. The cars are to be turned out at the rate of a dozen a month, so that the work will be in the shops for some time. The organization is such, however, that as far as interference with the routine work is concerned it could be continued indefinitely. While it would at first sight appear that the superimposing of such a large remodeling job upon the regular maintenance work would cause confusion, it has not done so for these reasons: First, the details of the changes were all worked out well in advance by means of a sample experimental car end. Next, the designs were prepared so that large quantities of parts could be ordered from manufacturers. Again, much of the work was detailed to a special force of men, who have become expert at the individual tasks involved. While no data as to costs are available at this time, these costs must be reasonable, for waste in labor and material has been minimized in every possible way. While the aggregate expense of the work will, of course, be large, there is no doubt that it will be a paying proposition in reduction of maintenance costs through standardization and improvement in general condition of the rolling stock, minimizing of boarding and alighting accidents, and generally better facilities for handling passenger traffic on the platforms of the cars.



### HUMANIZING RAILWAY OFFICIALDOM

When the officers of a railway can forget formalities and address each other by their first names, it is one evidence that they understand each other, a vital factor in the satisfactory solution of all departmental problems. Of late in connection with welfare work much attention has been directed toward bringing together the employees in the rank and file of electric railways, but this phase of activity may well be extended into the official ranks. Rubbing elbows on common ground is perhaps more important to a railway's officials than it is to the departmental employees. While the committee plan of company organization tends to accomplish this end, not many railways are operating on that plan. Even committee organization work fails to humanize the railway business, whereas periodical social meetings of the officers of both large and small railway companies purely bent on pleasure, bring about personal understandings that facilitate official business. Nothing is more detrimental to successful operation than internal friction, and close personal acquaintance developed through social gatherings of department heads and their immediate subordinates tends to eliminate this by bringing about a genuine appreciation of the other fellow's problems and an understanding of his point of view. In other words, we believe, after observing the results obtained by occasional social gatherings of railway officials on a number of roads, that this is a movement which may well be fostered. The railway industry must be humanized within before it can be expected to be humanized without, and the social gathering of the officers is a step in this important direction.

### MOTOR BUSES FOR PACIFIC COAST SYSTEMS

Electric railways on the Pacific Coast have suffered to a very serious extent from jitney bus competition, and despite convincing evidence that the jitney operates at a loss to State and city, and even to the operator himself, yet it survives and in some cases even thrives. The number operating in Los Angeles, for example, is still increasing, as shown in a report printed in last week's issue. This also reviews the status of the jitney question in all important California cities. The report shows that jitneys have been legislated out of existence in many cities and that the general trend of events is toward their suppression. Still the fact remains that two years after their advent they are operating on a more extensive scale than ever in the largest two Pacific Coast cities, and that in several cities where they are now forbidden by law they were patronized extensively until discontinued.

One conclusion which must be drawn from these conditions is that where there is no car service there is a demand for this class of urban transportation. After all, the primary function of the street railway company is not to operate cars, but to carry passengers. If a demand can be adequately and profitably served by certain forms of auto bus service, the street railway companies are the ones to supply that service. The

ELECTRIC RAILWAY JOURNAL does not believe that auto buses will ever replace the electric car operating on rails, but it is evident that the auxiliary services which auto buses can render deserve careful study. When a suburban district needs transportation facilities, but cannot offer enough traffic to warrant an extension of the electric railway system, it would seem wise for the traction company to consider establishing an auto bus feeder service to that district and so hold the trade until an extension is warranted.

Again, on those lines of an electric railway system where the ordinary cars are needed for rush-hour traffic—and the auto bus can never adequately serve this need—these same heavy, expensive cars are operated for long periods between rush hours with an average load of much less than full capacity. This is an expensive waste if these few passengers could be served by auto buses. It may be that in some districts an auto bus could parallel the electric lines and collect passengers to be transferred to the street cars at stations, thus materially cutting down the operating schedule of the electric line and improving the service, or it may be that the auto bus-to-be will operate by trolley to the limits of the zone which it was profitable to electrify, and beyond that run on storage battery charged during off peak. No entirely satisfactory plan has yet been worked out and, of course, no one plan could be applied universally. However, the fact that the foregoing schemes and many others have been recently suggested in Pacific Coast cities indicates the interest and activity there along these lines, and it is natural to expect interesting developments in the near future in the use of auto buses by the street railway companies.

Heretofore experiments with automobiles and auto bus feeders have usually been carried on the company's books at a loss—witness the competition jitney buses established by the Puget Sound Traction, Light & Power Company or the San Joaquin Light & Power Company (ELECTRIC RAILWAY JOURNAL for July 1, page 39). But these did not represent business ventures *per se*. In the light of recent developments the attitude has become rather "How can we profitably utilize the auto bus as an auxiliary and feeder?" and no answer to this question will be found by putting on a fleet of automobiles with the primary purpose of crowding out independent jitneys or by experimenting with cheap runabouts using factory bodies. The new basis of investigation, rather, is typified by the experiments recently made on several California systems with automobiles adapted to service on rails, and more particularly by the twelve and twenty-passenger auto buses (described elsewhere in this issue) recently built by the Pacific Electric Railway for feeder service. In commenting on the latter, Paul Shoup, president of the Pacific Electric Railway, is quoted as saying, "Such a car (and this one indicates possibilities of success) is destined to be at least a pioneer for standard car service, and it may have an even greater field in the world of transportation."



#### UNITS FOR COMPARING TRACK UPKEEP COSTS

Of the various bases which have been proposed for making comparisons of way department efficiency, efficacy of type of track construction and quality of maintenance work, the units, cost per mile of track, cost per car-mile and cost per ton-mile per mile of track, possibly deserve most consideration. While each of these units possesses certain advantages, none of them is entirely satisfactory for the purpose of comparison, because they do not take into account all of the variable elements which affect track maintenance costs.

Roughly, these elements may be grouped into three classes, legal or community requirements, destructive forces of nature and of vehicular traffic, and destructive forces which originate in the conduct of transportation. Evidently, the costs chargeable to the first class of elements will be different in different communities. Sometimes such charges as those necessary to keep a certain amount of paving in repair are imposed. While they have to be carried by the way department they do not in any way affect the value of the track as a piece of railway equipment, and it would seem, therefore, that they should not be included in unit costs. Of equal character are the renewals made before they are actually required by the condition of the track, simply because the municipality is about to repave that particular street, and as the life of the paving to be laid will exceed considerably that of the existing track, it becomes necessary to install new rails and perhaps new ties as well. The elements of the second class, of course, vary with location. Some of them, as decay, corrosion and freezing and thawing, are the cause of charges properly classed as maintenance charges, as are also the wear to which the rails are subjected by passing vehicles. On the other hand, it does not appear that flood damages should be included in a track upkeep unit. The last class of destructive forces, due directly to the conduct of transportation, causes charges which, evidently, should be included in any unit used for track maintenance comparison.

Of the units named above, the cost per mile of track is most commonly used. It has to commend it, simplicity in bookkeeping, and its wide use is no doubt partly due to this fact because way departments are not often blessed with an adequate supply of clerical help. It will be noted that no specific conditions of any kind enter into this unit cost. With a sort of "blanket sum" it attempts to include all of the variable cost items. It has the advantage that the destructive elements mentioned in class two are roughly comparable on the "mile of track" basis, but weight and number of cars and type of construction are given consideration only as they are "lumped" into the total sum. There is nothing about the unit itself which differentiates between the mile of track that forms part of a fair ground spur and is used only a few days each year and the mile of track located in a congested city district.

The second unit, cost per car-mile, has been used in many reports of public service commissions. Because the car-mile is used as a unit in some other equipment

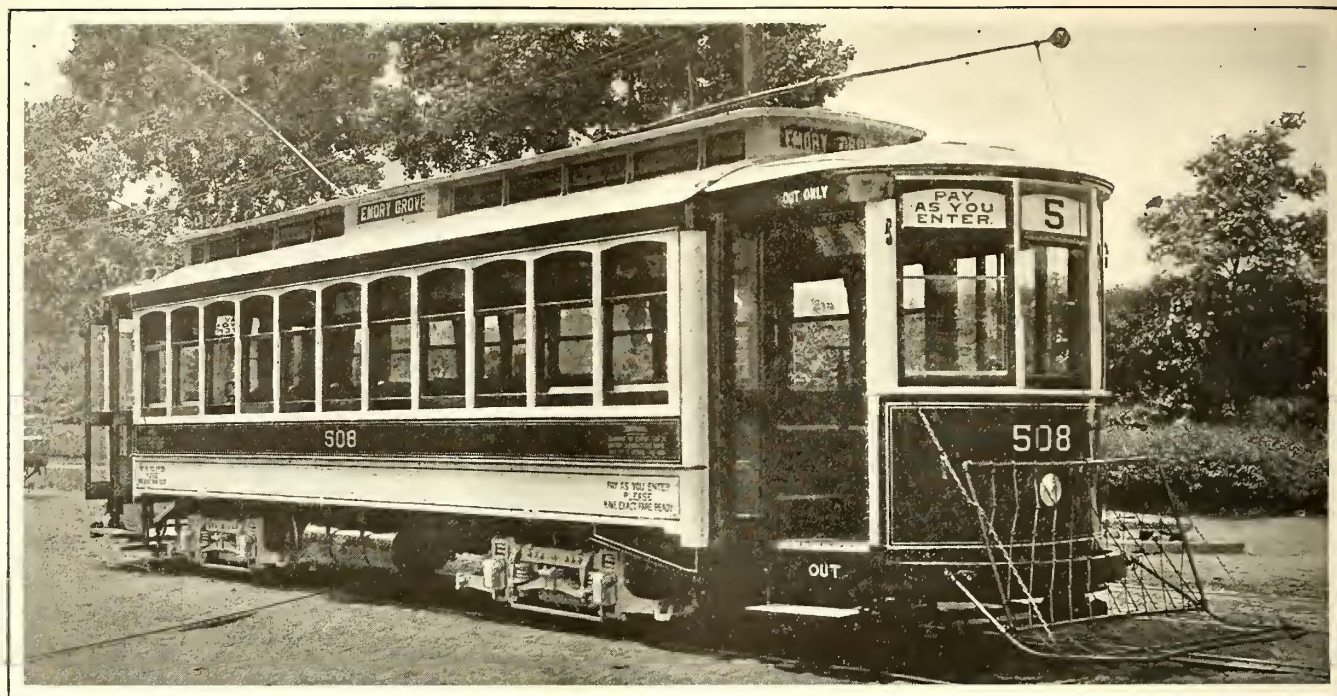
charges it, likewise, has some bookkeeping advantages. It gives some consideration to the number and speed of cars, thus avoiding in part one of the most important objections urged against the cost per mile of track as a unit. No distinction, however, is made between the car-mile of a 60-ton car and that of a 6-ton car, and one would naturally expect that they would produce different effects on the track.

The cost per ton-mile per mile of track, or to use a more convenient unit, the cost per 1000 ton-miles per mile of track, has also been proposed as a basis of comparison. It takes into account all that the car-mile does and in addition gives some consideration to car weight. If number, weight and speed of cars were the only factors which affected track upkeep costs the unit would appear to have some value for comparative purposes. However, it involves more bookkeeping than the car-mile and with the latter gives no consideration to such important items as destructive forces of nature and vehicle traffic. The latter is becoming of increasing importance on paved streets owing to growing street congestion and increased use of the tracks by heavy trucks.

Finally, of the three units, none gives any consideration to the type of track construction. A mile, a car-mile and a ton-mile are the same whether measured on exposed or paved track and with 50-lb. or 141-lb. rail. As one of the important advantages of a suitable comparative unit is the ability to compare the efficacy of a given type of track construction under different conditions of traffic and location, it would seem to be worth while, even with the present units, to make some distinction as between different types of track construction. It seems to us that it would be a marked step in advance to classify tracks into at least three groups, namely, open construction, subsurface unpaved construction and subsurface paved construction. If this classification were generally made it might be possible to deduce by comparison some new unit for track maintenance which would include in a satisfactory way the more important of the variables. If not attended by such good fortune, it would at least help to determine which of the three units above named is best suited for practical use.

Taking everything into consideration, it must be admitted that the effect of any standard unit basis for making track maintenance cost comparisons would become evident only after a number of years. However, as was pointed out in these columns in a recent issue, some more suitable basis of comparison is highly desirable, indeed, is necessary if efficiency in way methods and practices is to be increased, and definite data relating to the merits of different types of track under different conditions of service are to be obtained. The problem is one that merits the serious attention of railway men and is one which could well be considered by the engineering-accounting committee of the American Electric Railway Association, through a subcommittee including as members from the Engineering Association representatives of the way department.





REMODELING BALTIMORE CARS  
COMPLETE REMODELED CAR, DOUBLE-TRUCK, SEMI-CONVERTIBLE, CITY TYPE

## Vestibuling 560 Semi-Convertible Cars

The United Railways & Electric Company of Baltimore, Md., Is Standardizing Its Rolling Stock by Remodeling Vestibules—  
Economical Adapting of Removed Parts to New Work Is a Feature

**D**URING the latter part of the year 1915 the United Railways & Electric Company of Baltimore, Md., decided to vestibule 560 double-truck semi-convertible cars. These cars are of the open platform type, which was previously standard with the company, provided with portable vestibules to protect the motormen from inclement weather, as are all the cars in Baltimore. The decision involved the addition of folding doors and steps, the lengthening of the platform in a considerable number of cases, the removal of the end bulkhead, and other related changes. The opportunity was also utilized to make a number of minor improvements.

### 1914 CARS TAKEN AS MODELS

About two years ago the company purchased eighty-five cars provided with enclosed vestibules and folding doors and steps. As these cars had proved very satisfactory, they were taken as the models for the vestibuling job. These cars were fully described in the issue of the *ELECTRIC RAILWAY JOURNAL* for Jan. 9, 1915, page 86.

The platforms of the 1914 cars are 5 ft. 8½ in. in length, and between the vestibule and the car body is an open archway finished in cherry. The entrance doors are in four sections, each glazed with two panes of clear wired plate glass. The doors are hung in two sections and fold outward, providing a 47½-in. clear opening. As is shown in the line drawing reproduced herewith, special provision is made to render the doors weather-tight when closed, by the use of interlocking joints and rubber packing. The inside door of each pair is guided by means of a case-hardened steel roller, and the doors are hung on 1-in. round steel rods, as shown in the drawing.

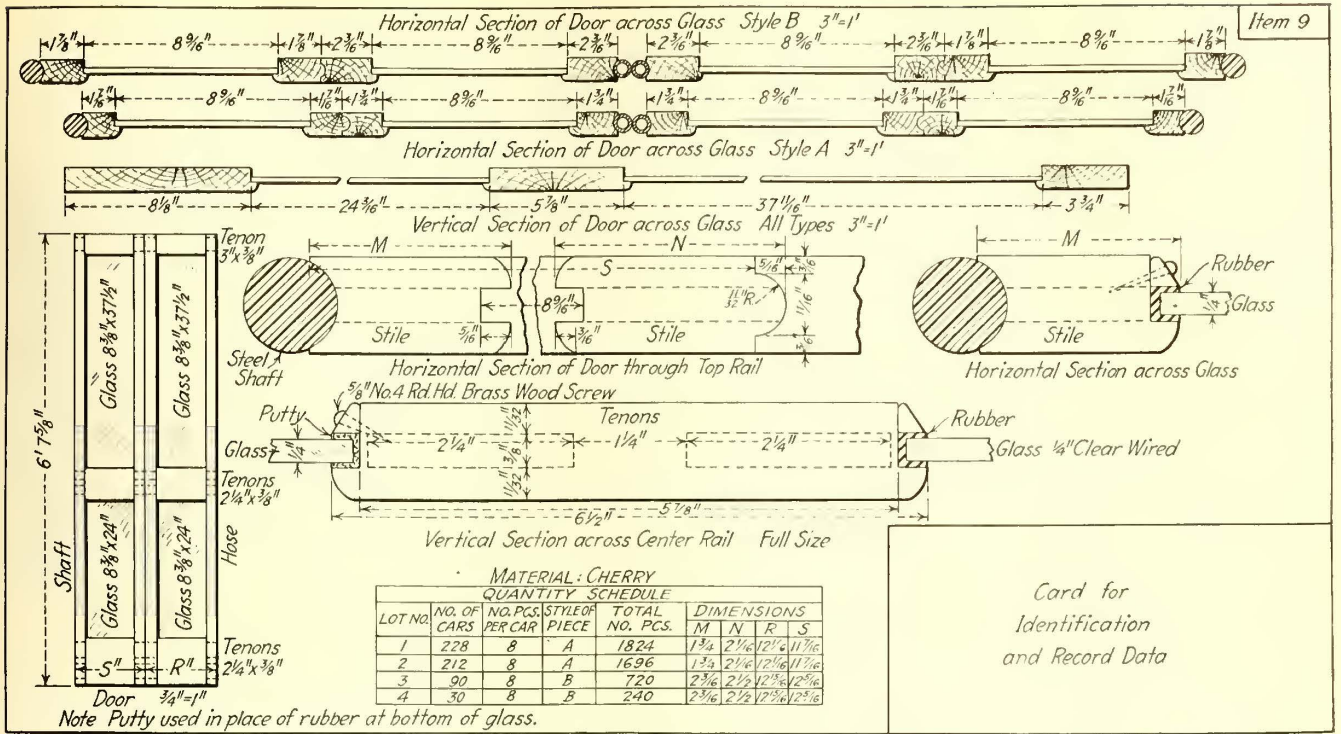
The exit opening on the side of the vestibule opposite from the entrance opening is about one-half the width of the latter, and is closed by one door of two sections. A stationary panel, with glass above, closes one-half of the exit side of the vestibule. The folding step for the entrance is 4 ft. long and 12 in. wide, while that for the exit is 25 in. long and 12 in. wide. These are operated in synchronism with the doors, both being controlled by the motorman's door operating handle located about 1 ft. to the right of the air-brake valve and on the level of the vestibule belt rail. The front of the vestibule from belt rail to floor is lined with removable panels of cherry.

While the general pattern described above has been followed in the remodeling, numerous changes in small details have been made in order to eliminate those elements of the design which were the source of repair costs. For example, the door brackets were enlarged so as to increase the bearing surface on the wood, thus assisting in holding the door frame together. The door shaft top bearing was strengthened in a similar manner. Among the interesting features is the scheme used for permitting the raising of part of the right-hand, front vestibule sash. As is shown in the illustration on this page, a metal frame is mounted inside the wood sash frame, and in a groove in the metal frame slides the lower pane of glass.

### EQUIPMENT WHICH IS BEING STANDARDIZED

The cars which are now in process of remodeling, 560 in number, are divided into four groups as follows: (1) 228 non-prepayment semi-convertible cars with 5-ft. platforms, city type; (2) 212 P.A.Y.E. semi-convertible cars with 5-ft. 8½-in. platforms, city type; (3) ninety non-prepayment semi-convertible cars, high speed, sub-





REMODELING BALTIMORE CARS—SAMPLE DETAIL SHEET WITH MATERIAL LIST, ORIGINAL 8 x 14 1/2 INCHES

urban type; (4) thirty P.A.Y.E. semi-convertible high-speed, suburban type.

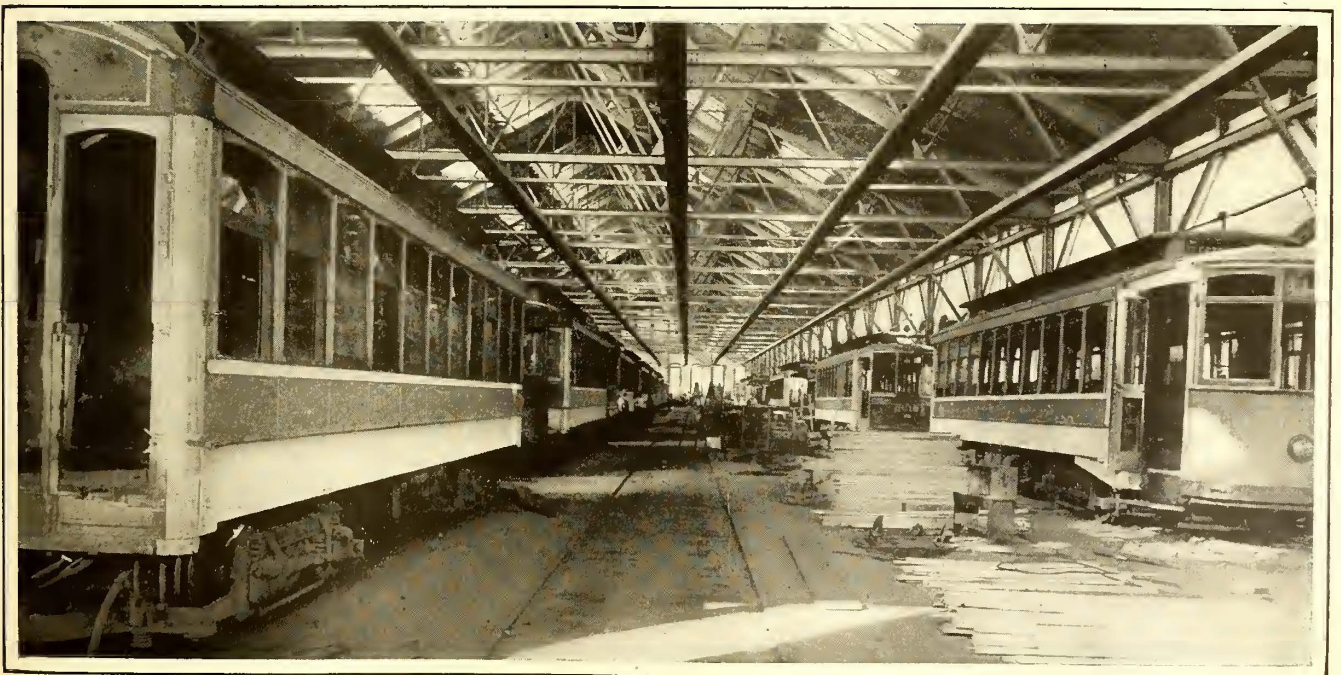
Of the above, the cars with short platforms required the lengthening of these to 5 ft. 8 1/2 in., to provide the necessary widths of opening and to permit standardizing of doors, etc. Lengthening was not necessary in groups (2) and (4), the cars in which were already of the P.A.Y.E. type.

PREPARATION OF DESIGNS AND SPECIFICATIONS

In view of the magnitude of the work it was necessary before proceeding with the details to make a careful study of the exact conditions that had to be met. Among the problems in mind were the securing of the

maximum door opening, getting the doors as nearly alike as possible, standardizing sizes of glass, providing for the mounting of the wheel guards, using standard handles, etc. The study was conducted by the use of a model car end, shown in several illustrations. To this model the various details and car equipment features that were to be met with in the reconstruction of the cars were applied.

After the model had been perfected, the parts were removed and drawings were made of them, a sample drawing being reproduced herewith. Each part was given an item number by which it is designated whenever reference is made to it. All drawings are made on a standard size, 8 in. by 14 1/2 in. In order that full in-



REMODELING BALTIMORE CARS—BAY OF SHOP, SHOWING CARS IN SEVERAL STAGES OF REMODELING





REMODELING BALTIMORE CARS—DUMMY VESTIBULE  
FROM ENTRANCE SIDE



REMODELING BALTIMORE CARS—DUMMY VESTIBULE  
FROM EXIT SIDE

formation may be always available as to the quantity desired in each case, each blueprint has a material quantity schedule, showing the lot number, the number of cars in the lot, the number of pieces per car and the total number of pieces. In addition, a general specification was prepared.

The schedules of general instructions for the several shops which are reproduced by way of illustration will serve to give a concrete idea of the way in which the work is being handled.

Copies of the drawings and specifications were sent to car, folding step and door specialty makers for bids, and the work of furnishing all of the parts possible was let out by contract. This included as many of the pieces of woodwork as could be ordered in reasonably large numbers. Obviously manufacturers were in a position to supply these parts more cheaply than the company could make them, as the latter procedure would have involved the superimposing of a manufacturing routine on top of the maintenance routine of the shop. All of the parts were laid out with this idea in view, so that it was possible to buy a large part of the material all ready to assemble. This left for the shop department of the company only the furnishing of special pieces.

The problem of organizing the work so that it would move smoothly and harmoniously without interference with routine maintenance has been quite an undertaking. The magnitude of the task will be appreciated by master mechanics when they remember that 110 cars are being remodeled this year and the schedule calls for the finishing of twelve per month. The work could not, of course be done by the regular shop force, and a special force of about thirty men has been detailed for the work. One section of the shop has

been assigned to the remodeling, and its appearance is shown in one of the illustrations.

#### NOTES ON THE SHOP PROCEDURE

In order to indicate the shop routine on the work under discussion, a number of photographs have been taken showing the cars in various stages of completeness. The photograph below shows the platform of a city type, non-prepayment car with the standard metal dash and portable vestibule. On being brought to the shop, a car is stripped of the hoods, vestibules, dashers, platforms, outer platform knees, bumpers, steps, double sliding doors in end walls, and the portions of the end bulkheads below the bottom line of the doorway arches. The brakes and electrical devices are all likewise removed from the platforms. The appearance of the end of the car in the resulting condition is shown on page 305.

The outside platform knees, which are of  $\frac{1}{2}$ -in. x  $3\frac{1}{2}$ -in. x 7-in. angle iron, with 3-in. oak fillers, are next removed, the oak fillers being replaced with new ones of additional length. The old oak fillers removed from the outside platform knees are cut to shape to splice readily with the center platform knees, making the center knees the required length. The original crown pieces are used when possible on the lengthened knees.

The next step is the lengthening of the hoods by  $8\frac{1}{2}$  in., which means adding one rafter and splicing. Alternate roof boards are cut back one rafter, so that the new section joins smoothly with the old hood. In this way very little of the old hood is lost, and after the hood has been finished it is difficult to detect the fact that it has been lengthened out. Even the old canvas covering is used if it is in good condition, merely a



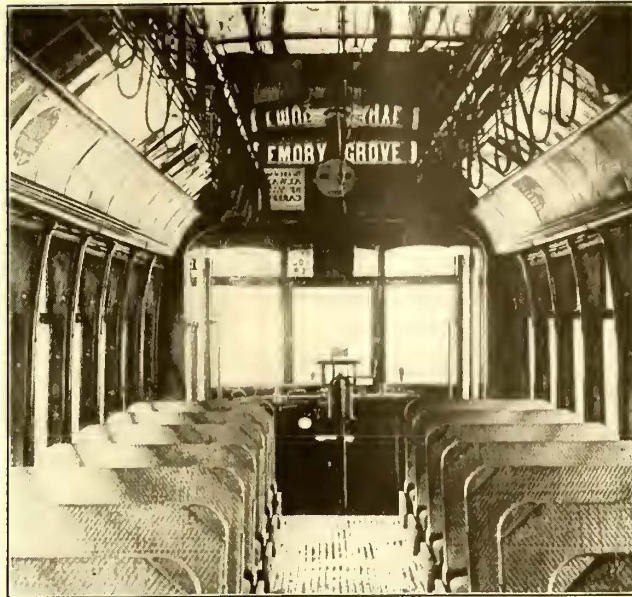
REMODELING BALTIMORE CARS—END OF CAR  
BEFORE REMODELING



narrow strip being added to lengthen it.

The photograph below shows the car with the platform lengthened and refloored. While the platform is being lengthened, interior finish is added. Back of the end wall finish the material is cut away up to the body corner post, and to the latter a piece of ash approximately 3 in. thick and 8 in. wide is secured by means of long screws set well into the post. The counter-sunk holes and the corner post are filled in with plugs, hot glued, driven in and cut off flush. The head piece is also cut back to form a graceful arch, and the interior cherry finish is then applied.

In finishing the ends of the cars, the dashes previously removed are returned to their places, the hood supports are replaced by ash ves-



REMODELING BALTIMORE CARS—INTERIOR VIEW OF REMODELED CAR

tibule corner posts of such shape and dimensions that they fit snugly against the portable vestibule and receive the metal dash. The latter is well secured to the corner post for support.

The space between the tops of the dasher and lower rail of the vestibule is then filled in with an extra width of No. 12 gage dasher iron, thus completing the dasher. The car is now ready to receive the vestibule door headers, guiding strips, etc., to which the parts of the door and step mechanism are applied. These features are clearly illustrated in the photographs.

The removal of the end walls, of course, reduces the space available for the corner longitudinal seats. The seat frames and cushions are, therefore, finished with a large corner radius

SCHEDULE OF GENERAL SHOP INSTRUCTIONS  
DIVISION OF WORK AND CHARGES

CARPENTER SHOP  
Schedule "A"

Scope—Lengthening platforms and hoods, including setting platform boards and strips; also adding folding doors and steps and fare boxes (boxes only).

Material from The J. G. Brill Company and International Register Company, except sundry items from shop not in excess of \$5 per car.

Charge time and material as follows: Twenty-five cars Emory Grove line Nos. 356-380, Req. No. 574. Etc.

Schedule "B"

Scope—Remove end bulkheads, doors, and refinish end of car. alter sand boxes and corner seats, relocate and adjust brakes, registers, etc., reset dashers and vestibules; also install sliding brass sash in left-hand vestibule sash. This also covers two (2) stanchions and new style switch holders.

Material supplied by shop.  
Charge time and material as follows: Twenty-five cars Emory Grove line Nos. 356-380, Req. No. 575. Etc.

Schedule "C"

Scope—Equip each car of the following list with illuminated route numbers.

Charge time and material as follows: Twenty-five cars Emory Grove line Nos. 356-380, Req. No. 745. Etc.

Note—For any work other than covered by the above schedules, proper information for charging time and material must be obtained.

TRUCK AND MOTOR SHOP  
Schedule "D"

Scope—Relocating and adjusting brakes, sand boxes, cables. Testing wires and wiring.

Charge time and material as follows: Twenty-five cars Emory Grove line Nos. 356-380, Req. No. 575. Etc.

Schedule "E"

Scope—Equip each car of the following list with illuminated route numbers.

Charge time and material as follows: Twenty-five cars Emory Grove line Nos. 356-380, Req. No. 745. Etc.

Note—For any work other than covered by the above schedules, proper information for charging time and material must be obtained.

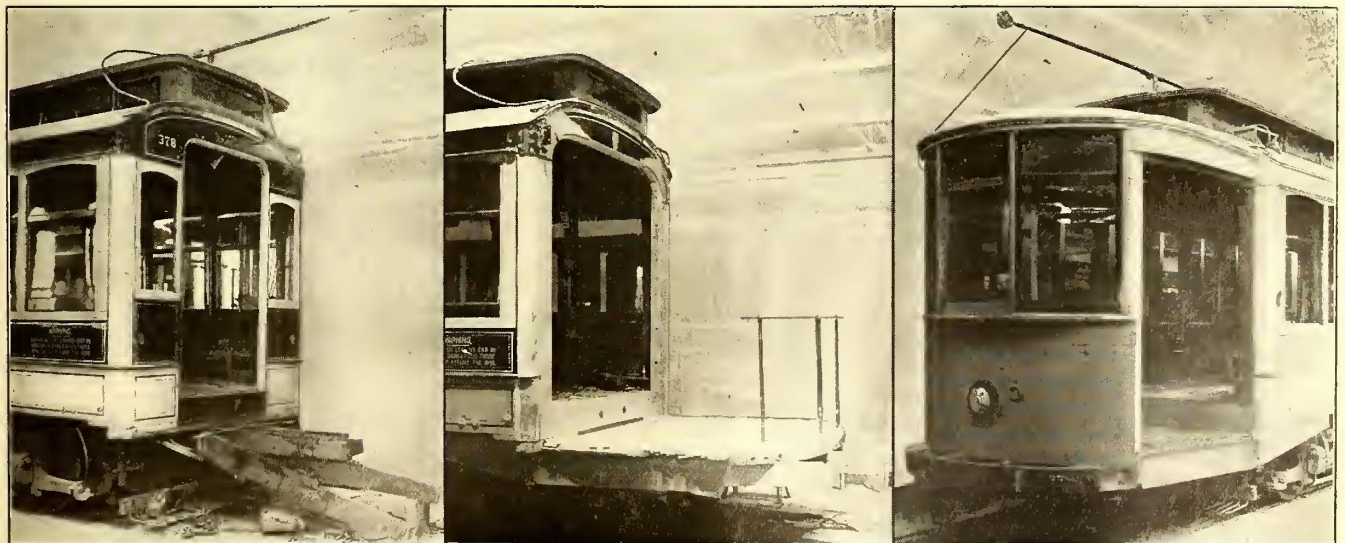
PAINT SHOP

Schedule "F"

Scope—Paint car, including all new work for doors and vestibules.

Charge time and material as follows: Twenty-five cars Emory Grove line Nos. 356-380, Req. No. 575. Etc.

Note—For any work other than covered by the above schedules, proper information for charging time and material must be obtained.



REMODELING BALTIMORE CARS—CAR READY FOR REMODELING; PLATFORM LENGTHENED READY FOR TRIMMING; VESTIBULE OF CAR READY FOR INSTALLING DOOR AND STEP MECHANISM



to permit ready entrance and exit at the widened doorway.

After the cars have been completely equipped with the inclosed vestibules and folding doors, they are sent to the paint shop where they are burnt off, resurfaced, painted, striped, lettered and varnished, or, if the paint condition is found to be good, a coat of body color is applied and the car is striped, lettered and varnished. The cars not equipped with route numbers are properly supplied as they go through the shop, indicating the lines to which they will be permanently assigned. They are also equipped with the HB life guards, the fenders are adjusted, and those which are of the non-prepayment type, such as the cars now passing through the shop, are equipped with International coin-counting fare boxes of the standard type developed to meet the special requirements of this company's service. There are at present more than 170 of these boxes in use on the cars of the United Railways & Electric Company.

#### CONCLUSION

It is evident that when the improvements now under way have been completed, the rolling stock of the United Railways & Electric Company will be in condition to be maintained with economy. Due to the standardization of the detail parts the necessity for keeping a great variety of stock parts will be eliminated. Above all, the cars will be modernized from the standpoints of safety and convenience.

The remodeling as described is in charge of A. T. Clark, superintendent of rolling stock and shops, under the general supervision of W. A. House, president United Railways & Electric Company.

## Locomotives for Interurban Roads

### Formulas for Determining the Tonnage Capacities of Interurban Locomotives Are Given

**I**N an article dealing with the above subject, published in the current issue of the *General Electric Review*, S. T. Dodd of the railway and traction department General Electric Company discusses the application of the electric locomotive to interurban service conditions. He points out that since interurban railways have been turning their attention to freight traffic in order to increase their business small electric locomotives have been rapidly coming into favor.

Some of the factors that are retarding the development of these small locomotives are the variations in conditions of service and differences in mechanical standards of the various roads. It is suggested that if a definite effort were made toward standardization by both manufacturers and users some of the variations which now cause trouble might be eliminated and it might be possible to standardize the small locomotive into relatively few types. The results of such a standardization would be a reduction in the cost of locomotives and an increase in the scope and economy of locomotive service.

In order to arrive at some means of comparing the tonnage capacities of locomotives, interurban services are divided into three classes, namely, switching, continuous freight haulage over a rolling profile, and continuous freight haulage against a grade.

Switching service usually consists of a series of short runs involving average movements of from 200 ft. to 400 ft., and schedule speeds (distance covered in an extended period of time divided by the time) of from 2½ to 3 m.p.h. The problem is, therefore, largely one of acceleration and, as speed is immaterial, the motors

should be geared for the lowest possible speed in order to secure a locomotive which is economical in energy consumption and low in first cost. The assumption is made that the available tractive effort of such a locomotive should be one-fourth of the weight on drivers, or, since in these small locomotives pony trucks are not used, one-fourth of the weight of the locomotive. It is also assumed that 25 lb. per ton is necessary to produce acceleration and overcome train friction. Expressed as a formula the

$$\text{Max. wt. of train in tons} = \frac{\text{Wt. of loco. in lb.}}{4 \times 25}$$

or if the locomotive weight in tons is designated by  $L$  the number of trailing tons,

$$T = \frac{\text{Wt. of loco. in lb.}}{4 \times 25} - L = 19L$$

Heating and accelerating ability are given as the factors which may limit tonnage in service which involves continuous haulage over a rolling profile. Assuming that the service is not modified by frequent stops and starts, and that train resistance is 10 lb. per ton, the limiting trailing tonnage, from the standpoint of motor heating, is

$$T = \frac{C}{10} - L$$

where  $C$  is the tractive effort corresponding to the continuous rating of the motors. From the standpoint of ability to accelerate on a grade the trailing tonnage,

$$T = \frac{\text{Wt. of loco. in lb.}}{4(20G + 25)} - L \\ = \frac{L(95 - 4G)}{4G + 5}$$

where  $G$  is the grade in per cent.

Continuous freight haulage against a grade is never met with in practice, but where the grades are long the motor heating approximates that which would obtain in such a service. For this condition the trailing tonnage is given as

$$T = \left( \frac{C}{20G + 10} \right) - L$$

The fact is emphasized that the above formulas are only general guides and need modification in many cases where practical application is being made. Examples illustrating the use of the formulas and comparative data on some interurban locomotives are also given.

## P. S. C. Orders Reports on Condition of Bridges in New York

The Public Service Commission for the First District of New York has issued an order to various railroad companies operating in New York City possessing bridges or elevated structures within the city limits, together with the rapid transit lines, including the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company, and the latter's subsidiaries, directing them to furnish a report of the condition of all bridges and elevated structures of their respective lines within thirty days after the end of each calendar year. This report will amount to a certification to the commission of the condition of these bridges and structures. The order is to take effect immediately. The report must contain a statement that the bridges have been inspected by competent officials or employees of the respective companies, and if found safe the report must so state. If they are found to be not thoroughly safe, the report must further state what steps have been taken to place them in safe condition.



# Latest Thoughts on Claim Work

Delegates at Convention of Pacific Claim Agents' Association in Tacoma on August 9-11, Discussed Fundamentals of Claim Work, Relations with the Public, Motor Vehicle Traffic and Photographic Aids

THE eighth annual convention of the Pacific Claim Agents' Association, held in Tacoma, Wash., on Aug. 9, 10 and 11, was called to order by President Thomas G. Aston, claim agent Washington Water Power Company, Spokane, Wash. About forty members were present. Addresses of welcome were delivered by Dr. Ernest C. Wheeler, president Tacoma Commercial Club and Chamber of Commerce, and by L. H. Bean, manager Tacoma Railway & Power Company, Tacoma, Wash. President Aston responded to these welcomes, and then in his official address emphasized the benefit that the members and the companies receive from the association.

## PAPERS AT OPENING MEETINGS

After the usual routine of committee reports, two papers were read by B. F. Boynton, claim agent Portland Railway, Light & Power Company, Portland, Ore., and A. M. Lee, assistant general claim agent Northern Pacific Railway, Seattle, Wash., on "Fundamentals of Claim Department Work" in their respective fields. These are abstracted elsewhere. Following the reading of Mr. Lee's paper, recess was declared, and the delegates were shown a new one-man car that was under construction in the shops of the Tacoma Railway & Power Company.

Practically the entire afternoon of the first day's session was consumed in reading and discussing the paper of F. J. Lonergan, attorney Portland Railway, Light & Power Company, on "Relation of the Claim Department to the Public," which appears elsewhere in abstract form. This paper aroused lively comment. J. H. Handlon, claim agent United Railroads of San Francisco, especially urged co-operation between doctors and the claim departments. He said that the first effort of his department was to secure the confidence of the injured party, impressing upon him the fact that the company would play fair and expected like treatment. In some cases the evidence secured by the department in its investigation was shown to the injured party. H. K. Relf, claim agent Spokane, Portland & Seattle Railway, Portland, Ore., said that he heartily indorsed the plan of meetings for carmen, where the staff of the claim departments could address the men on safety work and give instructions as to their conduct in case of accidents. The claim department, in his opinion, should impress upon operatives the necessity of securing definite information and names of witnesses. He suggested that the operating department and claim agent make their investigations jointly, if the accident was of serious proportion, as their combined knowledge of the conditions might produce more satisfactory results than if either worked alone.

Mr. Boynton stated that in his opinion investigators should be hurried to the scene of the accident at once, and also to the home of the claimant. If possible, signed statements of witnesses should be secured before the patient's attorney gets them. W. H. Moore, claim agent San Diego (Cal.) Electric Railway, suggested that the association should appoint a committee to frame a protest to be sent to the editors of the *Ladies' Home Journal* and *Good Housekeeping*, regarding the recent articles advising women to refuse at all times to divulge

their names as witnesses to accidents. No action was taken at the time.

President Aston said that when an accident was called to the attention of his claim department, he immediately, in case the patient was a woman, detailed a female secret service agent to visit her home under some pretext to find out her condition. In case the injured party was not seriously hurt, the department made no move until a complaint was filed by an attorney representing her. If the injury was serious, the department made an immediate call and showed how fair it could be. Mr. Aston especially recommended that claim departments make friends with the medical fraternity. H. G. Winsor, superintendent of investigations and adjustments Tacoma Railway & Power Company, advocated doing away with the air of mystery in regard to the operation of the claim department. If a passenger was injured on the lines of his company, it felt that he should be paid in proportion to his injury. This kind of treatment, Mr. Winsor said, resulted in the securing of friends for his company.

## SECOND DAY'S SESSIONS

The morning session on the second day was devoted first to discussing the subject of a paper which was to have been presented by O. D. Harris, assistant general claim agent Pacific Electric Railway, Los Angeles, Cal., entitled "Regulation of Motor Vehicle Traffic in the Country." This was not given, owing to the absence of Mr. Harris. Mr. Lee expressed the opinion that this country is rapidly approaching a time where it will be forced to regulate autos the same as street railway cars and steam railroad trains. One of the first requirements, according to Mr. Lee, will be that all motor traffic halt before crossing railroad or interurban tracks. President Aston remarked that the motormen of his company were instructed to assume that auto drivers are both deaf and blind. They are told: "If your assumption is correct, you will have avoided an accident; if not, no harm will have been done."

This discussion was followed by an address on "What Policy Is Best Adapted for Co-operation with Owners and Drivers of Motor-Driven Vehicles?" by J. W. Browne, claim agent Tacoma Railway & Power Company, which will be published in abstract later. In the discussion of Mr. Browne's paper, Mr. Aston said that automobiles should be regulated rather than street cars. He heartily advocated that members of the association affiliate themselves with some automobile association, and he also advised that claim agents avail themselves of every opportunity to address automobile clubs and similar organizations on the subject of safety work. The claim agents agreed that the problem of safety work must of necessity be purely educational, and that it is the serious duty of each member to exercise every effort to further the work.

Mr. Boynton thought that the suggestion in regard to addressing automobile clubs was so valuable that he intended to put it into practice in Portland within a week by detailing a man from his department to speak to the various local clubs.

Mr. Winsor made a motion as follows: "That the incoming legislative committee of this organization give



careful consideration to the subject of motor vehicle regulation, both in the city and in the country, and work in co-operation with all the member companies of this association, to the end that suitable laws may be enacted at the next convening of the several legislatures covered by the territory that this association represents." This motion was seconded by Mr. Boynton and carried unanimously.

The afternoon session of the second day was featured by the reading of the papers, "Safety Work in Schools," by T. N. Henry, safety lecturer Tacoma Public Schools, which will be published at a later date, and "Safety Work with the Public," by H. B. Coffin, chairman Public Safety Commission, Portland, which is published in this issue in abstract. The address of F. L. Burckhalter, superintendent Southern Pacific Company, Portland, on "Safety Work with Officials and Employees," was not delivered, as Mr. Burckhalter was unable to be present.

#### CONCLUDING SESSIONS

On the morning of the last day, the delegates heard the papers by F. M. Hamilton, superintendent department of accident investigation Puget Sound Traction, Light & Power Company, on "Appraisal of Property Damage, and by A. J. Falknor, attorney for the same company, on "Regulation of Motor Vehicle Traffic in Seattle." These will be abstracted later. Just before noon the association went into executive session to hear and discuss the paper of Mr. Relf on "Treatment of Hospital Cases." The last paper was presented by Mr. Handlon, on "Photography and Other Exhibits as an Aid to Trial Attorneys." This paper appears in abstract form on another page.

After a discussion of some length, the convention addressed itself to general business. The city of Portland, Ore., was designated as the next place of meeting. The following officers were elected to serve for the ensuing year: President, H. K. Relf, claim agent Spokane, Portland & Seattle Railway, Portland, Ore.; first vice-president, H. G. Winsor, superintendent investigation and adjustments Tacoma Railway & Power Company, Tacoma, Wash.; second vice-president, W. H. Moore, claim agent San Diego (Cal.) Electric Railway; third vice-president, Thomas A. Cole, claim agent Los Angeles Railway Corporation, Los Angeles, Cal.; secretary-treasurer, B. F. Boynton, claim agent Portland Railway, Light & Power Company, Portland, Ore.

The new executive committee includes: J. H. Handlon, claim agent United Railroads of San Francisco; A. M. Lee, assistant general claim agent Northern Pacific Railway, Seattle, Wash.; F. M. Hamilton, superintendent department of accident investigation Puget Sound Traction, Light & Power Company, Seattle, Wash.; D. C. Davis, district claim agent Northern Pacific Railway, Tacoma, Wash.; Charles A. Blackburn, claim agent Butte Electric Railway, Butte, Mont., and Thomas G. Aston, claim agent Washington Water Power Company, Spokane, Wash.

The convention was not lacking in entertainment features. One of the most enjoyable occasions of the session was a large dinner dance in the dining room of the Tacoma Hotel on the evening of Aug. 9. On Thursday the convention adjourned about 4 p. m. to attend a basket picnic held at Point Defiance Park. On Friday morning the visiting ladies were entertained with an automobile ride over the city's boulevards. Undoubtedly the greatest treat in the entertainment line, however, was the automobile trip to Paradise Valley and the famous Mt. Tacoma. The party left Tacoma Saturday morning and remained over night at the mountain hotel.

## Safety Work with the Public

BY HARRY B. COFFIN

Chairman Public Safety Commission, Portland, Ore.

The city of Portland was not slow to realize the importance of the safety first movement, as two years ago its present mayor, H. R. Albee, appointed a public safety commission, one of the first to organize in this country. This commission was made up of prominent business men, a master surgeon, high officials of the police and fire bureaus, the city traffic engineer, the superintendent of schools, the general superintendent of a steam railroad, an official of the local traction lines and representative members of the daily press.

Starting the campaign in the public schools, this commission brought home the principles of safety first to its 35,000 young Americans, instilling in their minds the dangers lurking all around them. It did not stop there, but appealed to the home life and the vocational activities, to suppress the chance taker, to eliminate dangerous conditions. The interest of the public was aroused and maintained. The press assisted in every way possible, and the authorities co-operated in initiating corrective measures.

During the past six months there have been 256 traffic collisions. There were 108 cases in which pedestrians were hit, resulting in five citizens being killed by automobiles and one by street cars, and 148 injured by automobiles and twenty-one by street cars. During this period, 2103 traffic violators were handled by the police bureau, of which 554 were warned and paroled by the captain in charge, 796 fined, 604 continued for sentence and twenty sent to jail for driving while intoxicated. A very creditable showing as compared to the monthly death roll in Seattle of five; San Francisco, eleven; Chicago, forty-five; Detroit, thirty, and New York, fifty.

One of the most potent factors in the safety first movement is the gathering together from time to time of delegates representing the community life of the city. Such a movement was initiated in Portland, called the "safety forum." A call was sent out to business houses and public utility corporations. As a result, we registered at the first meeting nearly 250 delegates, and the work of promoting interest in these representatives to carry the movement into every channel of the community's activities will be continued in the autumn.

How can wider and greater results be accomplished? By an organized effort to invoke the co-operation of a sympathetic public opinion. Why not help organize a public safety commission in all cities. Why not initiate a safety council in your own county to deal with the problem of safeguarding and education? It is pertinent to your business. The problem is not a one-man job. On the contrary, the broadest measure of support is required by county and town officials, public service corporations and the public generally.

Your commission would naturally plan and supervise a campaign of education. This would lead to a study of general hazards and those local to your community as connected with the physical and sanitary conditions of the streets and public places. Recommendations for safeguarding dangerous conditions and of suitable traffic regulations, the establishment of safety zones and isles of safety, the installation of up-to-date methods of handling traffic, the establishment of traffic bureaus with competent and experienced officers in charge directly responsible to the chief; the inspection of fire hazards in the home and in the factory; and, last but not least, the instruction of school children—all these subjects offer excellent opportunities for study and action.

The following thoughts, on a card sent to us, have made a deep impression:



*Fathers:* Be cautious in your work. Remember the dependent family at home.

*Mothers:* Caution the working members of your family always to be careful.

*Sisters and Daughters:* Urge your brothers and fathers to do everything in the safe way.

*Young Men:* Careless methods used now may mean total or partial disability to you for the rest of your life.

*Boys and Girls:* Learn to do things NOW in a safe way. It will be valuable to you as you grow older.

## Foundamentals of Claim Work

B. F. BOYNTON

Claim Agent Portland Railway, Light & Power Company,  
Portland, Ore.

The main fundamentals of claim department work are efficiency, co-operation, courtesy, prevention of accidents, and fair and square dealings, with both the public and the company. To accomplish this, the department must have competent, trustworthy investigators who will at all times, when taking statements from witnesses or claimants, bring out in unbiased fashion the points that are so necessary to the man in charge in determining the liability. The office employees that handle the records and do the filing should be selected as to their especial adaptation for correct filing and keen discernment, for with a corps of wide-awake office help a repeater or fraudulent claimant will very seldom pass through the hands of all without recognition.

The physicians and surgeons should be big, broad, intelligent men—men who are judges of human nature—for the kind, courteous, considerate attention given a patient by the physician many times minimizes what might have been a bad claim to adjust. They should thoroughly understand that they should at all times in their reports to the claim department show up the injuries in such a way that the claim agent will know the exact extent of these. The trial attorneys should at all times, when dealing with the juries and witnesses, show a disposition to be absolutely fair and impartial. In other words, they should show to the community at large that all the company seeks is absolute justice, let it hit where it may.

The prevention of accidents in connection with an electric railway is a very essential fundamental, and it should be under the claim agent's supervision. He is in a better position than anyone else to see what is causing different types of accidents, and if he is a man who has had any practical railroad experience, he will have a good idea of what would be the best preventive.

Another important fundamental is co-operation between the claim department and the operating departments. In fact, to obtain the best results a claim department must have the hearty co-operation of every other department connected with the utility. Moreover, as regards the people outside the company, the claim agent should meet with the business men and the public at large at the different gatherings and show that he takes an interest in the welfare of the community in all its different phases and is willing at all times, if necessary, to give his time toward different public enterprises.

Lastly, the different members of the claim department should be thoroughly schooled in treating the public in a kind, courteous manner. There is nothing that any department in any large or small institution can do that brings as good results as the practice of being polite and obliging. Members of the claim department should frequently hold meetings and exchange ideas on the best means of obtaining a higher standard of efficiency.

## Steam Railroad Claim Work

BY A. M. LEE

Assistant General Claim Agent Northern Pacific Railway,  
Seattle, Wash.

Whatever contributes to good will between a steam railroad and those with whom it comes into contact may be considered as fundamental. Through the medium of the courts and legislation there has developed a growing tendency toward the removal of legal liability as the controlling consideration in determining the merit of claims. The leaning, on the contrary, has been toward the establishment of a humane estimate in injury cases growing out of the conduct of the railway business. The aim has been toward affording protection to the servant and according to him or to his heirs fair consideration following a misfortune.

In Washington and in many other states the question of compensation is entirely removed from any argument as to the circumstances surrounding the injury or the legal merit of the claim. This idea has not been enacted into law by Congress, and it does not now embrace the interstate carriers. But the tendency is in that direction, and the employer's liability act passed by Congress several years ago has removed many defenses theretofore available to the carrier in injury cases. These legislative enactments show the trend of public thought on the subject of compensation, and it will be reflected by the successfully conducted claim department of to-day. The fundamental responsibility is to afford help and relief in meritorious cases while protecting against imposition, and to do this without creating controversy.

The right to give away the company's money does not rest with the claim agent where a strict interpretation of legal merit shows no liability, but the developments of recent years toward affording the employee every protection possible and compensation for an injury incident to the conduct of the business, will offer a fair and reliable scale upon which to weigh the question—what fault produced the injury? And fairness, not alone to the injured party but to the company as well, more often indicates the wisdom of paying something. A mistake in the ordinary run of claims may much more profitably be made on the side of compensation than by withholding it. The payment, if made with a right explanation, in a case of even small merit, retains a grateful loyal employee in the service and at the same time removes the chance of litigation and maybe a large judgment.

Consideration of all of the elements of a particular case should be based upon a broad fairness which must govern also the inquiry into the facts. Unfairness carries its own penalty, and the discovery of treachery in any of our dealings will be at the sacrifice of a material part of our usefulness. Withholding justice will take away future opportunity for administering it. On the other hand, extravagance distorts good judgment and creates a false appetite. Fairness is the only safe guide.

By what has already been said there is no intention to discourage thorough investigation. Many cases arise wherein the loss is great, and the obligation, if any, is large; the question must necessarily be settled by some reviewing officer charged with a larger responsibility than the claim agent. A full knowledge of all the facts is essential to such a determination, and in order that no one may be misled care and resourcefulness must be diligently applied in gathering all of the facts. But this thoroughness will never be in conflict with absolute fairness.

We must not overlook the small thing against us because the general showing is overwhelmingly in our



favor. The small element of negligence that we omit to consider may be the basis upon which a resourceful attorney will build up a case involving at least considerable expenditure of time and money for a defense. On the other hand, the small bit of adverse evidence, even though it be very small, may give the responsible reviewing officer justification for authorizing the expenditure of a lesser sum than litigation would involve, so that the claim agent is permitted at the right time to dispose of a case amicably.

The figures which wreck the showing which the claim department would like to make on the company's books under "Injuries and Damages" do not come from misguided liberality in the interpretation of the rights of injured persons, but from one-sided investigation and narrowness in determining the fair measure of the other man's rights, which mistake ultimately results in expensive litigation with sometimes a heavy judgment. All litigation is expensive, and for the most part it is also hazardous and largely speculative. It is best to make every reasonable concession to avoid a lawsuit.

### Relation of the Claim Department to the Public

BY F. J. LONERGAN

Attorney Portland Railway, Light & Power Company,  
Portland, Ore.

The work of the claim agent of a public service corporation of to-day involves greater and more intricate problems and demands a higher degree of skill and efficiency than ever before in the history of such corporations. The claim agent owes a grave responsibility not only to the company he serves but also to the public, and to perform the duties of a claim agent satisfactorily requires a vast amount of preparation and training. The work requires a devoted loyalty to the company and also a just, equitable and courteous attitude toward the public in general.

The claim agent, as a representative of a public service corporation, occupies a position which requires of him the utmost good faith and integrity in all his dealings with the public. On the other hand the claim agent should demand and receive from the public honest cooperation, not only in the settlement of claims but also in the investigation which follows after an accident has occurred. For it must be readily apparent that where the public through its regulatory commissions has undertaken to regulate the service and limit the return upon the investment of a public service corporation, it has a direct interest in the affairs of such corporation, and if there is to be a betterment of service or a reduction in rates, every saving made by the claim agent must be considered a factor in bringing about such a result.

Were it not for the fact that public service corporations are required to pay out vast sums of money every year on account of dishonest claims—claims that are secured through fraud, deceit, exaggeration and perjury—there would be a considerable saving in the damage accrued account which would necessarily redound to the benefit of the public. I have yet to meet a claim agent, and I have been fortunate in meeting many, who does not experience almost daily the work of malingerers or professional claimants, a practice which would be short-lived if public opinion could be aroused sufficiently in cases of this character. To arouse public opinion in cases of this kind, is certainly one of the duties that the claim agent owes to the public as well as to his company.

Recently a woman secured a judgment against the Portland Railway, Light & Power Company on perjured testimony, and when the perjury was discovered, indict-

ments were returned against the woman, her husband and another for subornation of perjury and against the witness for perjury. All parties pleaded guilty. The court, after two weeks of dilatory tactics, directed a verdict of not guilty against the woman's husband and dismissed the indictment against the woman. It also had the pleas of guilty withdrawn from the witness and the one who had helped procure his subornation, and the indictments in their cases dismissed. The court gave as the reason for this unheard-of proceeding that it thought the whole matter to be of a civil rather than a criminal nature, but to add to the travesty, it then promptly overruled a motion for a new trial in the civil case. Thus it may be seen that there are strange obstacles to be met in the attempt that is made to mold public opinion.

When we understand and appreciate the true relationship between the public and a claim department, we are appalled at the monumental stupidity and ignorance of such policies as has been advocated through the columns of the *Ladies' Home Journal*, advising and warning persons who might witness an accident to refuse their names to any representative of the utility who might call upon them and to refuse any assistance in arriving at the true facts in the case. Who should be more interested in giving to a public service corporation the true facts and circumstances surrounding an accident than one who belongs to the body politic?

The claim department has a great work to perform in its relation to the public. There are undoubtedly many ways in which this work might be accomplished, but the most important point concerns the character and the efficiency of the claim agent himself. The claim agent should appreciate that the public is necessarily interested in his work, and it should be his duty to bring this home to the public at every opportunity. He should enter into this work with the same earnestness and sincerity as he would in the performance of any grave responsibility. He should have a dignity that commands respect and an absolute honesty of purpose that carries with it conviction, and he should maintain a department that is so conducted and managed as to secure and at all times retain the utmost respect and confidence of the public.

### Photography and Other Exhibits as Aid to Trial Attorneys

BY J. H. HANDLON

Claim Agent United Railroads, San Francisco, Cal.

Photographs can often be used to advantage to reveal the physical conditions existing at the scene of the accident, such as the condition of the roadway with reference to the paving and station platforms with reference to the accommodations provided for passengers. They can also be used to show the viewpoint of the motorman or engineer at various angles and likewise the viewpoint of the driver or pedestrian, as well as to describe the grades approaching the scene of the accident, the location of street or store lights, the congested condition of the thoroughfare, the space between tracks as shown by passing cars, the distance between the tracks and the street curbing or crossing gates or station platforms, and the overhang of the car when accidents occur at crossovers or curves.

When a photograph is taken immediately after an accident, it is sometimes possible thus to obtain evidence of the skidding or route of the vehicle and the exact location of blood spots or debris arising from the collision. When a vehicle is involved, it is advisable to photograph it to show the point of contact as well as the extent of the damage.

Photographs of the car are always valuable whether



the case has arisen from a collision with a pedestrian or a vehicle or from an alighting or boarding accident. In the last mentioned class of accidents it is advisable to prepare for an accusation of defective car-steps by securing a photograph of these immediately after the accident. In investigating collisions between cars it is wise to examine and photograph the rails in the hope of discovering that some foreign substance has greased the rails. Defective parts of equipment should be photographed to establish the fact that the accident was unavoidable. Of course, the part that is defective should also be used as evidence in court.

Whenever possible, it is important to obtain photographs of injured persons while at work or showing them as being engaged in active pursuits. The exact date and time the photograph is taken, the accident report number and name of the photographer should be shown on the photograph. X-ray photographs of injured bones should be secured when any question arises as to the extent of the injury or the degree of recovery.

Charts should be prepared showing the various distances that are factors in the accidents, and profile maps can often be introduced to advantage. It is advisable to urge claimants and witnesses to furnish a sketch of the conditions under which the accident occurred. Shopmen's reports of their inspections of the car and their records of repairs made to the car before and after the accident, time-tables, weather reports, and police and hospital records are all valuable and often very necessary.

Instances have arisen where claimants and witnesses have refused to sign their statements but have been prevailed upon to identify their statements by tearing off a corner. Where their hands were unclean, they have been permitted to handle the statements so that their finger prints would be visible to the court or jury. When interviewing persons who deny witnessing an accident, it is important to secure from them a signed statement to this effect. Then, should they afterwards testify in court that they were eye witnesses, little or no credence would be placed in their statements.

## Overhead Charges in the Bay State Case

Company's Expert Allows 12.74 Per Cent of Structural Cost to Cover All Such Charges

IN the recently argued fare-increase case of the Bay State Street Railway, Boston, Mass., before the Massachusetts Public Service Commission, an exhaustive study of material and labor costs was carried out by the company's consulting engineers. The company expended more than \$120,000 in this work, including supplementary studies of rate schedules, and the results of the investigation are on file and open to public inspection in ten volumes of typewritten data in the offices of the commission. These data are well worth the examination of any engineer interested in valuations, for they are filed in unusually complete and usable form and throw a great deal of light upon the historic costs of electric traction property. The main points of the company's brief in the final presentation of its case to the commission were published in the *ELECTRIC RAILWAY JOURNAL* of July 29.

In the Bay State case, a considerable part of the overhead charges were said to be incurred during the construction of the constituent companies and were outstanding capital obligations at the time of the consolidations. This made it impossible for the engineers to present the actual records, and it was necessary for the company to submit estimates based on its experience

and that of its engineers. The company contended that the only fair way to consider overheads in any case was to determine whether the total percentage allowed for such items was equitable. This was said to be the practice of most commissions. While it was advisable to have the engineer in charge give details as far as possible, the allowance should not be shaded because in one account engineering seemed too high, as it was necessary to make many arbitrary apportionments in working up the details. Thus, in the Bay State case, the work orders for underground construction were complete and no contingencies were assigned. These showed that 14 per cent of the structural cost was overhead. Yet after a complete study R. M. Feustel, expert for the company on valuation, was obliged to assign the details of the 14 per cent arbitrarily.

For all overhead charges, the Feustel allowance was 12.74 per cent of the structural cost, or \$4,769,000. This, it was said, was conservative in comparison with the allowances made by other commissions. It was suggested at the hearings that the allowances of other commissions were made up on the reproduction-cost basis and therefore would naturally be higher. Mr. Feustel, however, recognized the fact by making the overheads lower on the original cost than those estimated on the reproduction-cost basis. The Bay State figures were also attacked on the ground that part of the overheads were met out of operating expenses. Mr. Feustel agreed that certain costs which might properly have been included in overheads undoubtedly were charged to operation, but he stated that his percentage was lower than it would otherwise have been because of this fact. His allowances for organization and legal, engineering and interest costs during construction were purposely kept lower than if the overheads had been figured on the reproduction-cost basis.

In regard to the assertion that if any part of the overhead costs had been met through operating expenses they should not again be allowed for in the value of the plant, it was emphasized that in the Bay State case other property paid for by the stockholders had disappeared, being used up in the service of the public; that the public had never paid enough to keep the property intact and that the company had never had a fair return by way of dividends. The company contended that if any overheads were paid for out of operating expenses it could not fairly be said that such costs were met by the public. On the contrary, it held that they were paid for by the stockholders by foregoing dividends or by capitalizing replacements which the public should have paid for. It was stated that during the last two years alone the stockholders had foregone in the way of dividends considerably more than enough to make up any possible failure to capitalize overheads, and the entire amount had gone into the property to take care of depreciation which should have been paid for by the riding public.

The supplementary report of the New Jersey State Board of Taxes and Assessment for the year ended Dec. 31, 1915, shows that the miles of track of cable, electric and horse railway companies in the State, as of the above-named date, totaled 1,251.53 miles. The capital stock issued amounted to \$86,818,990, while that paid up was \$83,582,376. Funded debt totaled \$97,902,100 and other debts \$13,934,427. The cost of railroad, including equipment and appurtenances, was \$181,493,751. Gross receipts amounted to \$22,034,000, while the expenditures for repairs, superintendence, management, etc., totaled \$11,415,308. Dividends were paid to the extent of \$1,866,339 during the year.



# Keeping Mechanical Department Costs

Up-to-the-Minute Cost Data Are Available Through the System Which Is in Use on the Oakland, Antioch & Eastern Railway

By F. A. MILLER

Superintendent of Power and Equipment, Oakland, Antioch & Eastern Railway, Oakland, Cal.

THE following system of keeping cost data was established in the mechanical department of the Oakland, Antioch & Eastern Railway by the writer about two years ago. It has proven of great assistance, as it enables one at a moment's notice to put his finger on just what it has cost the company to maintain any piece or all of its equipment for a given period. This makes it possible for the department to run down excessive costs on any item which goes to make up the annual maintenance budget.

## METHOD OF SEGREGATING ACCOUNTS

A blue printed list, entitled "Shop Order Numbers," is the basis of segregation of all charges for labor and material which are expended in equipment maintenance.

In this list are given the various equipment items and their corresponding shop order numbers. The list contains forty-eight main headings, which in turn are suitably itemized. A framed copy of the list is kept in each of the departments of the shop, and the foremen handling work are held responsible to see that the men in making out their time slips are charging the correct shop order number.

In the accompanying illustration is displayed the form of time slip used. Such slips are made out daily by the men and turned into their foreman, who O.K.'s and sends them to the office of the mechanical department not later than 10 o'clock the following morning. The slips are then entered on a loose-leaf time roll. This is made with one carbon copy, the original being attached to the payroll, which is forwarded to the auditor's office at the completion of each period. The copy is left in the department for filing.

The time slips are now extended according to the men's rates, and a recapitulation is made of all of the shop order numbers. The total for each equipment item is posted daily on a 5-in. x 8-in. card, a sample of which is shown partly filled out as Form II. There is one of these cards for each item listed on the blue print, and after a month's work has been completed a monthly total is extended; also a total for that month plus that for the previous month or months. Thus if one desires to know the maintenance labor cost of a certain piece of

PASSENGER EQUIPMENT—COST OF MAINTAINING ELECTRICAL EQUIPMENT FOR YEAR 1915				
Item	Labor	Material	Total	Per Cent of Total
<b>Collectors:</b>				
Pantographs .....	\$172.64	\$58.88	\$231.52	4.8
Trolley poles and wheels .....	173.89	261.58	435.47	8.6
Trolley bases .....	10.07	1.01	11.08	.22
<b>Totals .....</b>	<b>\$366.60</b>	<b>\$321.47</b>	<b>\$688.07</b>	<b>13.62</b>
Per car-mile .....				0.047 cent
<b>Wiring:</b>				
Main wiring .....	\$139.07	\$54.69	\$193.76	3.9
Control wiring .....	76.71	40.93	117.64	2.5
Dynamotor wiring .....	58.72	89.61	148.33	3.03
<b>Totals .....</b>	<b>\$274.50</b>	<b>\$185.23</b>	<b>\$459.73</b>	<b>9.43</b>
Per car-mile .....				0.0308 cent
<b>Main Apparatus:</b>				
Change-over switch .....	\$87.36	\$11.57	\$98.93	2.03
Circuit breakers .....	7.86	.74	8.60	.18
Reversers .....	101.43	49.09	150.52	3.08
Dynamotor brush holders .....	8.55	20.16	28.71	.58
Main resistance .....	77.96	183.98	261.94	5.4
Switch groups .....	164.48	62.02	226.50	4.7
<b>Totals .....</b>	<b>\$447.64</b>	<b>\$327.56</b>	<b>\$775.20</b>	<b>15.97</b>
Per car-mile .....				0.051 cent
<b>Motors:</b>				
Motor bearings .....	\$43.05	\$176.64	\$219.69	4.5
Brush holders .....	35.18	59.83	95.01	1.9
Motor leads .....	85.67	98.42	184.09	3.8
Armature bearings .....	9.00	.56	9.56	.19
Gear cases .....	1.02	None	1.02	.02
Changing armatures .....	134.48	1.98	136.46	2.8
Repairing and rewinding armatures, 322 E. ....	172.76	116.57	289.33	5.9
Changing fields .....	10.96	None	10.96	.22
<b>Totals .....</b>	<b>\$491.10</b>	<b>\$452.00</b>	<b>\$943.10</b>	<b>19.14</b>
Per car-mile .....				0.082 cent
<b>Dynamotors:</b>				
Brush holders .....	\$8.55	\$20.16	\$28.71	.58
Resistance .....	47.20	111.48	158.68	3.5
Changing armatures .....	50.55	.45	51.00	1.5
Repairing and rewinding armatures .....	159.75	74.86	234.61	4.8
Changing fields .....	8.78	1.87	10.65	.22
Repairing fields .....	7.44	26.00	33.44	.7
<b>Totals .....</b>	<b>\$282.27</b>	<b>\$234.82</b>	<b>\$517.09</b>	<b>11.30</b>
Per car-mile .....				0.038 cent
<b>Control Equipment:</b>				
Controllers .....	\$26.01	\$0.50	\$26.51	.5
Operating switches .....	2.02	None	2.02	.04
Control resistance .....	6.54	8.06	14.60	.3
Bus line receptacle .....	22.15	12.81	34.96	.7
Bus line jumpers .....	32.38	30.65	63.03	1.3
Control receptacle .....	33.41	17.16	50.57	1.04
Control jumpers .....	76.94	34.32	111.26	2.3
Miscellaneous electrical repairs .....	25.88	49.91	75.79	1.6
Electric brakes .....	58.22	44.66	102.88	2.2
<b>Totals .....</b>	<b>\$283.55</b>	<b>\$198.07</b>	<b>\$481.62</b>	<b>9.98</b>
Per car-mile .....				0.032 cent
Inspection electrical equipment .....			\$960.00	
Per car-mile .....				0.083 cent
Total cost .....			\$4,889.86	
Total passenger-miles .....			1,500,604	
Cost per car-mile .....				0.32 cent

Form F 201—10M 4-16

**OAKLAND, ANTIOCH AND EASTERN RAILWAY**

**TIME TICKET**

DATE \_\_\_\_\_ 191\_\_

NAME \_\_\_\_\_

HOURS	WORK DONE	JOB NO.	COST

NO TIME ALLOWED UNLESS COVERED BY THIS TICKET

O. K. \_\_\_\_\_

FORM 1—DAILY TIME SLIP FILLED OUT BY WORKMEN FOR REGULAR WORK

equipment up to any day or month or year, this card gives the information. At the end of the year the totals are transferred from these cards and tabulated under their respective heads as classified on the blue print. This tabulation shows labor, material, total and per cent of total. Per cent of total means the relation in per cent that the money spent on a specific job has to the total amount spent in the maintenance of equipment. By this method, increases or decreases in maintenance costs can be readily detected. The tabulated report covering the maintenance of electrical equipment on passenger cars, twenty of which are motors and fourteen of which are trailers, for the year 1915 is here presented.

After the cards have been posted a recapitulation of all the shop order amounts is again made and segregated







end of each month these are removed and the papers pertaining to each account are clipped together and filed away by months, together with the necessary papers supporting the month's business.

Store ledger cards, Form V, for all material in the material and supplies account, segregated into classes and arranged numerically, are kept in the office of the mechanical department. These cards are also used as price cards.

The main point is to have each day's work considered a unit and complete it that day. In this way no time is lost in looking up records a week old, errors are eliminated in the distribution, and nothing is forgotten, as the transaction took place on yesterday and is still fresh in the minds of all concerned.

## Pacific Electric Railway Experiments with Motor Bus Feeders

Company Operates Six-Wheel Auto Bus in Arlington, Cal., Where Jitneys Have Been Excluded

THE Pacific Electric Railway recently built at its Los Angeles shops two six-wheel motor buses of the type shown in the accompanying illustrations, which will be used experimentally as feeders for its electric systems in an effort to work out some successful plan for improving and extending its service. Company officials have made it plain that the new vehicles are not put on in competition with jitney buses, but will be assigned regular schedules for the present in outlying districts which it is desired to connect with existing traction lines or where it is not practicable to build extensions under present conditions.

A novelty in the new cars is the flexible feature, an important element of the patents. The passenger body is not a trailer, as it is supported on a ball and socket joint located forward of the rear axle of the engine member, thus combining the two parts in a six-wheeled, flexible coach. An automatic steering lever connects the middle or driving axle with the hindmost axle, the latter having the same connections between wheel and axle as the ordinary automobile front axle. In this way the hindmost wheels are made to track those ahead, and thus the limiting turning radius for the entire coach is no greater than that of the four wheels of the engine member.

A feature claimed for this type of construction is that because the forward end of the passenger section is supported at one point, the rocking common to the ordinary four-wheeled car is absent. By having the

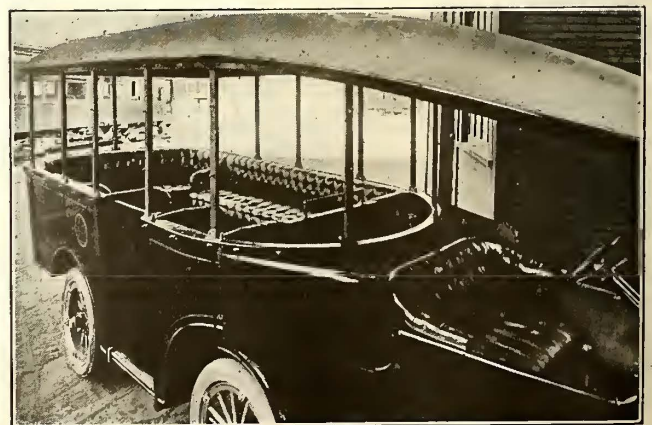
motor on a separate chassis the passengers do not feel its vibration, and the connection is made convenient for speedy uncoupling, so that in the event of any breakdown on the engine member the rear section can be jacked up and another engine member coupled on in a few minutes. Spanning the flexible joint between the engine member and the passenger section are curtains, which operate on spring rollers. These curtains are to be painted with route signs.

One man operates the machine, the seating arrangements being such that passengers pay their fares on leaving. The first two cars built have a seating capacity of twelve in the rear section and one with the driver. These cars were built according to plans which have been worked out in detail for either twelve or twenty-passenger bodies. Any light automobile can be adapted as a motor. Those used by the Pacific Electric in their first two units are Chevrolet cars with engines rated at about 30 hp.

The first of these cars to be put in service went into commission on July 26 in Arlington Heights, a suburb of Fresno, which has a population of about 3000, and which has been without transportation facilities since the jitney buses were excluded from that city. The ordinance which forbids the operation of jitney buses in Fresno does not prevent the operation of this car, as it is an electric line feeder and has become a part of the equipment of the Fresno Traction Company. The bus will run only on streets where there is no car service at present, and will transfer passengers to the electric system. The new car was driven from Los Angeles through the Mojave Desert and over the Tehachapi Pass up to Fresno, a distance of 246 miles, in ten hours and thirty minutes, arriving in excellent condition and ready for immediate service.

It is believed that this coach combines the good points of the jitney, such as low operating cost, curb loading, quick get-away, comfort of riding, with the good points of the trolley car—greater capacity, responsible management, and free transfers to existing lines. Being operated by a street car system these vehicles serve as feeders from outlying or adjacent districts, for use where service by trolley cars is not profitable or is objectionable, and for testing out extensions of rail systems.

The equipment is the invention of R. B. Fageol of Oakland, Cal., who produced the Fadgl motor trains used at the Panama-Pacific Exposition. Mr. Fageol's inventions are being handled by the Fadgl Flexible System of San Francisco. Although two demonstration cars have been built previously, those recently put in service by the Pacific Electric are the first to be tried out by an electric railway company.



TYPE OF CAR USED BY FRESNO (CAL.) TRACTION COMPANY CAR BUILT BY PACIFIC ELECTRIC RAILWAY; WHEELS AT THREE DIFFERENT ANGLES



# How to Appraise Public Utility Property

In This, the Concluding Section, the Author Discusses the Use of Field Checks, the Summation of Field Data, the Preparation of Labor Costs and the Use of

Appraisal Data in Evidence

By GEORGE W. KUHN, M.E.

THE ELECTRIC RAILWAY JOURNAL of July 15, 1916, contained the first section of this article on the general methods to be pursued in appraising public utility property. In that issue the discussion was confined to the planning of appraisals, co-operation with the appraised company, the handling of company records and the designing of forms. In this issue the author takes up the use of field checks, the summation of field data, the determination of labor costs and the presentation of appraisal data in evidence.

### FIELD CHECKS

To secure information not available from the company's records or to check that which has been secured, a field inspection of the property is usually found to be necessary. Whether such information is to be complete or at random will depend upon the nature and the amount of information required as well as upon the extent of detail and accuracy desired. The examination may be made primarily to determine the physical condition of the property or to obtain such knowledge of construction types and conditions as will form a sound basis for compiling installation costs. It is recommended that at least a random field examination be made regardless of the apparent completeness of the written record, so that the reliability of the written record may be confirmed or definitely discredited.

The field check will be most effective if timed to start after all the office work pertaining to the inventory of structures in the field has been completed. Only at such time can the amount of detailed field data required be known and the inspection so arranged that all of such information may be obtained during one examination. Many of the problems arising during the preparation of the office inventory may be profitably reserved for solution in conjunction with the field inspection.

The time necessary for checking the office records by a count in the field may be very much reduced if arrangements are made to have the various company employees in charge of groups of property prepare inventories. This can be done readily and accurately because of the familiarity of the men with the property in their charge, and a random check by the appraising force will establish the reliability of the original count and furnish a double check on the records in the company's office. The facts that such employees usually receive lower wages than the appraising force and that the counting by such employees will add an insignificant amount to the ordinary day's work, will tend to keep the total cost of making the inventory of such property very agreeably low.

To facilitate work in the field, the streets on which property is located should be systematically arranged into routes for economic travel. While it is true that the manner in which the written records have been prepared will determine the corresponding form and order in which the field records are to be made, a judicious division of streets so that in a given section the number or size of wires or ownership or use of poles is constant will make it possible for a field party to keep track readily of several kinds of property at the same time. In so far as possible the plan of the field opera-

tions should be worked out in detail in the office by the use of maps, street guides, routes of street car lines and all the information at hand.

The route sheet shown as Form I adds to the convenience of both the field men and those directing the work from the office. The "route number" space makes it possible to refer to a route definitely and most briefly, while the "locality" space takes the name of the section of the territory covered by the appraisal and gives a more or less definite conception of the conditions to be met and also helps to determine whether certain routes should be assigned together to the same field party. The length of the route in miles, as entered in the "approximate miles" space, helps toward uniform total street length being assigned to the various parties. The column headings for "Street," "From," and "To" are self-explanatory. The heading "F. P." calls attention to places where circuits and equipment are supported on foreign poles or on elevated railway structure. The heading "Remarks" allows the man in the office to insert notes telling the field party where they can save time by riding, directing them to pick up equipment,

<i>Company</i> .....		<i>Date</i> .....		<i>File No</i> .....	
<i>Computer</i> .....		<i>Checker</i> .....		<i>Sheet No</i> .....	
<i>Subject: Route-Sheet for Field Check</i> .....				<i>Inv No</i> .....	
○ <i>Route No</i> .....		<i>Locality</i> .....		<i>Approx Miles</i> .....	
<i>Street</i>	<i>From</i>	<i>To</i>	<i>F. P.</i>	<i>Remarks</i>	

FORM I—CONVENIENT ROUTE SHEET FOR FIELD MEN AND FOR DIRECTING WORK FROM THE OFFICE

short runs of circuits or pole lines on intersecting streets, and calling attention to changes in names of streets on which property is installed and matters of like nature.

Form II on page 316 shows the field man at once the entire situation for a given street. It shows whether certain groups of property are installed or not, whether any questions are to be answered and whether additions and removals since the date of the appraisal require consideration. A checkmark in a given column opposite a given street will show that the particular item has been considered in the office for that street. The color of the checkmark may very conveniently be used to show the field man whether the item marked requires his further consideration for the street involved. Not only is time saved by making it unnecessary for the field man to look through many detail sheets each time a question arises in his mind, but the sheets and records themselves are spared an immense amount of handling which could have only detrimental effects on them.

Every convenience that will assist in the work of the field parties will well repay the trouble and time spent in providing it. Such matters as stiff backs for the



binders containing the necessary records, so that writing in the field may be done less inconveniently; large rubber bands to prevent the pages being disturbed by the wind; extra forms fully ruled to save work of ruling same in the field; a pocket map and a street guide of the locality, and a copy of instructions should be issued to each party going into the field. The type of pocket map found to be most useful is provided with an alphabetical list of street names printed on the back of the sheet, so arranged that by using a co-ordinate system of letters and numbers on the borders of the front of the map, any street may be quickly located. The instruction sheets should contain a complete description of construction types used in the classification of the property being examined. The accompanying set of field instructions and sketches of construction types for circuit suspensions on elevated railway structures (pages 317 and 318) illustrate the complete description of work that should be given to field men.

Definite rules should prescribe the manner of correcting the original office record so that it will not be destroyed nor later comparison of office records with

seeking to confer with them or to furnish them with supplies.

The duplication of a field examination for the purpose of verifying the results originally obtained is not justified because of the relatively great expense for the results obtained and the usually very small percentage of error found. Practically as good a check may be obtained by having the field parties made up of more than one man each and requiring that two members of each party shall make independent determinations of the quantities, measurements or other detail recorded. This can be done very quickly and often obviates serious errors in the work.

Arrangement of routes is planned with the recorded data as a basis, but field parties should, of course, be alert to observe and record any extensions beyond those shown by the record in hand, where such extensions occur on the lines or routes assigned to them. The same care should, of course, be used in taking account of places where property as existing in the field is not of the same description or amount as that recorded in the office. In cases where the field check is carried on after the official date of the inventory, the amount of change of record is very much reduced if memorandum lists of extensions and retirements since such date are furnished to the field parties. Such information will account readily for differences found by men in the field and save much misunderstanding and needless work.

In the preparation of inventories, particularly of such properties as are not readily susceptible of a field check, means must be provided whereby the inventory made from the company's record may be checked. Among the very best means is the preparation of records in graphic form, and if the company does not have suitable maps and records for the purpose, they should be prepared by the appraisers. Such maps should be to scale and sufficient space should be provided to allow several conventional lines being marked on the streets. The probable necessary widening of the street spaces will, of course, throw the block measurements out of scale, but if measurements along streets are taken between center lines of intersecting streets, the scale may still be used without serious error. Such maps when completed will show the continuity of underground duct lines, pipe lines and overhead circuits, the necessity for attendant structures such as standpipes, switchboxes, valves and fittings of various kinds, etc., and will tend to point out errors not readily discovered otherwise. They will also often furnish information not available from any of the records examined and offer a basis for the conception of the system as a whole; the extent and location of the territory served; the condition of the property as to duplication of plant, inadequacy, direction of probable growth of the system, etc. Much valuable information regarding average length of haul from the storeroom, location and density of distribution of poles, pipe lines or underground duct systems, location of line transformers, pavement conditions, flexibility of the system with regard to alternate or relay routes of transmission or distribution, etc., may often be deduced from such graphic descriptions of the property and the district served.

SUMMATION OF DATA

In the treatment of the information listed on the field sheets, it will be found to be a distinct advantage to average such sheets into groups, so that they may present complete and separate histories of the examination of the various parts of the property. For flexibility, however, the various steps in the consideration of the property groups should be capable of independent treatment and the following arrangement has been found very convenient and is recommended. The prop-

<i>Company</i> .....		<i>Date</i> .....		<i>File No.</i> .....	
<i>Computer</i> .....		<i>Checker</i> .....		<i>Sheet No.</i> .....	
<i>Subject</i> .....		<i>Guide Sheet for Field Check</i> .....		<i>Inv. No.</i> .....	
○ <i>Route No.</i> .....	<i>Locality</i> .....				<i>Approx. Miles.</i> .....
<i>Streets.</i>	<i>Questions</i>	<i>Line Poles</i>	<i>Lamp Poles</i>	<i>Service Poles</i>	<i>Dist. Wire</i>
	<i>Arc Wire</i>	<i>Trans. Wire</i>	<i>Transformers</i>	<i>A.C. Services</i>	<i>D.C. Services</i>
			<i>Additions</i>	<i>Removals</i>	

FORM 11—GUIDE SHEET WHICH SHOWS AT A GLANCE THE ENTIRE SITUATION FOR A GIVEN STREET

information found in the field made difficult. By careful attention to such details as the use of colored pencils, the prohibition of erasures, the use of definitely determined symbols, etc., the original entry may be confirmed or contradicted, or even a final entry differing from both the original office data and the information observed in the field may be specified along with the reason therefor, while at the same time the entire record from beginning to end may be preserved intact on the original sheet for future reference. In general, the more fully the plan anticipates the differences which will surely develop during and after the field inspection between the records and the field observation, the greater will be the efficiency, the more useful will be the results obtained and the lower will be the cost of the work.

In laying out routes, the plan should be so arranged that of a certainty property at intersections of streets shall be recorded only once. To this end, conventional signs or check marks should be specified in the instructions, through the use of which a party coming upon the property in the field may know whether it has already been listed by a preceding party. The limits of routes to be followed by the various parties should be very definitely decided, and specifications should be explicit as to side of street, pole number or other boundary which is to divide the different territories. Marks placed by parties on property in the field may be so designed that, when used in combination with a system of telephone calls to the office at specified times, the parties may be promptly located by men from the office



## Instructions for Parties Checking Overhead Lines in the Field

### General:

The main object of the inspection is to determine the accuracy of data taken from the company's record as of the date of the appraisal. It is desired also, however, that a general observation be made of construction methods, practices affecting costs and conditions affecting depreciation so that intelligent reports may be made upon these matters. Specific note should be made where property is inoperative.

To facilitate the work, streets on which the company has overhead circuits have been grouped into routes and such routes have been divided, as far as practicable, into sections in which the physical characteristics of the property are constant. The sections have been so arranged as to give the most economical line of travel for the route, and it is important that the sequence and direction noted should be followed.

The inventory records of the various groups of property to be inspected have been arranged by streets and compiled into route folios along with an explanatory route sheet which gives the names of the streets making up the route, the sequence of streets traveled and direction of travel. All material listed on the inventory sheets should be accounted for by the party in charge of the route unless specifically instructed otherwise by notes on the route sheet. Construction work done on property since the date of the appraisal is noted on the route sheet and care should be taken to avoid listing this as extra property not entered in the inventory record.

Special rules regarding procedure at intersections of routes and lines are given elsewhere in these instructions.

### Electric Services:

Spaces have been provided on the service sheet in which to note the lengths of cable, pipe and greenfield in each service. It is not necessary to estimate or list lengths inside buildings. Cable should be listed by the length from the pole to the building and will be assumed to be three conductor unless listed otherwise. List pipe and greenfield separately and specify total lengths of aerial wire used in feet of single wire.

Specify services according to following characteristics by type letters:

- A—Aerial wires (or cable) from pole to building with greenfield on building.
- A1—Aerial wires (or cable) from pole to building with pipe on building.
- A2—Aerial wires (or cable) from pole to building with pipe and greenfield on building.
- B—Branch service (tap from another service) with greenfield on building.
- B1—Branch service (tap from another service) with pipe on building.
- B2—Branch service (tap from another service) with pipe and greenfield on building.
- C—Inside wiring only (services marked "B?" in lists are to be changed to "C" if found to be inside wiring only).

Greenfield or pipe used for services and located on poles, elevated railway structures, etc., should be noted in a separate column as extras, and the single length of wire in them should be included as part of the total length of wire in the service.

Special poles which are not line poles on private property, as well as storm-boxes, stand-pipes, etc., which are erected and used exclusively for services, should be noted for such use on the pole lists.

Extra supports, such as cross-arms on elevated structures, when used exclusively for house services should be noted on the service sheets, but when used for street lighting should be noted on the lamp pole sheets.

Services are special departures from the main overhead line to serve the consumers' premises and, except in large installation, may be distinguished by the fact that they use multiple conductor cable. Consider all wires between line poles as part of the main circuits. Services from series arc circuits are to be taken as running from the line pole to the lamp pole or, in case the pole supporting the lamp serves also to support the line, from the top of the pole to the lamp only.

Where it has been necessary to assume that certain services are of underground construction and such services have not been found in the records of the underground construction, the listed item has been marked with a blue check. This group includes services running down standpipes from overhead lines but excludes connections between overhead and underground lines. Primary services to public schools and large buildings have been marked on the list with a red check. Special attention should be given to these checked items and full information recorded if any overhead construction exists.

It is expected that the men in the field will form mental conceptions of the standard types and sizes of materials used so that when construction departs to any marked extent from the standard they may be able to recognize and record the details.

### Lamp Poles and Transformers:

Before starting to inspect a locality, the record showing the location of lamp poles and transformers should be consulted and the approximate locations noted. By this means much unnecessary work may be avoided since only sheets bearing on other groups of property will have to be consulted for locations for which no transformers or lamp poles are recorded. It will be assumed that each transformer is provided with two primary cutouts and no secondary cutouts unless the field notes specify otherwise.

### Poles and Fixtures:

To avoid confusion due to double recording of material at intersections of lines, the following method will be followed:

1. At ends of lines and at intersections, including cases where one or more lines are carried on foreign suspensions, the intersection or terminal pole carrying circuits being checked shall be so marked by the first party arriving at such poles that the disposition of the material may be known by the second party. The following marks will be used and will have the meaning noted:

- X—Pole, fixtures and transformers (if any) taken.
- P—Pole and fixture only taken.
- T—Transformers only taken.
- O—Circuit only taken.

2. The first party arriving at an intersection will take note only of such material as is listed on the sheets in its possession, leaving all other material to be taken by subsequent parties. The first party will also mark an arrow on the side of the pole near the walk, about five feet above the ground and pointing in the direction of travel of such party. Where fire alarm boxes are installed on poles and painting of the pole might cover such arrow, the arrow should be duplicated near the ground line.

3. Where standpipes are installed on poles for the use of circuits rather than for services, such standpipes should be listed as part of the pole and fixture account and the note should show the kind of circuit served.

4. Pavement for street and sidewalks, which would be affected by the installation of poles, stubs and standpipes, should be noted on the pole sheets by means of the following abbreviations (use printed capital letters):

- A—Asphalt sheet.
- AB—Asphalt block.
- WB—Wood block.
- G—Granite.
- M—Macadam.
- BB—Belgian block.
- B—Brick.
- D—Dirt.
- MS—Medina sandstone.
- F—Flagging.
- C—Cement.

5. Where too great expenditure of time is not involved, general notes should be made regarding excavation conditions as observed at openings, conditions affecting disposal of surplus excavated material, etc., wherever possible.

6. Where giant strain insulators are used to sectionalize or end circuits, such insulators should be listed as extras. When used in pairs, note as "double giants." Note clevis ends, specially large sizes and extra greenfield on poles. Identify stubs, guys and anchors with the pole which they serve, noting cases where stubs at intersection, etc., serve more than one pole. Where two guys appear on a pole owned by a foreign company but used by the electric company, assign one guy to the electric company. Note double cross-arms as the number of pairs of single cross-arms to which they are equivalent.

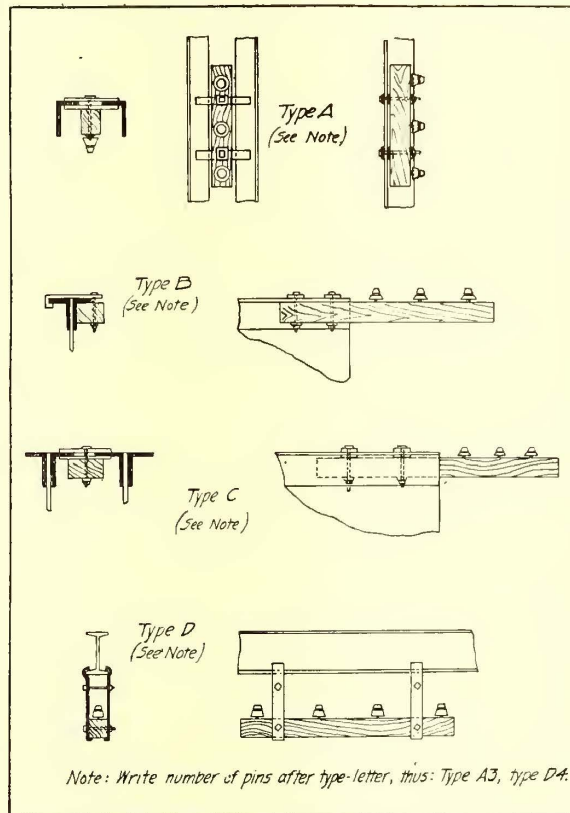
7. In listing poles not found on the original inventory records, all data, including ownership, if such can be determined, should be noted and the location given with respect to a given curb of the nearest intersecting street.

8. Methods of supporting circuits from elevated railway structures are shown in the accompanying sketches and the number of units should be reported by type letter. When the limits of location are given between which the type of construction is uniform, the average spacing of units may be given instead of an actual count. It is recommended that such sections be not allowed to become too lengthy so that confusion in counting may be avoided.

9. The field parties will take circuits, poles, etc., up to and including the pole immediately at the station or substation.

### Circuits:

In checking circuits in the field, note pole numbers of poles at limits of sections directly on the circuit sheet. Where such pole is foreign-owned or the number cannot be distinguished, the length given on the record may be checked if found correct. Lengths given for sections of circuits supported wholly on foreign poles have been approximated only and should be checked roughly for



SKETCHES OF CIRCUIT SUSPENSIONS ON ELEVATED RAILWAY STRUCTURES TO ACCOMPANY FIELD INSTRUCTIONS



## Instructions for Parties Checking Overhead Lines in the Field—Continued

accuracy, and correct figures should be substituted where necessary. Do not erase records; draw a pencil line through them and write the correction above. Where no figures were included in the original inventory, insert a cipher and draw a pencil line through it and then write the correction above it.

**Miscellaneous:** Each party should see that it is provided with a street guide and map, a list of streets having more than one name, a crayon, a copy of instruction sheets, all records for the section to be inspected and additional forms for listing material found. The number of hours worked per day is to be the same as in the office. Progress should be reported to the office each forenoon and afternoon by telephone, and a record will be kept in the office of the time of calling, the location, the progress made and the direction of travel, so that the field men may be reached conveniently in case it is necessary to convey information or supplies to them.

Sheets checked in the field are to be signed in the space marked "checker" by the man in charge of the party. Records are to be preserved with all care possible. Avoid the use of ditto marks. The use of ink and large check marks, erasures of original record and other practices tending to disfigure the sheets or make them illegible are strictly forbidden. As sections of routes are completed, they should be checked off on the route sheets. Materials found in the field and not recorded on the lists and not included in notes of installation since the date of the appraisal should be listed under the heading "field extras." As in the original records, not more than one street is to be considered on a sheet.

The following abbreviations are for use in listing material.

F.P.—Foreign pole	Wh.—Westinghouse
P.P.—Private property	G.E.—General Electric
G.—Ground wire and guard	M.H.—Manholes
Ph.—Pot head	S.B.—Service box
Cb.—Curb.	D.B.—Double braid
P.—Pine.	L.C.—Lead covered
Ch.—Chestnut	Pr.—Primary
Cd.—Cedar	S.—Secondary
F.—Feeder	H.D.—High tension direct-current
M.—Main	H.A.—High tension alternating-current
Cr.—Concrete	L.D.—Low tension direct-current
L.A.—Lightning arrester	L.A.—Low tension alternating-current
U.G.—Underground	
S.P.—Standpipe	
Sp.—Special	
R. C.—Rubber covered.	

In referring to poles the following will be used:

J.T.—Pole owned jointly by electric company and telephone company.	Union, used by electric company.
J.W.—Pole owned jointly by electric company and Western Union.	C.—Pole owned by city, used by electric company.
J.C.—Pole owned jointly by electric company and city.	E.T.—Pole owned by electric company, used by telephone company.
T.—Pole owned by telephone company, used by electric company.	E.W.—Pole owned by electric company, used by Western Union.
W.—Pole owned by Western	E.C.—Pole owned by electric company, used by city.

erty is divided into groups according to some system of accounting. The system found to give the best results is the uniform system prescribed by some regulating body, such as the Interstate Commerce Commission or the State Public Service Commission. The group designation (in the case considered this would be the account) receives some identifying number and is incorporated into the file number of sheets on which property included in that group is listed. This will act automatically to arrange all allied property into distinct groups in the files. A further step consists in dividing such files into sub-groups, such as field sheets, detail computation sheets, final summation sheets, sheets on which depreciation, scrap value, etc., are considered, and the like. These sub-groups may be easily separated from other parts of the general group by the simple incorporation of a sub-group letter, or other designation, into the file number. In case detailed and independent computation or consideration along separate lines is necessary for parts of these sub-groups, it is a simple matter to divide them into sections whose numbers will appear as prefixes to the sheet numbers.

It is advisable that the sub-groups containing the compilation and computation sheets be kept separate from the records of field inspection, both for convenience in handling and because the original field sheets will thus be protected from much unnecessary wear and tear which might result in erasure or blurring of the record.

In all computation or summation work where there may be necessity for analysis or revision at some later time, it is almost absolutely necessary that record be made of the source from which information was obtained and that the results of computations be verified before they are used in further continuation of the work. Judgment must be used to determine how far an investigation should go before the detail consideration must be checked, since it is apparent that there is a golden mean which will balance saving in cost of checking against importance of probable error with consequent duplication of part of the work of computing.

For obtaining uniformity in methods and clearness of information regarding such methods, it has been found to be a very profitable practice to write descriptions of what is done while the work is still fresh in the mind of the men in charge, and to incorporate such descriptions in definitely assigned places in the files. Such procedure will be found to be of great help when

pressing questions as to details arise and the time allowed to answer is short. It will also prove valuable when similar work is contemplated at later times and the formulation of plans and methods is in order. Such description is, of course, an elaboration and amendment of the plan of work as originally prepared.

During the work of gathering and summing detailed information the men in charge should devote themselves to supervising and planning work ahead. For this reason they should be careful not to allow themselves to be drawn too deeply into the detail of estimating labor costs, laying out forms, etc. The efficient working out of the plan will require that there shall be some man or men free to devote time to questions which must be decided and policies which must be formulated. No small part of the planning will consist of determining where and how listing machines, computing machines, mimeographs, printed forms and similar mechanical means shall be brought into the work to reduce the load of the routine work on the men. A careful study of such means will result in a remarkable saving in costs.

### LABOR COSTS

The work of preparing labor costs for the installation of property will usually devolve upon the appraisers, for in general the corporation does not keep its cost records in such shape that the units desired in appraisal work may be readily derived therefrom. Great care must be used in preparing estimates, and as much time as can be spent economically on the study of operating conditions should be devoted to obtaining a special knowledge upon which to base the estimates. It is very important that such fundamental information should be so obtained that it will set forth clearly the conditions which existed at the time of the installation of the property and which affected the original cost of such installation. Material prices may usually be obtained by consulting the company's vouchers and supplementing such observations by requests for quotations as of the date desired from manufacturers. Where the actual expenditure by the company is sought, great care must be used in the consideration of cases where several items of property were installed together and made more or less common use of the same installation cost.

All records of the company which purport to show labor costs should be carefully examined before being used, because such records frequently show the amount



of work contemplated rather than the actual work done. In any case, such records should not be used without an independent study in the field of similar work in progress and a thorough investigation by means of conferences with the company's departmental heads, etc., as to past methods and conditions affecting the work. If the men carrying on the field check of the inventory are properly instructed, their observations and reports on specific and general construction conditions in the various sections of the territory should be very valuable.

After the inventory of quantities and the study of unit costs have been completed, modifications of the original plan for summation to effect many time-saving short cuts may be suggested and eventually adopted if the relative importance and prices of the several types receive careful consideration. The elimination of some of the finer details recorded, which are seen to be not sufficiently dissimilar or not important enough in either value or amount or both to be given special consideration as separate groups, will result in considerable saving in work done by computers and checkers. Such merging of minor groups will usually bring about important economies without seriously affecting the final result.

The use of averages, weighted or otherwise, should be scrutinized very closely. Information based on such averages is often used without sufficient care and may lead to very erroneous conclusions. Before averages are used it should be definitely determined that they are not only mathematically accurate but are logically and practically correct and that their use is not made impossible by one or more of the actual conditions under which the company operates its property.

#### PRESENTATION IN EVIDENCE

When the appraisal is being made by a commission, the company and the complainant should be invited to appoint engineering representatives who may inspect methods used in listing the property and whose agreement to the reasonableness of such methods will bind the company and the complainant against objecting to such methods later after the work is completed. Along the same line the decision may well be reached to have engineering representatives of both the company and the complainant, if there be one, present to comment on the reasonableness of the unit prices proposed for use and to lend such assistance as may be approved by the commission's engineers in the preparation of such prices. If agreement to methods and unit prices be obtained in advance of the determination of totals, it will be possible to reduce the time spent at hearings to a small fraction of the usual amount. Steps of this nature tending toward the determination and final presentation of the simple fact before the regulating body will not only save much time of expensive officials and experts but will result in all parties being better satisfied with the result, and the result itself being obtained much sooner than it would be otherwise.

It is recommended that only summaries or statements of total figures be put into evidence before the regulating body. Much time is only spent needlessly if great masses of detail are handed by specialists such as expert accountants or engineers to lawyers, who are laymen as far as engineering or accounting reports are concerned, to be put into evidence before other laymen and then examined and argued over by other lawyers who are advised in their questioning by accountants or engineers in the employ of the company or the complainant. Such examination can best be done in conferences, where all detail will be available from the original records and where argument will be at first hand and without formality.

If detailed information be desired by one of the parties, it can usually be prepared from the original records at reasonable notice. It is best, therefore, not to attempt to prepare answers to more than those questions which will almost surely be asked but to depend on the flexible condition of the record to answer others. Such procedure will save much time, since many possible questions involve the preparation of lengthy information which may well be deferred until the necessity is made distinctly apparent.

## COMMUNICATION

### Electrification in Europe and America

NEW HAVEN, CONN., Aug. 15, 1916.

To the Editors:

I have read with much interest the report and recommendations of the general managers of the Swiss Federal Railways, with regard to the new St. Gothard electrification, an account of which appears in the issue of your journal for Aug. 5, 1916. Their decision to adopt the single-phase system in this case is an extremely important one, and will have far-reaching consequences, since it actually determines the system to be used in the future for all lines in Switzerland, both government and privately owned, some 2000 miles in all. It is apparent that those making this decision did so with a full realization of their responsibilities, of the importance of the issues involved, and after exhaustive study of all possibilities. Under the circumstances a few comments may be of interest.

The underlying conditions controlling the situation in Switzerland may be summarized as follows:

1. Switzerland has no coal deposits but has plenty of water power available. Relatively cheap electric power is therefore at hand. The use of electric power is everywhere encouraged largely as a means of rendering the country economically independent of its neighbors.

2. Tunnels large and small are abundant. In this case 30 per cent of the distance to be electrified is of tunnel construction. This together with the extent of the tourist traffic renders the smoke from steam locomotives particularly objectionable.

These factors together with the excellent technical training given to the Swiss engineers explain in large measure why for years Switzerland has led the van in both hydroelectric and certain phases of railway electrification development work.

That the board of managers should consider the development of the direct-current system as "insufficiently advanced to be seriously considered at this time," will come as a shock to many who remember the successful application of this system at a time when the single-phase system was unknown. Twelve years ago the direct-current system was considered fairly well developed and mature, whereas the single-phase system was unborn. What has occurred in the interval? What are the dominant features of the single-phase system upon which it makes its appeal to-day as exemplified in this report from a body of impartial and competent engineers? The direct-current system has been notably successful wherever applied. The direct-current motor in many ways is universally acknowledged to be superior to the single-phase motor. What, then, are the reasons why direct-current was not chosen in this case, and are those reasons ones which apply to conditions in the United States?

From a close reading of the abstracted report, and of



the original, a copy of which I was privileged to see, it appears to me that there were several controlling reasons influencing the decision in favor of the single-phase system as follows:

1. Its demonstrated universality of practical application.

2. Its contingent adaptability to probable future conditions having in mind the present trend of electrical development.

3. A fair measure of standardization has already occurred in single-phase systems.

4. There are in Europe no manufacturers with the necessary experience in the development of heavy, high-voltage direct-current apparatus, or with facilities through the use of which this apparatus could be thoroughly and conclusively tested out.

5. The superior speed characteristics and speed control possibilities of the single-phase motor make a strong appeal.

By way of comment on these points, it may be said, first, that the single-phase system has already been successfully applied on a large scale to every condition confronting the Swiss engineers; to main lines, terminals, tunnels and yards; to freight, passenger, switching and miscellaneous services; to locomotives, multiple-unit cars, high and low-speed services, etc.

Regarding the future, the recent development of the phase converter and the already more than foreshadowed development of the mercury arc rectifier, point to the coming of a new composite or universal system toward which all present systems are strongly converging. This new system will permit the simultaneous operation of all present types of traction apparatus under a single wire carrying high-voltage alternating current, and will combine the real advantages of all systems while at the same time largely escaping the disabilities of each. In the future a single-phase locomotive at relatively slight expense can readily be adapted for direct-current operation where it proved desirable, while the rest of the system remains unchanged. With the direct-current system, a change or adaptation to new requirements may and, probably would, mean the abandonment of costly substations and extensive changes to power stations, transmission lines and rolling stock.

In the line of standardization of single-phase railways in this country the use of 11,000 volts on the contact wire is universal. In Europe most electrifications are at from 15,000 to 16,000 volts. Should higher voltages seem desirable in the future they can be used without prohibitive cost or inconvenience. This is not the case with direct-current.

The fact that the extra weight of the single-phase motor has compensating advantages as regards speed possibilities has been little understood and appreciated in America. The Swiss engineers, however, are evidently alive to it and fully appreciate its great commercial significance. This point is more fully treated in the earlier reports on the Swiss Federal Railways, which also refer to the possibility, with single-phase motors, of varying the voltages on the locomotive transformer taps and to the value of this as a means for correcting line drop.

The report in comparing the various systems touches upon many other features: over-all efficiency, inductive and other interferences, effect upon peak load of starting losses, method of primary generation, *i.e.*, whether single-phase or three-phase, etc., and throughout shows a most discriminating sense of relative values. It clearly separates essentials from non-essentials, refuses to cloud main issues by the discussion of unimportant details. The broad aspects and tendencies and their

relations to the future are never lost sight of. In fact, it is an admirable report.

I, for one, am a strong believer in the direct-current motor, *per se*, and have never swerved from my belief that for certain restricted applications the direct-current system has no equal. It is capable of and doubtless will receive much further improvement. I am very conscious, too, of the disadvantageous features of the single-phase system in certain of its details. Nevertheless the practical consensus of opinion in both Europe and America seems to be that for general application and heavy work the single-phase system, with all its defects, possesses overwhelming advantages. Engineers in France, Germany, Austria, Switzerland, Sweden appear to be of practically one mind in this matter. In America opinion is not quite so settled, although even here, too, the set of the tide in the direction of single-phase has recently been very pronounced, especially since the decision of the Pennsylvania Railroad to adopt single-phase at Philadelphia as the nucleus of a more general application to that company's diversified requirements in the future.

The point should be emphasized, however, that America does not share with Europe the disability of having no experienced and responsible manufacturers equipped to supply high-voltage direct-current apparatus. At least two reliable firms are ready to do this, and to some extent this fact changes the situation over here. I therefore look to see more applications of direct-current in the future in America, but believe that these will be chiefly of a special kind, *i.e.*, to subways, short suburban lines, certain short heavy freight lines, etc. In Europe, however, under the conditions which obtain, it is improbable that much further high-voltage development will take place, for except for light interurban service, the single-phase system seems too firmly established.

In the face of the overwhelming current of competent opinion here and abroad in favor of the single-phase system, it is difficult to escape the conclusion that at present this system, in spite of its limitations and defects, is, on the whole, the one which impartial engineers are most willing to recommend for application to the diversified requirements of steam railroads.

WILLIAM ARTHUR.

## Niagara Falls Stop-over Privilege Granted by International Railway

With the completion of the new aerial tramway across the Whirlpool Rapids in the lower gorge of the Niagara River at Colt's Point, Ont., the International Railway of Buffalo, N. Y., has granted an additional stop-over at this point to passengers making the Gorge Route belt line trip on the Park & River division of its line along the Canadian gorge. The aerial tramway, built by Spanish capitalists and modeled after the only other of its kind in the world at San Sebastian, Spain, across the gorge opening into the Bay of Biscay, is one of the greatest attractions for tourists at the Falls. It is 1800 ft. long and midway from terminal to terminal the car is 200 ft. above the vortex of the awe-inspiring Whirlpool. The line is reached only by the International Railway.

Among the pleasant and profitable customs which are gaining vogue in educational circles, one of the most interesting is the exchange of professors for lecture courses. One such recent exchange resulted in the delivery of a course of six lectures on railway electrification by Prof. D. D. Ewing of the faculty of Purdue University, at the University of Michigan.



## Some Recent Advances in EQUIPMENT AND ITS MAINTENANCE

Labor Cost of Painting Fenders Reduced by Dipping—New Meter and Low-Flow Alarm for Circulating Liquids—Increasing a Substation Attendant's Earnings \$15 per Month—Keeping a Continuous Inventory in the Storeroom—Western Road Finds Friction Brake Satisfactory—Other Articles of Practical Interest

### Dipping Equipment Reduces Cost of Painting Fenders

Twelve Fenders Painted in Twenty Minutes by the Use of This Process

BY H. C. EBELING

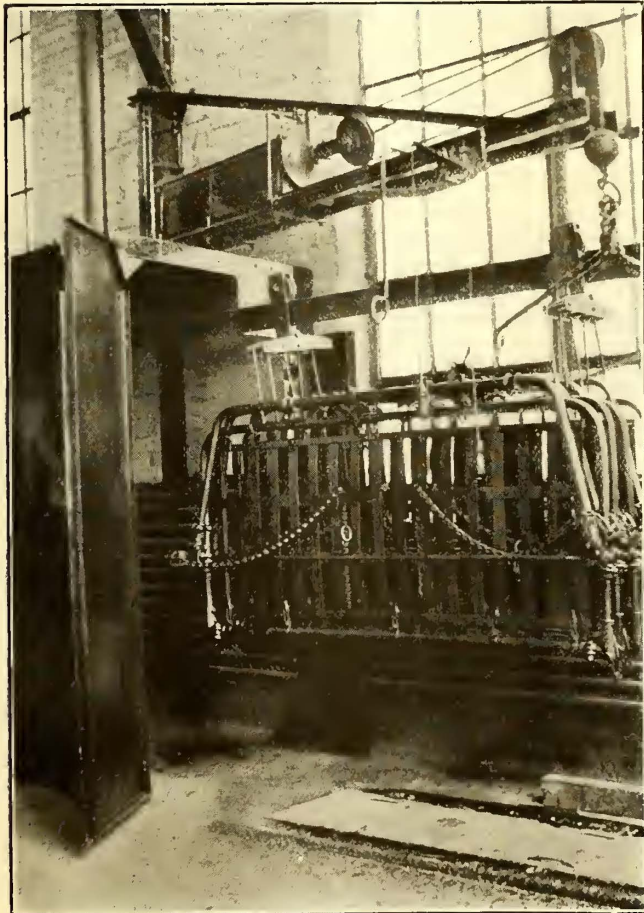
Engineer, the Cleveland Railway Company, Cleveland, Ohio.

The cost of painting fenders in the shops of the Cleveland Railway Company, Cleveland, Ohio, has been materially reduced by the installation of a special fender painting apparatus and, at the same time, a better job of painting is accomplished because all the small crevices and corners of the fenders are thoroughly coated with paint. This painting apparatus consists essentially of a jib crane mounted on the shop building wall, equipped with an air cylinder and the necessary ropes for lowering the fenders into the dipping tank and raising them to the carriages on which they are moved into the drying oven. The oven is installed immediately beneath the jib crane, and it is supplied with a short section of track equipped with carriages upon which the fenders are hung after they are dipped. The oven was provided to hasten the drying process. It is built of steel and

is heated by a section of the steam heating pipe coils, which also serve to heat the building.

The order of operation of this equipment is as follows: The fender is placed near the dipping vat, where it is picked up by the crane and lowered into the paint. After the fender emerges from the vat it is hooked onto two small carriages mounted on the track leading into the drying oven. Two of these carriages, one placed on each side of the fender, are equipped with a sufficient number of hooks to hold four fenders. Before the fenders are moved into the drying oven, however, the excess paint is allowed to drip back into the vat, over which they are suspended. The drying oven is of sufficient capacity to hold twelve fenders.

Prior to the installation of this equipment one man was employed continuously in painting fenders, and he was always behind with his work. At the present time the two men who have charge of fender repairs also dip them, since it requires only twenty minutes to dip twelve fenders, which is all that the drying oven will hold. The raising and lowering of the fenders into the dipping tank is accomplished by the air cylinder controlled by a pendant lever attachment. A view of the jib crane, dipping tank and the fenders mounted on the two carriages which transport them into the drying oven is shown in the accompanying illustration.



FENDER PAINTING EQUIPMENT USED BY CLEVELAND RAILWAY

### Let the Workmen Know the Cost

Saving Follows When Men Know the Relative Value of Available Material

BY "VULCAN"

A.M.I.C.E., A.M.I.E.E., England

The value of the materials and apparatus used on electric railways is, as a general rule, unknown to the men engaged in the carhouses and repair shops as it is thought, perhaps rightly in most cases, that nothing would be gained by the publication of such information. It is obvious of course that in many instances it would be against the employer's interest to make generally known among the men the prices paid for goods. On the other hand, there are cases where the lack of such information is the direct cause of waste and excessive maintenance expenses.

On one occasion the writer found it necessary personally to investigate the reason for the heavy consumption of quick-drying, oil-proof, insulating varnish. This particular varnish was normally used for circuit breakers, the interiors of controllers, and for the outside finishing of fields and armatures, and its cost was about \$2.75 per gallon. A considerable wastage was found to be due to the practice of leaving the varnish when not in use in large uncovered paint cans so that rapid evaporation took place. Of much greater importance, however, was the fact that this expensive varnish was through ignorance being used in large quantities for such rough jobs as painting repaired lifeguards, motor cases, wheels, trolley standards and poles, the outside of controllers, etc., where a cheap



quality of ordinary black varnish would have done equally well.

The men at the carhouses, as would be expected, were the chief culprits in this matter. These men are not usually as well trained as those in the central repair shops, and there is therefore some excuse for their failure to discriminate between the different materials which look very much alike. In each case the shop foreman's excuse was that neither the men nor himself knew the expensive nature of this particular varnish as compared with the others and, had the price of it been approximately known it would have been used in a more reasonable manner.

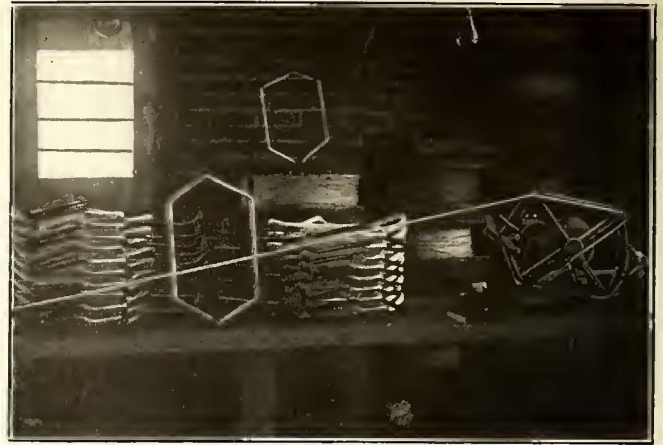
The following year there was a saving of more than \$975 in this item, due to the more economical use of the varnish as compared with the previous twelve months. In the writer's opinion there are many instances in electric railway practice where it proves to be a paying proposition to let the men know the approximate cost of the materials which they are handling.

## Keeping the Substation Attendant Busy

### Employees Increase Their Earnings by Doing Odd Jobs on Illinois Traction System

Some time ago H. E. Chubbuck, vice-president executive Illinois Traction System, worked out a plan whereby the service of substation attendants could be made more valuable to the company and at the same time the attendants could increase their earning capacity. This plan provided for furnishing the various substation attendants with such machine tools as were necessary to employ their time when they were not engaged in their regular substation duties. The first successful experiment in this work was conducted in a substation at Lincoln, Ill., where the attendant is now winding armature coils, and boring, grinding and balancing trolley wheels.

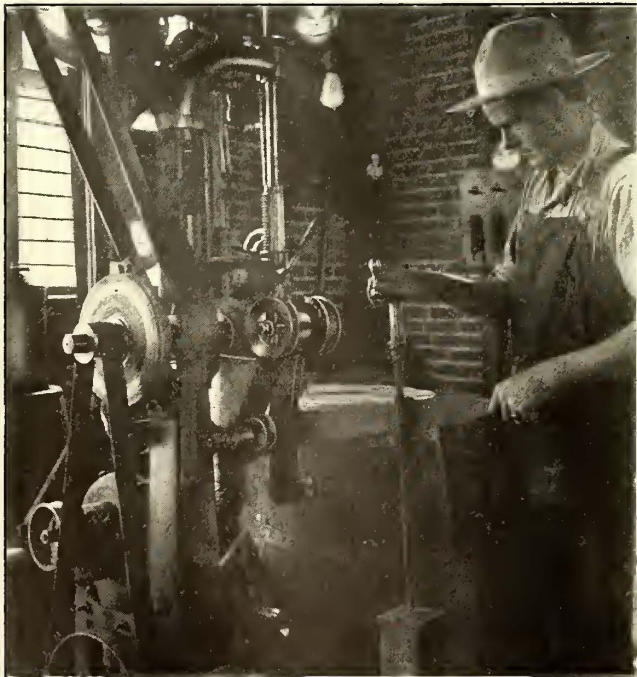
Beside the present direct-current substation at Lincoln is an old building formerly occupied by single-phase substation equipment. This building furnished a



COIL WINDING MACHINE USED IN ILLINOIS TRACTION SYSTEM SUBSTATION

floor space about 20 ft. square, and at first the substation attendant only wound armature coils. This proved so successful, however, that the finishing of trolley wheels was soon added to these auxiliary duties. At the present time the machine tools in this substation attendant's shop include an armature winding unit, a trolley wheel grinding and finishing machine, two electric ovens for baking the finished armature coils, and a complete stock of wire and other necessary materials. The trolley wheels are cast in the general repair shops of the company at Decatur, Ill., and shipped to the Lincoln substation for finishing after which they are shipped to the storehouse. The finished coils are also sent to the storehouse.

Both the armature winding and the trolley finishing are being done very satisfactorily, and at the same time the substation attendant earns from \$10 to \$15 per month more than his regular wages. While this work is now being done only at the Lincoln substation, the success which has attended this initial installation makes it probable that equipment will be installed in other substations on the system where probably other work than that done at Lincoln will be given to the substation attendant. This work is being done under



SUBSTATION ATTENDANT GRINDING TROLLEY WHEELS



SPECIAL BARREL FOR RECEIVING BRASS DUST FROM GRINDER







with spring clips as shown in one of the accompanying illustrations. Whenever stock is taken from the bins, the quantity is recorded in the "Out" column, and similarly whenever new stock is received it is recorded in the "In" column. Each record is dated and at the close of the day the balance of stock on hand is figured and transferred to the storehouse stock ledger. In order to facilitate the handling of stock, every article is given a number along with its correct name so that there can be no difficulty from that standpoint. A copy of each requisition is forwarded to the auditor, and this, along with a record of the quantity of new stock purchased forms a record of the stock on hand. Periodically the auditor checks his balances with those of the storekeeper.

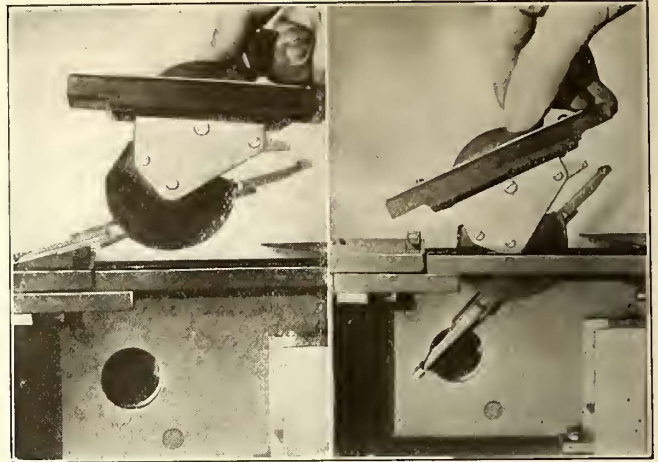
This bin-tag system also facilitates the delivery of stock upon requisition, because the record is set down at the bin from which the material is removed and at the close of the day it is simply a question of transferring this record to the storehouse storekeeper's stock ledger.

## Developments in Railway Voltage Safety Switches

Employees Cannot Come in Contact With Live Parts While Operating Switches or Replacing Fuses

Sometime ago the Brooklyn Rapid Transit System and its associated company, the New York Municipal Railway Corporation, studied the possibility of safety switches for panel boards at passenger stations and terminals. Such structures, of course, are sometimes in charge of ticket sellers or others unfamiliar with electricity. With the use of live-face knife switches there was always danger that the operators would come in contact with live parts. Accordingly the engineers of the above-named railways desired to obtain safety switches for heating, lighting and other circuits of railway voltage that would eliminate this danger.

The accompanying illustrations are of a new safety switch which has been adopted by these companies and which is manufactured by the Krantz Manufacturing Company of Brooklyn, N. Y. Panels made up of these switches are now being placed in all new stations, an average of two per station on the new elevated lines, and from two to five in the subway. These safety switches



SECTIONS THROUGH PANELS, SHOWING SWITCHES BEING REMOVED WITHOUT EXPOSING OPERATOR TO DANGER

have also been adopted by the Interborough Rapid Transit Company of New York.

All panel boards adopted by the New York Municipal Railway are made up of slate lined cabinets divided into two main sections from left to right. One section contains negative common return wire connections covered with slate on which are mounted card frames, one for each circuit. The second section contains the switches with corresponding fuses. The switches are isolated from one another by suitable insulated barriers. The fuse compartment is accessible only to the electricians each of whom is provided with a master key. The door of this compartment uncovers the fuses for all circuits.

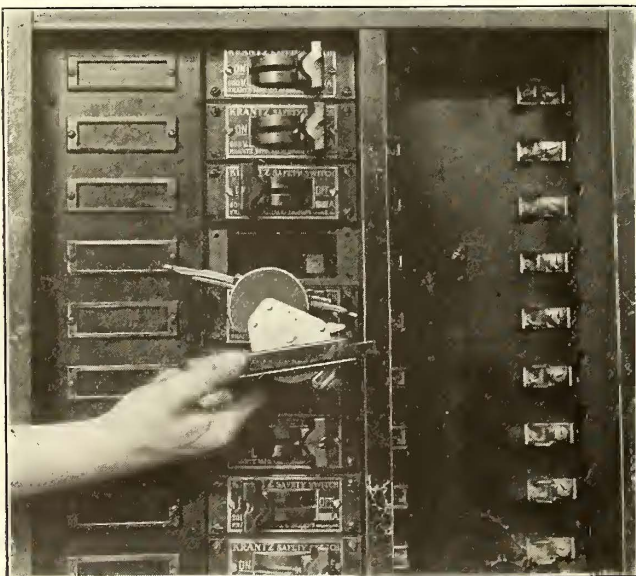
These standard panels are intended for lighting and small heating units, but in some instances relays, fuses, and resistors of the automatic train-announcing system (lights and gongs) are placed above the layout described.

The heart of the safety panel is, of course, the switch. This is of brush contact type, usually single pole, and operated on the toggle-joint principle. Up to and including 10 amp., auxiliary carbon contacts are used; for larger sizes, magnetic blowouts are provided. The person who manipulates a switch cannot possibly remove it except when it is dead, and when the switch has been removed no live parts remain exposed in the switch cell. Furthermore, the removal of one switch does not disturb the others.

The panels adopted by the Interborough Rapid Transit Company differ from the B. R. T. and N. Y. M. panels only in the following points: The switch and fuse are in one compartment, and each compartment is built on an auto-lock principle; that is, there is a door over the fuses which cannot be opened unless the switch is open, and the closing of the switch automatically locks the door, thereby making it impossible at any time for anybody to come in contact with live parts. This construction leaves all parts of the switch and fuses dead and ready for inspection and examination when the switch and door are open.

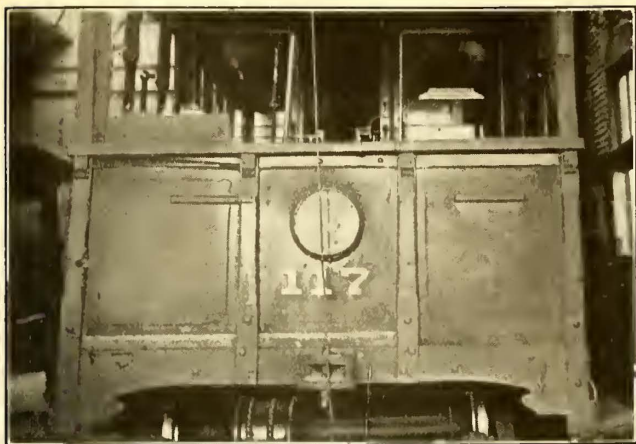
It is apparent that these safety switches are just as applicable to car panels carrying the auxiliary circuits, as they are to station panels.

The load on one of the street car lines of the Havana (Cuba) Light, Railway & Power Company picked up very much recently and an extra feeder wire was needed. On account of the high cost of copper the company is using scrap trolley wire for this service until the price of copper becomes normal again. They find that this serves the purpose very well.



SINGLE-POLE SAFETY-BRUSH SWITCH PANEL USED ON NEW YORK MUNICIPAL RAILWAY





VIEW SHOWING FRICTION CLUTCH DRUM UNDERNEATH THE CAR

### Friction Clutch Brake Improved

Changes in Brake Rigging Result in Fewer Flat Wheels and Less Brake Shoe Wear

After seventeen or more years of experience, the railway department of the Pacific Gas & Electric Company has decided that for service in Sacramento, Cal., the rope friction method of applying brakes affords better control, causes less brake-shoe wear, and practically eliminates the wheel flattening that results from locking wheels. The original scheme of applying brakes in this way was adapted from a plan in use on the Grove Street line in Oakland, Cal., but on the Sacramento system several changes had to be made in order that the best results could be secured.

The first brake installed gave considerable trouble because the connecting chain was coupled directly to the equalizer bar and also because the leverage on both light and motor wheels was the same, causing the light wheels to lock and flatten. These difficulties were overcome by placing two small sheaves on the equalizer and running a chain over them in the manner shown in the accompanying drawing. The original method of fastening the chain directly to the equalizer bar is also shown. The leverage on the light wheels was decreased by means of a dead lever.

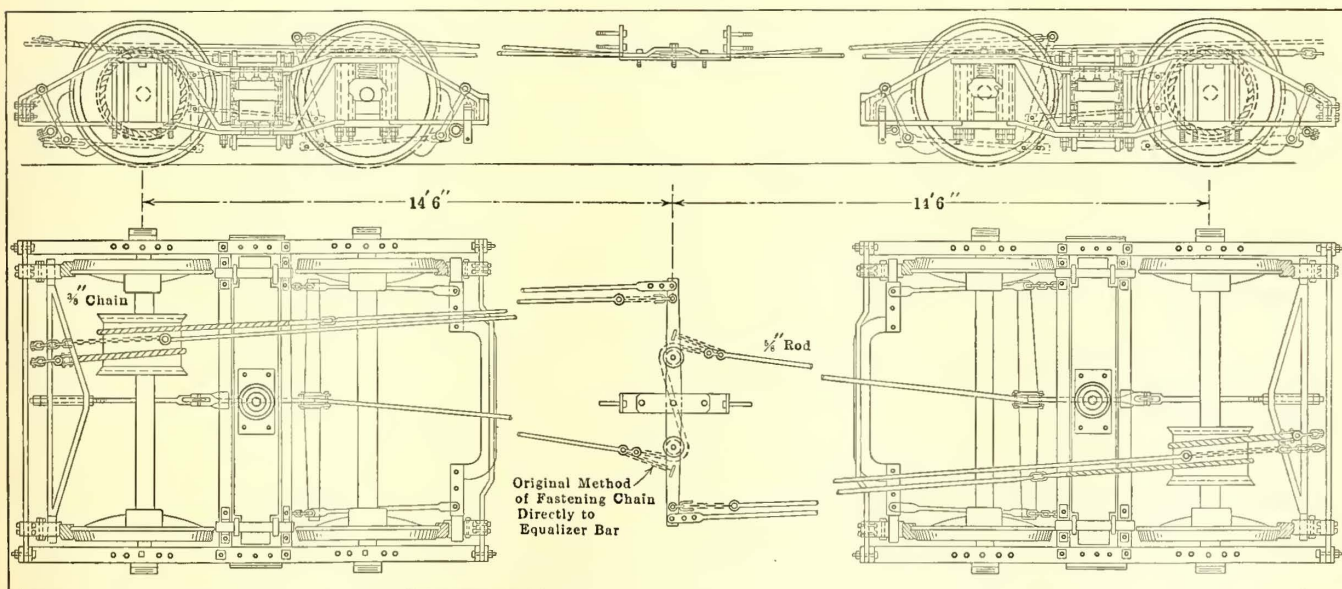
On cars equipped with this braking mechanism no air brakes are provided, and as the Sacramento system

is without steep grades it has been found feasible to control the cars by hand brakes without undue effort on the part of the motorman. The brake shoe and brake beam are such as are ordinarily used with standard equipment except that the motorman has two levers for applying the brakes. The first of these, which operates the rope friction mechanism, is used ordinarily, and the other, which is direct connected to the same brake beam, is held as an emergency reserve to be used if the rope breaks, if the friction mechanism fails for any reason, or to prevent the car from slipping back down grade.

The rope encircles the 18-in. friction drum in such a way that when it is tightened the forward motion of the car applies the brakes, and the greater the speed the more effective the braking. When the car is standing still, the brakes cannot, of course, be applied with this lever. The idea is in effect that the motorman snubs the rope around the moving part of the running gear, utilizing momentum to apply the brakes.

The rope used is a 1½-in. manila rope of the variety known as "snag rope" by river boatmen. Its peculiarity is that it will not stiffen when wet. This particular rope has been found to give the best service on the friction drum. An 8-ft. length is used on each end of the car, and its life in the ordinary service varies from three to five months, according to the care exercised by the motorman. New men invariably wear out the ropes faster.

It is a notable fact that although new platform men coming on the force often complain about the absence of air brakes on some of the cars, the older men who have the choice of equipment have invariably taken the rope friction equipment in preference to that provided with air brakes. Another point which the master mechanic makes in favor of the rope friction is the decreased brake-shoe wear. When the first air-brake cars were put in service, the brake-shoe wear was so much heavier than with the other type of equipment that it caused considerable comment in the shops, but it was found that the wear with the air-brake equipment could not be kept down to the wear normal on the friction-brake cars. To increase the life of shoes on the air-brake cars it has been found very effective to use chain scrap in the shoe castings. This has been done economically as the company casts its own brake shoes in the Sacramento shops. In making these castings, after the pattern has been removed from the mold a suitable



PLAN AND ELEVATION SHOWING FRICTION CLUTCH DRUM AND IMPROVED BRAKE RIGGING ON PACIFIC GAS & ELECTRIC CAR

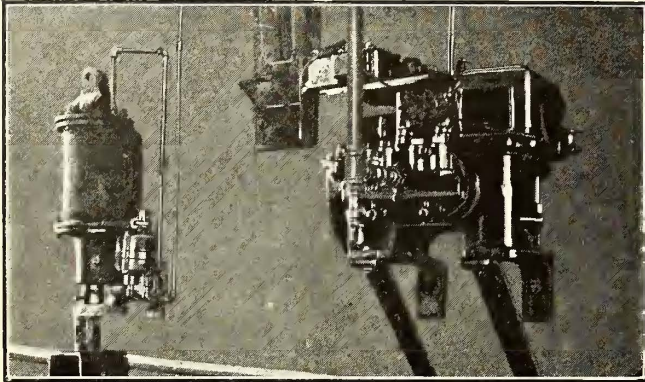


length of chain is fastened in place and the hot metal poured around it.

The Sacramento Railway Department of the Pacific Gas & Electric Company is operated under the supervision of N. J. Hullin. G. C. Snider is master mechanic.

## Bulldozer Made of an Air-Brake Cylinder

An old air-brake cylinder mounted on the wall of the repair shops of the Galesburg Railway Lighting & Power Company, Galesburg, Ill., equipped with a pressure head and a substantial table for supporting the work, is used whenever pressure is desired. A view of this equipment is shown in one of the accompanying

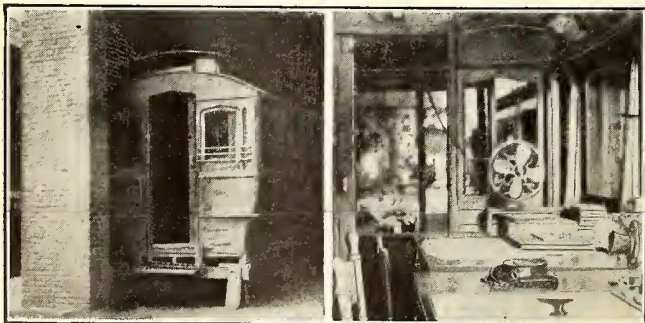


VIEW OF AIR COMPRESSION AND BULLDOZER

illustrations. The control of the air-brake piston is through an ordinary engineer's valve, and compressed air is supplied by an air compressor equipped with an automatic control device, both of which were removed from an old car. The air reservoirs are mounted on the bottom cords of the roof trusses overhead. A view of this unique equipment is shown in the accompanying illustration.

## An Office Made from an Old Street Car

The illustrations herewith show how W. F. Breese, master mechanic of Columbus (Ga.) Railroad, solved his office problem by converting an old street car into an office. He set up the car in the corner of the shop on two heavy wooden horses. It is equipped with all necessary conveniences, including fans, electric heaters, a bookcase, cabinet, two desks and two chairs. This saved erecting a partition in the building. The car used for the office was the first electric car operated in Columbus and is, of course, a sort of relic, hence interesting as well as useful.



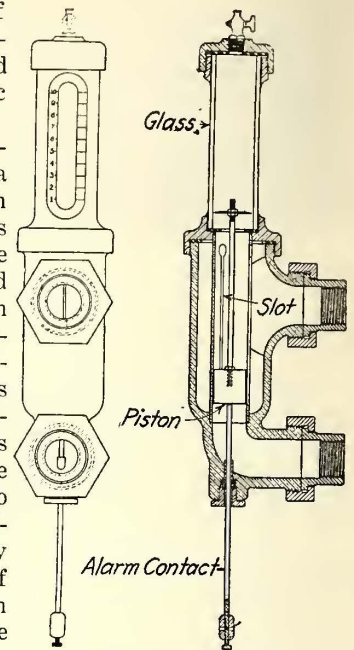
OLD STREET CAR CONVERTED INTO AN OFFICE; EXTERIOR AND INTERIOR VIEWS

## New Type of Flow Meter

A Simple Meter for Liquids, Which Also Provides a Low-Flow Alarm

This device, which has been designed by J. F. Vaughn, and which was recently placed on the market by the Spray Engineering Company, Boston, Mass., is specially applicable for indicating the flow of liquids in water or oil-cooled transformers, and in water-cooled hydraulic machinery bearings.

As shown in the illustrations, it consists of a cylindrical chamber with suitable pipe connections enclosing a slotted tube through which the liquid must pass. Enclosed in the slotted tube is a piston which is carried upward as the liquid is turned on, until the exposed area of the slots is sufficient to permit the flow of the liquid. Up to the capacity of the indicator the flow is directly proportional to the area of the slots in the tube. An index is attached to the upper end of the piston rod, which extends up into a glass tube at the top of the cylindrical chamber.



ELEVATION AND SECTION OF FLOW METER FOR LIQUIDS

The glass tube is encased in a protecting cover, cut away to allow the movement of the index to be noted, a scale, calibrated to read in gallons per minute, being provided.

A feature is also an electric contact device consisting of an adjustable brass rod extending through an insulated stuffing box at the bottom of the chamber, establishing contact when the piston rests on the rod. This can be connected in circuit with a lamp or bell, to attract attention when the flow has fallen below a fixed minimum.

Results of tests show that the indicator gives a straight line calibration over a large range, and the loss of head in operating the instrument has been found to be negligible, not exceeding 0.004 lb. per square inch with a capacity of 15 gal. per minute.

The indicator may be used with screens for dirty water, and can readily be cleaned by unscrewing the top and slipping out the slotted tube and glass.

## "Armature Buggy" a Misnomer

It is the experience of the master mechanic of the Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich., that "armature buggy" is more or less a misnomer for the equipment used for that purpose, because if it is made a little heavier and of slightly more generous dimensions than required for handling armatures, it is a universally handy tool in the average electric railway repair shop. Of course, its usefulness is confined only to that of transporting heavy materials. There are usually frequent calls for work of that nature in shops not equipped with overhead bridge cranes, or where it is necessary to move the material from one department to another outside the range of the crane installation.



## NEWS OF ELECTRIC RAILWAYS

### NEW YORK STRIKE AFTERMATH

#### New York Railways Accused of Violating Strike Agreement —Reinstatement of Discharged Men Demanded— Company Appeals to Its Own Men

Most strikes have their more or less serious aftermath. This has been true of the recent settlement in New York. More particularly with respect to the New York Railways is the cry of wolf being raised. On Wednesday afternoon union officials seemed bent on making an issue of the cases of men they allege have without reason been denied reinstatement. Talk of an ultimatum to President Shonts of the company by the labor representatives was rampant. Mayor Mitchel was communicated with at Plattsburg by his secretary. The union even called a mass meeting for the consideration of a strike vote.

Meanwhile the directors of the New York Railways were in regular session. All kinds of wild guesses were made by the newspapers as to what was taking place. The rumor foundry shut down for the night, however, when President Shonts of the company at 4.30 p. m. made public a letter written by him to the chairman of the committee of organized employees, in which he said that he had arranged for Vice-President and General Manager Hedley of the company to see Mr. Conway and his committee of employees of the company at the company's office at 11 a. m. on Thursday. Mr. Shonts said he was willing to meet any number of committees as long as they are made up of employees of the company.

At the conference on Thursday morning between officials of the union and Mr. Hedley the men demanded the immediate reinstatement of the employees alleged to have been discharged for activity in the recent strike. Mr. Hedley declared he lacked authority to reinstate the men, and said he would lay the question before the board of directors at a meeting on Friday. The union representatives then withdrew, declaring they would take up the subject of the reinstatement of the men with Chairman Straus of the Public Service Commission and Mayor Mitchel, the underwriters of the agreement, in case direct negotiations failed. Officials of the New York Railways consented to the admission to the meeting of three officials of the Amalgamated Association. Hugh Frayne, New York State organizer of the Federation of Labor, also attended the conference, which was in executive session.

The summary of the conference on Thursday as made public explained that the conferees, in discussing the discharges of the forty-eight men, had concerned themselves chiefly with an interpretation of clauses Nos. 4 and 5 of the strike settlement agreement of Aug. 7. These clauses follow:

"Clause 4. In the interest of public safety and public service, the company wants it clearly understood that the direction and control of employees in all matters looking to efficiency in the service remains with the company and is not to be the subject of conference or arbitration; but if a dispute should arise as to whether a particular case falls within the above class, that question shall be subject to conference and arbitration as above provided for.

"Clause 5. If the above is agreed to and accepted, it is further agreed that the employees shall declare off the strike and return to work immediately in the positions they occupied prior to the time of going on strike, without prejudice."

It has been the contention of the Amalgamated that neither of these two clauses applied to the dismissals made by the company, because the company had promised to take back all employees, regardless of discipline, as soon as the strike was settled. The company, on the other hand, insisted that it never meant to take back strikers who were convicted in the courts of violence, and that it was justified in this refusal by the clause giving it exclusive jurisdiction over matters relating to discipline. J. L. Quackenbush, general attorney for the company, told the union representatives that the company officials had inserted the clause giving the

company the exclusive right over matters of discipline, after talking the subject over with Mayor Mitchel and Mr. Straus. He said it was detrimental to discipline for the company either to employ or re-employ men who had been convicted of crime in the courts.

Since the strike the New York Railways has carried its case direct to its own men. The officials at two mass meetings of the men on the evening of Aug. 15 urged the men to form their own organization and to deal with their employers without outside assistance. Mr. Hedley, who addressed the meetings, said that he wanted to talk direct to the men and wished them to tell him their grievances in a sensible, manly way. He said that he had heard the charge to the effect that the directors had violated some of the conditions of the strike agreement. That was not true. There had been no violation of any kind. The principle of the directors was to give every employee a square deal. Mr. Hedley was quoted as saying that the men who do not join the union will receive the same pay as those that do and that the management would also have the say whether the men that do not join will receive something more than those that do.

On Aug. 15 a letter from the union of New York Railways employees to Mr. Shonts went forward, accusing the officials of "deliberate and flagrant violation" of the agreement of Aug. 7. The charges of the union men mentioned in the letter were indiscriminate discharging of men who participated in the suspension of work, and violation of the agreement by "attempting to advise, suggest, and carry forth a plan of the election of committees to represent the employees when you agreed not to interfere in any way with the committee or the selection of same." A conference was demanded "so that we may know what your intentions and policies are to be in relation to this agreement." This was the communication to which Mr. Shonts replied, fixing Thursday at 11 a. m. for a conference.

At the same time that he replied to the committee representing the union employees of the company Mr. Shonts sent a long letter to Mayor Mitchel and Mr. Straus, chairman of the Public Service Commission. He explained why men had been discharged following the strike and why the company felt that it was within its rights in asking its employees to elect new committees and representatives. He insisted that there was nothing in the agreement of Aug. 7 that bound the company to deal with only one committee. His letter covers so well the progress of material events since the strike that it follows substantially in full except for the introduction:

"In view of the agreement underwritten by you jointly, which we had expected would effectually deal with any questions which might arise in the future, I think it important to quote paragraphs from the letter received from a committee of employees and to give you the facts.

"First—Since the return of the employees to work, by indiscriminate discharging of men who had participated in the suspension of work, when you were aware and in honor bound to restore every employee back to his former position without prejudice."

"The facts are that since 9 o'clock p. m., Aug. 7, forty-eight men have been dismissed from the service of this company. The causes of these dismissals were as follows: Twenty-eight for failure to turn in fares, fourteen for having been adjudged guilty of a crime, two for insubordination, two for drunkenness, two for failure to report on time. Several men were laid off for having been arrested, charged with violence in connection with the recent strike. As soon as these men were acquitted by the court they were restored to service.

"No man has been discharged or interfered with in any way with reference to his union affiliations. Our officers have been instructed to comply scrupulously with every detail of both the letter and the spirit of the agreement.



"We desire to call your attention to the fact, on the other hand, that in many cases employees of this company have clearly violated the rules of this company, some of the violations increasing the hazard and endangering the safety of passengers on our cars.

"In order, however, that there could be no possible question of our good faith, we have gone to extreme lengths in judging every such case in the hope that as soon as matters settled down to a normal basis the men would realize their obligation to adhere to the rules of the company.

"Second—you have further violated the agreement by attempting to advise, suggest and carry forth a plan of the election of committees to represent the employees, when you agreed in the above mentioned agreement not to interfere in any way with the committees or the selection of the same."

"The facts are that we have in no respect attempted to interfere in any way with the committees which might be selected to represent employees. We have advised the employees to select their own committees and have provided a method of absolutely independent secret balloting for those desiring to follow that course.

"We did agree to receive a committee of our men, to allow that committee to select any advisers and spokesmen it might choose. We did not, however, agree to receive only one committee. While not interfering with the union in any way, and while not refusing to receive any advisers or spokesmen a committee of our employees might choose, we have provided a method whereby the interests of every employee, union or non-union, might have representation in dealing with the management.

"To the end that the election of employees' representatives shall beyond question represent the wishes of the men themselves, I beg to request that you delegate persons to represent you at each polling place in supervising the conduct of the election and the count of the ballots. I attach hereto a list showing the location of the polls and the time at which they will be open.

"All that we want is that those of our men who do not desire to join a union shall have complete freedom to refuse to join. We have stated publicly and we have steadily advised our men that, in our judgment, the best interests of New York would be served if our employees dealt directly with the company, without reference to outside organizations having no such responsibility to this community as we and our employees have. We have given the union complete freedom to exercise such moral suasion as it might in inducing our men to join the organization. We are likewise doing all that we can to convince our men, perfectly frankly and openly, that their interests will be promoted by refusing to join. That procedure is entirely in accord with the agreement of Aug. 7.

"We have received a series of demands from a committee of our men, and in accordance with our agreement we shall meet with this committee and discuss the situation. In order that there may be a more intelligent interpretation of the demands that have been made, as well as of the letter which is now being inclosed, I feel it important to call your attention to certain features of the agreement of Aug. 7.

"First—That all the disputes that may arise between the company and the employees in the future, on which they cannot mutually agree, shall be submitted to arbitration.

"Second—That, in the interest of public safety and public service, the direction and control of the employees in all matters looking to efficiency in the service remains with the company, and is not to be the subject of conference or arbitration, but if a dispute should arise as to whether a particular case falls within the above class that question shall be subject to conference and arbitration as above provided for.

"Third—That employees have the legal and moral right to organize, and the company pledges that it will not interfere with the employees in their exercise of these rights, nor shall employees undertake to interfere with other employees in their exercising of their rights to decline to organize, either by intimidation or coercion."

"We shall, of course, abide scrupulously by every detail of the agreement. We are quite prepared to submit any question arising out of that agreement to arbitration. But we are sure you will agree with us that it was in accord with the letter and spirit of the agreement that our men shall have absolute freedom in choosing their affiliations."

## WHAT NEW YORK UNION MEN DEMAND

### Agreement for a Year—Thirty Cents an Hour First Year for Trainmen and Thirty-three Cents Thereafter— Text of the Demands

The demands of the organized workers for a radical revision of hours of employment and for better pay were served on the New York Railways, the Third Avenue Railway and the Second Avenue Railroad on Aug. 14, although the labor leaders were fully aware of the plans made by the officials of the New York Railway to have their employees select new representatives at a special election to be held by them on Aug. 18. The demands were made not only on behalf of motormen and conductors, but of all the other employees in the service of the companies. In addition to making provision for men who have been discharged, or who have been accused of dereliction in their duties, the union asks that a new work day for motormen and conductors, on a basis of nine hours as a minimum and ten hours as a maximum, be established by the companies, and that if these employees be held on call more than twelve hours to allow for "swings" they be paid time and a half for all overtime. The organized workers also demand that men working less than six hours be paid for eight hours' work, and that all carhouse employees be granted a 10 per cent increase in wages. The same demands, with minor exceptions, were served on the New York Railways, the Second Avenue Railroad and the Third Avenue Railway and its subsidiaries. They are as follows:

"Section 1. There shall be a basis of a nine-hour minimum of work and a maximum of ten hours for conductors and motormen, the full day's work to be completed in twelve consecutive hours. Runs over six hours and under ten hours shall pay ten hours. Runs under six hours shall pay eight hours. There shall be no more than seven hours' work in any one-half run.

"Section 2. Regular motormen and conductors will not be required to work overtime, but where men consent to do any extra work over and above their daily schedule they shall be paid at the rate of time and one-half, time to start from the completion of regular work until the completion of such extra work. Men who are ordered to report at a certain time are to be paid, not from the time they start on the cars, but from the time they are ordered to report.

"Section 3. All work done on snow plows, sweepers and scrapers shall be paid for at the rate of 50 cents an hour, and all equipment in such work shall be manned by no less than three uniformed men. Particular effort will be made by the company to allow time for meals at reasonable intervals for all surface motormen and conductors doing snow work, but in no case will a man be required to do more than six consecutive hours' snow work without giving him time off for meals; and where such time off is not sufficient time to go to their regular place for their meals, the company will furnish meals or meal tickets.

"Section 4. When a member of the association is summoned to answer a charge it must be as soon as possible after the alleged offense is committed. He shall lose no more time than is actually necessary, and after a fair and impartial hearing before officials of the company and committee of the association, if not found guilty of the alleged offense, he shall be reimbursed for all time lost.

"When any member is summoned to answer charges, he shall, upon request, have time to present any defense which he may have, and, if he so desires, shall be entitled to an adviser or advisers and an adjournment for a reasonable time to enable him to present his defense.

"Whenever a member of the association is summoned to answer to a charge, he is to be handed a copy of the charge and shall be given five hours to answer. If not satisfied with the decision of the superintendent, he shall have the right to appeal to the general manager, and in this appeal he will be entitled to an adviser or advisers, and the final decision shall be given within one week, and if found not guilty he shall be reinstated in his former position and he shall be paid for all time lost.

"When any member of the association is summoned to answer to a charge before the superintendent and has been excused or has not been proved guilty, no other charge shall be



read to him, and he shall be paid for all time lost. Petty charges against the members shall be answered for without loss of time. Regular men violating the rules of the company and penalized to have time off shall not be required to report for work.

"Section 5. A lost car shall consist of an absolute failure on the part of a man to get his car out on time. Men reporting that they are sick ten minutes or more before the car is due to leave the carhouse in the morning shall not be credited with a lost car, and where men are to make reliefs at other than division carhouses, and are unable to reach their relieving point, they shall notify the station master or official in charge one hour before relieving time.

"Men who are sick shall give thirty minutes' notice, personally, by messenger, or by telephone. No lost car charge shall be made to men who are impeded by a tie-up. When an extra man fails to show up no lost car shall be charged against him unless he has missed some run. The present rules for punishment for a lost car shall be discontinued, and all penalties applied to individual cases. In no case shall an employee be discharged because of a lost car.

"Section 6. The rates of wages to be paid motormen and conductors on electric lines and storage battery cars shall be 30 cents an hour for the first year of service and 33 cents an hour thereafter. Conductors and drivers on horse cars shall receive 28 cents an hour for the first year and 30 cents an hour thereafter. Flagmen and switchmen, 25 cents an hour—the day's work to be completed in twelve consecutive hours. An increase of 10 per cent shall be granted to all carhouse employees. For them ten hours shall constitute a day's work.

"Section 7. It is to be understood that the question of seniority shall be taken up for adjustment between the officials and the several divisions.

"Section 8. The superintendent in charge shall meet the employees who have been summoned before him each day between 9 a. m. and noon, excepting Sundays and holidays.

"Section 9. An employee summoned to explain or act as a witness in a law suit affecting the company shall be paid for all time at his regular rate, and if taken from his run and not restored he shall receive a full day's pay.

"Section 10. No motorman or conductor shall be suspended or discharged for inability to secure the names of witnesses in any accident.

"Section 11. When men are working regular schedule runs and their cars are taken from the line or discontinued, they shall receive full schedule time whether the car is operating or not. Nothing in this section shall interfere with the official in charge using such men for other work, but such work shall not extend beyond their regular scheduled hours.

Section 12. Conductors when required to register fares at terminals before collecting the same from passengers, shall not signal the car to leave the terminal until such fares have all been collected.

"Section 13. Motormen and conductors when instructing new men shall receive 35 cents in addition to the regular day's pay.

"Section 14. All motormen and conductors while shifting, switching and flagging cars shall receive the regular motormen's and conductors' rate for such work.

"Section 15. If cars do not leave the carhouses on time, motormen and conductors shall receive their full day's pay.

"Section 16. If any extra men ordered to report to the carhouse receive no work they shall be allowed two hours' pay on their regular rate. Motormen and conductors working until 1 a. m. shall not be required to report until 11 a. m. the same day. This shall not interfere with any motormen or conductors who desire to report sooner.

"Section 17. Regular motormen and conductors having no Sunday runs shall not be required to report for work, but when such motormen or conductors do report they shall receive a minimum of six hours' pay.

"Section 18. Motormen and conductors shall not be responsible for loss of switch bars, run plates or dash signs. Uniforms shall be purchased in the open market, the company to have the right to select color of cloth and specifications for same.

"Section 20. Whenever any complaint is made against any employee of the company by a passenger or by any other person, such person making the complaint must be present at the time of the hearing. In the event that the charge

against such employee is not substantiated, he shall be entitled to and shall receive his regular day's pay.

"Section 21. All motormen and conductors operating night cars shall be relieved by or before 7 a. m., the night's work to be concluded in twelve consecutive hours.

"Section 22. An open book shall be established at each carhouse in which men may sign for day or days they wish to be absent, and the first man registered for a particular day or days shall have first preference. Applications to be made ten days ahead.

"Section 23. Any employee elected by the employees to represent them on matters which will prevent him from working his car shall, after he has been relieved from such duties by said employees, be permitted to return to his former position with the company in his full seniority rights.

"Section 24. Any committeeman selected by the employees to represent them at each carhouse shall have the privilege of being off when it is necessary to carry out any business of the employees.

"The above requests and conditions shall be binding upon the companies and the employees for a period of one year, dating from Aug. 1, 1916, to July 31, 1917."

#### NEW YORK STRIKE MEMORANDUM TO GOVERNOR Public Service Commission Suggests That Agreements to Arbitrate Be Recorded with Commission and Made Part of Binding Franchise Obligation

Oscar S. Straus, chairman of the Public Service Commission for the first district of New York, on Aug. 10 transmitted to Governor Charles S. Whitman a memorandum in case number 2126 concerning the recent strike in New York, in which he reviewed briefly the inquiry made by the commission into the strike and appended for consideration of the Governor certain deductions of the commission. In concluding his letter of transmittal to the Governor, Mr. Straus said:

"You doubtless will be gratified to learn of the effective part this commission has taken in this important transportation situation. The commission, however, does not feel that its duty is completed. We have learned very important lessons from this experience and these lessons may be utilized by the commission in proposing legislation in accordance with the duty imposed upon it by the Public Service Commissions Act. We had intended in any event to apply to the Legislature for supplementary and amendatory legislation. In order, however, that such legislation as we hoped to recommend to the Legislature shall be well considered and discussed from every angle, we regard it as of sufficient consequence to present the entire situation in detail with our tentative conclusions, together with certain phases of the subject, to be considered as a basis for legislation. This we hope will elicit criticism from every side. We intend to continue the investigations. In the meantime, I take great pleasure in transmitting to you this preliminary statement of the entire situation, together with an outline of the legislative problems that are presented. We shall be glad to receive from you an expression of your own views upon the subject."

The memorandum proper was concluded as follows:

"While the settlement of the strike is important, the commission believes that the lessons to be derived therefrom are more important and should be plainly set forth as a basis for further study and legislation. At this time it is not practicable to formulate definite measures to be introduced in the Legislature, but, in order that there may be the widest possible criticism and opportunity for discussion, the commission now presents for consideration certain deductions which it makes and certain questions which its experience suggests, as follows:

"First—It is evident that the responsibility for maintaining service and adequate transit conditions requires that the commission shall be clothed with the fullest powers. The public now believes that the commission has such powers. This is not true, however, for the statutes contain careful limitations which have been further restricted by judicial decisions. If the commission is to be an administrative body to regulate and control public services, its power should be ample and undoubted. In applying this concretely to industrial situations it is obvious that even if



public opinion is the only power to control a given situation, such public opinion should be brought promptly to bear upon the basis of authentic knowledge of the facts and the just application of reason. If law and order are to be maintained in the community, correctly informed public opinion must receive an opportunity to assert its power.

"Second—We are of the opinion, further, that if it had been known that the facts in the Yonkers and Westchester matter were subject to public investigation and inquiry by the Public Service Commission, the men would have been satisfied with the enforcement of the agreement to arbitrate and would have been satisfied with an order from the commission directing the president of the railroad to proceed with the arbitration. We, therefore, suggest that when agreements to arbitrate are made between public utility companies and their employees, they should be recorded with the Public Service Commission, and if ratified and approved, made a part of the binding obligations of the company in the exercise of its franchise. This would permit the making of voluntary agreements between employees of the companies and the companies, with the knowledge on the part of both that there was power in the commission to enforce the agreement. We are of the opinion that the Public Service Commissions Law should be amended to compel parties to such agreements to register them with the commission, and in the event of a breach to permit either party to apply to the commission for relief, and that the commission should be vested with adequate power to grant relief in such cases.

"Third—The recent experience of the commission indicates clearly, as did the experience in 1877 and 1902, in the cases of the Boston & Maine Railroad strike and the anthracite coal strike, that investigation and publicity are more than half the cure for industrial differences.

"Fourth—The rapid transit lines of the city are now or about to be operated under the provisions of contracts entered into between the commission, as representative of the city, and the companies, whereby the city is in a position of ownership of most of the lines and to a certain extent in partnership in the operation, thus creating a situation unlike any existing elsewhere, wherein there is a direct municipal, as well as public, interest in the continuous operation of the rapid transit systems of the city. This raises the question which is presented for consideration and public discussion, as to whether the employees on such lines occupy a position toward the public and the municipality different from the position occupied by the employees of other public service corporations.

"Fifth—There is no doubt that men have the right to refrain from working and any rule that requires a man to work against his will is in the nature of slavery. On the other hand, there are positions of public service that require the performance of instant duty; for example, the policeman or the fireman may not throw up his job while on duty, though he may resign his position.

"It may very well be considered at this time whether or not the principle should be extended to the extent of saying that it is against the public interest that men employed on railroad or other public utilities may, without notice, exercise their right to quit their jobs in a group, thus crippling, if not totally arresting the operations of public utilities, to the great damage of the public. We are not undertaking now to suggest what remedy, if any, may be just and practicable, but it is already the law that the matter of the operation of public utilities is a matter of state regulation. Is the quitting of the service a matter for state regulation?

"These questions cannot be settled without the broadest possible discussion. They should be considered from every angle, with due consideration for the rights of the employees and the public. We believe that the commission should present these questions for consideration so that when it resumes its hearings for the purpose of framing legislation, it will have the benefit of receiving information, suggestions and criticisms to aid in arriving at a final conclusion."

The commission expresses the opinion that the two days of investigation into the Third Avenue Railway situation clarified the facts and fixed the responsibility. All documents recording the agreements have been placed in the record in the case.

## RAPID TRANSIT MATTERS TO COME UP IN PITTSBURGH IN SEPTEMBER

Dr. J. P. Kerr, president of Council of Pittsburgh, Pa., announced on Aug. 11 that serious consideration is being given a proposal which has been made to the effect that the rapid transit commission to be appointed by the Mayor shall have two unpaid advisers, one from the Pittsburgh Railways and the other from the Pittsburgh Subway Company, which has an ordinance pending for the construction of an underground line to East Liberty.

The rapid transit question was started in the present Council through the adoption of a resolution asking A. Merritt Taylor, Philadelphia, to consult with the city officials. In May Mr. Taylor made a tour of the city and advised with the Mayor and Council. He suggested that the city conduct an extensive survey, patterned after the one he supervised in Philadelphia, for the purpose of determining the necessity for a subway or elevated line. It was Mr. Taylor's idea that a complete survey and plan be developed for the future as well as the present so that whatever is done within the next few years will fit into a comprehensive metropolitan system.

An ordinance was introduced in Council authorizing the Mayor to appoint a rapid transit commissioner to proceed with such a survey, which it was estimated would cost about \$150,000 and to provide which it was planned to issue councilmanic bonds. After some discussion the matter was tabled until after the summer vacation. Dr. Kerr says now that it is the intention of the Council to proceed immediately after the first meeting in September to attempt to secure the required additional rapid transit facilities for the city of Pittsburgh.

## TWO OUT OF EIGHTEEN SUGGESTED CINCINNATI EXTENSIONS APPROVED BY COMPANY

Through Walter A. Draper, vice-president, the Cincinnati (Ohio) Traction Company made its report on Aug. 11 on requested and proposed car-line extensions to the street railroad committee of the City Council of Cincinnati. Of the eighteen extensions requested by suburbs, civic associations and individuals, the company approves of only two. One of these, the extension of the McMicken Avenue line over Hopple Street, will be stopped at the west end of the Hopple Street viaduct, if the wishes of the company are observed. The extension of the Warsaw Avenue line to Covedale is approved and the company states that it recognizes its obligation to reroute the College Hill and Westwood cars.

Various reasons were assigned for the disapproval of the extensions, principal among which were sparse population in some sections, difficulty and cost of construction and operation and the advantage of delay until the rapid transit loop shall have been built. The report takes each case in order and discusses it in detail.

The requests and proposals for extensions were made in connection with the terms to be incorporated in the revision of the franchise which is now under consideration, and the report calls attention to the fact that they total more than 50 miles and call for the construction of approximately 32 miles of new track, at an estimated cost of \$1,200,000. This does not take into consideration the additional rolling stock, feeder wires and other equipment that would be necessary in operating the extensions.

The report discusses the practices that have been common in the case of suburban real estate development. It is generally safe to assume, said the report, that requests for extensions indicate that they will not be remunerative. The company would naturally build such as it believed would show a profit in operation without being requested to do so. On the other hand, it does not always follow that extensions constructed by the company are remunerative from the start. Under certain circumstances the company recognizes an obligation to build extensions and offer an improved service when immediate returns are not apparent. The report says:

"Without putting a burden on the entire transportation system that it cannot stand, the transfer system in Cincinnati should be extended to provide as nearly as possible



what the people apparently desire; that is, a universal transfer system which will allow them to go from one point in the city to another point on the lines of this company by the shortest route, with the proper protection against abuse. This, with the revision of the other terms of the franchise along lines indicated in this communication, this company believes can be done. Consequently this company is prepared to say that if other features of the franchise are worked out fairly and equitably, it will accept as one of the terms of revision an extension of the transfer system, properly safeguarded, providing for transfers on transfers to enable its patrons to go from point to point by the shortest route."

The company is arranging to place in each of its cars booklets containing a complete list of transfer privileges, to which passengers may refer in case of a dispute with the conductor.

For the year ended Dec. 31, 1915, 36,000,000 transfers were collected, as against 101,000,000 cash fares. From this it was shown that the average fare per passenger was reduced to 3.75 cents.

Mayor George Puchta is endeavoring to have the proposed lease of the rapid transit loop submitted to the voters at the November election. To that end he held a conference with members of the Rapid Transit Commission, city officials and others on Aug. 11.

### HARRISBURG STRIKE A DEAD ISSUE

Charles G. Quinn, secretary of the State Federation of Labor, announced on the night of Aug. 16 that the Public Service Commission of Pennsylvania would be asked before Aug. 19 to investigate the financial condition of the Harrisburg Railways and to order a reduction of fare to various suburban points. Quinn has been backing the strikers in their fight for recognition of the Amalgamated Association. He alleges that based on real value an enormous dividend is being paid by the company and that fares could easily be lowered and still allow a considerable return on the capital invested.

More than a dozen jitneymen, operating without the required city license, were arrested on order of Chief of Police Thomas J. Ziel on Aug. 16, and ten strikers, charged with participating in attacks on a trolley car last week received a preliminary hearing on the evening of the same day.

J. J. Thorpe, the Amalgamated Association organizer, on Aug. 16 again appealed to the citizens of Harrisburg not to ride on the cars, but the usual number of passengers is being hauled, the company's records show. On Aug. 12 Mr. Thorpe authorized the publication of a letter to him from Mayor Armstrong of Pittsburgh in which the Pittsburgh executive expressed the hope that Thorpe would bring about a peaceful settlement of the strike.

On Aug. 11 mass meetings were held by the strikers in the suburbs in the hope of getting the sympathy of the suburbanites and of persuading them not to ride on the cars. As no jitneys were running, however, the suburban traffic was very heavy throughout the day and has been growing heavier.

At 5 a. m. on Aug. 11 all jitneys were ordered off the streets, with the exception of those having city licenses, and all but about a score of the 500 operating quit business. Mr. Thorpe urged the jitney men to continue operation on the "tip" system whereby the drivers had no fixed charge but took what people chose to give them. Only a few took his advice, and most of those that did have since been arrested. Several of these men were fined, but they have appealed their cases.

On Aug. 16 the company was running within four cars of the usual schedule, but conditions were such that they are not needed. About 25 per cent of the employees remained loyal throughout the strike. Of those who struck, about one-third have been taken back. Those who have been rehired applied individually for jobs. One day of the strike it rained all day long, and the few jitneys which ventured out charged as high as \$1 per trip. Local papers scored the operators for the "hold up." All the cars of the Harrisburg Railways carry this sign at each end:

"We employ no strikebreakers. You're safe in this car. The conductor and motorman on this car are experienced

men, citizens of Harrisburg, earning an honest living, working a reasonable time for whom and with whom they choose to work.

"Your riding on this car makes it possible for these men to earn an honest living, and they in turn know how to make your ride safe and pleasant."

**Kentucky Compensation Act Discussed.**—The new workmen's compensation law was the subject up for consideration at the last meeting of the Louisville Rotary Club. R. T. Caldwell, president of the Kentucky Board, was the speaker. He went into considerable detail in his discussion of the safety first movement of the Louisville Railway as illustrating the principle lying behind the act. Before the campaign was begun by the company the number of deaths from accidents averaged one a month, but as a result of the propaganda there had not been one fatal accident for thirteen months.

**One Man on a Car Provides Vacations.**—The Athens Railway & Electric Company, Athens, Ga., recently issued the following notice to its patrons: "In order to give each man in our employ a vacation we are taking advantage of the small travel on the railway in August to give the motormen and conductors their leave during this month, by operating the cars with one man. We believe this plan will enable us to give to our patrons good service and to our men a rest and change that will be beneficial. This plan will be operative Aug. 5 and continue until each man has had a ten-day vacation."

**Buffalo Suburban Line Damaged in Strike.**—Disclosures of apparent negligence on the part of county authorities to protect the property of the Buffalo (N. Y.) Southern Railway from destruction by striking platform men and their sympathizers will lead to a grand jury investigation. The interurban road has been almost permanently crippled by the destruction of trolley poles, rails and wire, despite the monthly expenditure of \$2,500 on the part of the county to patrol the line. Deputies employed by the county have not made an arrest. Nathan A. Bundy, receiver of the line, estimates that the property damage is in excess of \$20,000. Those who have complained of lawbreaking on the part of strikers have been intimidated and threatened with violence. Cars have been operated over some parts of the line, but there has been no service over the entire line since last June. No agreement is in sight.

**Court Allows Expenditure for Toledo Cars.**—Judge Killits of the United States District Court at Toledo, Ohio, has authorized the Toledo Railways & Light Company to use the money in possession of Captain Craig, representing the court, for the purchase of additional cars. The company will have sixty new cars after Sept. 1 at a cost of \$397,350. They will be paid for in semi-annual instalments of \$16,000 after the initial payment of \$77,260. The funds have been accumulating from the difference between the regular fare and the straight 5-cent fare or six tickets for a quarter allowed by the court, following the strike settlement last spring. The amount on hand at this time is \$43,741. Previous to the strike in April the fare during the morning and evening rush hours was 3 cents. The terms of the settlement of the strike were published in the *ELECTRIC RAILWAY JOURNAL* of April 15, page 745.

**Norfolk Franchise Hearing Continued.**—Another hearing in regard to the proposed franchises of the Virginia Railway & Power Company in Norfolk was held by the committee of the whole Council on Aug. 3. The objections offered to the grant were practically the same as those advanced at the last hearing. Several Councilmen urged the employment of experts to go over the ordinances, and the session was finally adjourned without definite action. One additional objection offered was to the provision for the payment of one fare for two children under five years old accompanying an adult. It was also stated that provision should be made for an extension of the area to be covered by underground wires. The committee on cheaper gas, which has a connection with the other franchises, has held several meetings and is at present gathering information regarding rates in other places and awaiting figures in regard to the operation of the gas company, which are being compiled.



# Financial and Corporate

## ANNUAL REPORT

### Brooklyn Rapid Transit Company

The comparative income statement of the Brooklyn (N. Y.) Rapid Transit Company for the fiscal years ended June 30, 1915 and 1916, follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Transportation revenue.....	\$27,557,278	98.60	\$26,096,265	98.74
Miscellaneous revenues.....	391,493	1.40	331,421	1.26
Total operating revenue....	\$27,948,771	100.00	\$26,427,686	100.00
Maintenance of way and structures .....	\$2,485,421	8.89	\$2,391,814	9.05
Maintenance of equipment...	2,508,369	8.98	2,401,841	9.09
Operation of power plant...	1,725,307	6.18	1,553,177	5.88
Operation of cars—trainmen's wages .....	5,084,648	18.19	4,787,574	18.11
Operation of cars—other expenses .....	1,858,323	6.65	1,744,690	6.60
Damages .....	602,968	2.16	607,700	2.30
Legal expense in connection with damages .....	256,113	0.91	261,153	0.99
General law expenses.....	66,038	0.24	53,406	0.20
Other general expenses.....	797,652	2.85	819,754	3.10
Freight and mail expenses..	302,102	1.08	338,414	1.28
American Railway Traffic Company—expenses .....	6,961	0.02	854	0.00
Total .....	\$15,693,907	56.15	\$14,960,381	56.61
Net revenue from operation..	\$12,254,864	43.85	\$11,467,305	43.39
Income from other sources	438,705	1.57	438,715	1.66
Gross income .....	\$12,693,569	45.42	\$11,906,020	45.05
Taxes .....	\$1,837,682	6.58	\$1,700,035	6.43
Interest and rentals (net)..	5,244,055	18.76	4,693,423	17.76
Total deductions .....	\$7,081,737	25.34	\$6,393,459	24.19
Net income .....	\$5,611,832	20.08	\$5,512,561	20.86

The system's passenger revenue for the year ended June 30, 1916, increased \$1,599,983 or 6.29 per cent. The increase in the preceding year was only 3.05 per cent. Freight revenue fell off \$132,599, and other operating revenues (including advertising, station privileges, rents, etc.) increased \$60,071, making the total operating revenue \$1,521,085 or 5.76 per cent greater than for the preceding year. The operating expenses increased \$733,526 or 4.90 per cent, leaving an increase of \$787,558 or 6.87 per cent in net revenue from operation. The operating ratio was 56.15 per cent as compared to 56.61 per cent for the preceding year.

In the operating expenses there was included \$4,993,790 for maintenance of way and structures and equipment, this representing an increase of \$93,606 or 3.91 per cent for way and structures, and \$106,528 or 4.44 per cent for equipment. This amount, however, was not all expended, and \$531,484 thereof was set aside for reserves, this being an increase of \$275,099 in reserves for depreciation over the preceding year. Trainmen's wages and other direct expenses in the operation of cars increased \$410,707 or about 6.29 per cent, occasioned partly by the increase in traffic and partly by the higher scale of wages which became effective on Dec. 31, 1915.

The deductions from income were increased by \$574,958 on account of new rapid transit lines placed in operation during the year, but other interest deductions showed a slight decrease, so that the net increase for interest and rentals was \$550,631 or 11.73 per cent. Taxes increased \$137,647 or 8.10 per cent. The final result of the system's operations was a net income of \$5,611,832, an increase of \$99,271 or 1.8 per cent over the figures for the preceding year. Dividends were paid at the rate of 6 per cent per annum, absorbing \$4,467,318, and a balance of \$1,144,514 remained for the year.

When the company assumed the obligations imposed by the rapid transit contracts with the city, it was expected that during the period of construction, and before the benefits of those contracts would be felt in their effect upon net revenue, pending full operation, there would be a small margin, if any, of surplus earnings over dividend requirements. It is said to be likely, however, judging from the

satisfactory response to such new facilities as have been placed in operation, that the company will be able safely to continue dividends at the present rate during this construction period, and thereafter the margin of surplus ought to be considerably greater.

The report of the company states that the results of operation of the new lines have been quite satisfactory. The railroads which have been thus far placed in operation are not those from which material additions to net revenue were expected, except as they furnish better facilities to territory previously supplied with transit, or until, in the case of the outlying lines, the tributary population should increase. None of the new lines from which a considerable net revenue was anticipated has yet been placed in operation, or will be until the latter part of the present fiscal year. Instead of the entire new system being completed and ready for operation on Jan. 1, 1917, as was hoped when the contracts were signed, the benefits of operation of the most profitable part of the system will not be enjoyed until about the fiscal year 1918-1919. Notwithstanding this delay, it is encouraging to note that the passenger receipts of the operating company, namely, the New York Consolidated Railroad, have increased during the last fiscal year by \$1,333,380, and the net revenue has been sufficient to make good all of the company's first preferential of \$3,500,000, and \$424,467 additional on account of interest and sinking fund upon the investment of new capital in improvements and in contribution to city-built railroads. For the entire period of operations under the city contracts, from Aug. 4, 1913, to June 30, 1916, the net earnings have been sufficient to make good all the company's first preferential of \$3,500,000 per year, with the exception of the small amount of \$14,605.

The companies of the system expended during the year for welfare work among the employees, and for pensions of men retired from service, \$112,840. Of this total \$17,703 was on account of the system's medical bureau; \$35,818 on account of pensions; \$23,920 (covering only a portion of the year) for contributions to employees' insurance premium, and the remainder for clubhouse expenses, contributions to baseball league, entertainments, etc. The full first year's payment toward the premiums for the employees' group insurance plan will, it is said, require the approximate sum of \$31,000.

Special franchise assessments from 1907 to 1912 inclusive, with the exception of 1909 when the assessment had previously been compromised, were adjusted in March. The assessments in litigation aggregated \$191,672,200, on which the original tax was \$3,363,427. The amount of reductions in valuation procured was \$44,982,679, and after paying nearly \$400,000 in interest and penalties the saving effected in taxes was \$372,670. The compromise eliminates practically all of the system's liability for taxes prior to the current year.

The capital expenditures during the last fiscal year totaled \$11,434,059, of which \$10,823,715 represented rapid transit expenditures made in pursuance of the new contracts, and \$209,910 represented similar expenditures in suspense. The expenditures for construction and equipment up to June 30, 1916, under the rapid transit contracts with the city, were as follows: On account of contribution to city-owned lines, \$11,148,834; on account of equipment of city-owned lines, \$6,153,119, and on account of additions, extensions and improvements to existing railways, \$23,532,620—a total of \$40,834,575.

Miscellaneous operating statistics for the last two fiscal years follow:

	1916	1915
Passenger earnings .....	\$27,063,235	\$25,462,957
Per cent increase over preceding year.....	6.28	3.05
Passengers carried .....	728,465,567	689,822,507
Revenue mileage .....	98,748,451	92,909,994
Per cent increase over preceding year.....	6.28	6.14
Earnings per revenue mile (cents).....	27.4	27.4
Units per passenger (cents):		
Passenger earnings .....	3.72	3.69
Miscellaneous earnings .....	0.18	0.20
Total earnings .....	3.90	3.89
Operating charges .....	2.16	2.17
Taxes .....	0.25	0.24
Interest and rentals .....	0.72	0.68
Total .....	3.13	3.09
Surplus .....	0.77	0.80



**MODIFIED REORGANIZATION PLAN**

**Reorganization Committee of Syracuse & South Bay Electric Railroad Reduces Proposed Bond Issue**

The reorganization committee of the Syracuse & South Bay Electric Railroad, Syracuse, N. Y., in a circular dated July 28, notes that the properties covered by the \$550,000 of first mortgage bonds of the Syracuse & South Bay Electric Railroad and Syracuse, Watertown & St. Lawrence River Railroad are now being advertised for sale under foreclosure. Allen & Peck, Inc., estimate the net income of the combined properties applicable to capital, for the year ended June 30, 1917, at \$19,000, about the same as the income for the year ended June 30, 1914. They also recommend that considerable expenditures be made immediately in renewing poles and ties and surfacing track. The property of the Oneida Lake Terminal Company at South Bay, upon which the railroad terminal is located, should, it is said, be acquired. Moreover, provision must be made for the expenses of the foreclosure, the distributive share of the few bonds not deposited with the committee, the expenses of the committee, etc. It being impracticable to raise the \$50,000 cash needed for these purposes upon the new securities as heretofore proposed, a modification of the plan appears imperative so as to permit the issue of not to exceed \$50,000 of first lien secured notes.

The estimated earnings make it advisable to reduce the proposed bond issue from \$375,000 to \$205,000, with a corresponding increase in new first preferred stock. The actual earnings under the receivership do not warrant the payment of interest on the bond issue as originally proposed from

of such other indebtedness shall receive nothing. In case the commission shall require still other reductions, the new stock, bonds and other indebtedness to be issued, and the distribution thereof, shall be such as the commission shall approve, and as nearly as possible in accordance with the plan, but so that before any distribution is made to the holders of existing other indebtedness the holders of the existing bonds of the two companies shall receive stock and bonds to the aggregate face value of those which they would receive under the plan. Of the remaining stock approved by the commission, the holders of existing other indebtedness of both companies shall, before any distribution is made to the holders of existing South Bay preferred stock, receive, if possible, an amount equal in face value to the amount of stock which they would have received under the plan.

**INTERURBAN RAILWAY DEFAULTS INTEREST**

**Digest of Circular to Security Holders of the Buffalo, Lockport & Rochester Railway Giving Reasons for Default**

The Buffalo, Lockport & Rochester Railway, Rochester, N. Y., operating 58 miles of interurban railway between Rochester and Lockport, where connections are made for Buffalo, defaulted on Aug. 1 on the payment of interest due then on the \$2,799,000 of first mortgage bonds outstanding. A circular addressed to the security holders over the signature of C. Loomis Allen, president of the company, and W. W. Foster, secretary and treasurer, says in part:

"As of Jan. 1, 1911, the company resumed operation of its properties at the close of a period of operation by a

SECURITY EXCHANGE BASIS FOR SYRACUSE & SOUTH BAY ELECTRIC RAILROAD REORGANIZATION

OLD ISSUES	New 5 Per Cent Bonds	New First Preferred Stock	New Second Preferred Stock	New Common Stock
<i>First Proposal:</i>				
Bonds of Syracuse & South Bay Electric Railroad	50 per cent—\$275,000	40 per cent—\$220,000	.....	.....
Bonds of Syracuse, Watertown & St. Lawrence River Railroad	40 per cent— 80,000	27½ per cent— 55,000	100 per cent—\$420,000	.....
All other debts	.....	.....	.....	.....
Preferred stock of Syracuse & South Bay Electric Railroad	.....	.....	.....	50 per cent—\$150,000
<i>Present Proposal:</i>				
Bonds of Syracuse & South Bay Electric Railroad	30 per cent— 165,000	60 per cent— 330,000	.....	.....
Bonds of Syracuse, Watertown & St. Lawrence River Railroad	20 per cent— 40,000	47½ per cent— 95,000	100 per cent— 420,000	.....
All other debts	.....	.....	.....	.....
Preferred stock of Syracuse & South Bay Electric Railroad	.....	.....	.....	50 per cent— 150,000

July 1, 1915, and the reorganization committee believes that interest on the new bond issue as now proposed should accrue from Oct. 1, 1916. For the purpose of ensuring a continuity of management and control, it has inserted in the proposed amendments a provision for a five-year voting trust, and the new stocks will be delivered in the form of voting trust certificates.

The reorganization plan now contemplates an outstanding capitalization, subject to modification by the Public Service Commission, of \$50,000 of first lien 6 per cent notes, \$205,000 of sinking-fund 5 per cent bonds, \$425,000 of 6 per cent first preferred stock, \$420,000 of 6 per cent second preferred stock and \$150,000 of common stock. The exchange treatment of the existing securities for each \$1,000 worth is shown in the accompanying table.

Holders of existing common stock of the two companies are to receive nothing under the plan. In case the Public Service Commission shall require a reduction of the amount of stock, bonds or other indebtedness provided for under this plan, such reduction shall, if possible, be made in the amount of the new common stock, and the amount thereof to be received by holders of existing South Bay preferred stock shall be reduced accordingly. In case the reduction required shall be such as to eliminate the proposed new common stock, the holders of the existing South Bay preferred stock shall receive nothing under the plan and the new second preferred stock shall be called common stock. In case the reduction is such as to reduce the amount of the second preferred stock (thereupon to be called common stock) below the amount proposed, then the amount of such second preferred stock to be received by the holders of other indebtedness shall be reduced accordingly. In case the reduction shall be such as to eliminate the new second preferred stock as well as the proposed new common stock, then the holders

receiver, pursuant to a readjustment of the capitalization of the company made without foreclosure. Prior to this readjustment the amount of the first mortgage bonds outstanding was \$3,400,000. In the readjustment the holders of \$650,000 of the bonds deposited them with the National Trust Company, Ltd., Toronto, and relieved the company from the further payment of interest on these bonds, thus reducing the amount of interest bearing first mortgage bonds to \$2,750,000. Yet the earnings applicable to bond interest have not since the above-mentioned receivership been sufficient to pay the interest on the \$2,750,000 of bonds, the statements of the company for the last five years having shown deficits as follows: Year ended June 30, 1912, \$11,976; 1913, \$78,233; 1914, \$54,491; 1915, \$21,108; 1916, \$44,199.

"In spite of these deficits the company continued to pay interest on the \$2,750,000 of bonds, raising the funds required for this purpose, in addition to the company's earnings, by loans from the stockholders and others.

"On Aug. 1, 1915, the company had a large amount of accounts payable outstanding, as well as a large amount of short time notes, and the credit of the company was such as to make it very difficult to operate the property economically. In the hope that the earnings of the company would improve during the next few years the directors, about Aug. 1, 1915, authorized an issue of \$200,000 in face amount of 6 per cent second mortgage bonds, the proceeds to be applied in paying off the accounts payable, discharging the short-time paper and re-establishing the credit of the company. All of these bonds were taken by the stockholders of the company at par, although the first mortgage bonds were then selling in the market at far below par, and the proceeds applied for the purposes above mentioned. During the last year the utmost economies in management have



been effected, and in the opinion of the officers no further reduction in operating expenses could be made without injury to the physical property. The gross earnings of the company, however, did not increase as it was hoped they might, but on the contrary during the year ended June 30, 1916, the earnings fell off 9.47 per cent.

"During the past year the company was faced with the necessity of making capital expenditures. Forty-nine thousand dollars, face amount of first mortgage bonds, which had been placed in escrow pursuant to the above-mentioned recapitalization, were issued for this purpose, thus bringing the total first mortgage interest-bearing bonds up to \$2,799,000.

"In view of the continued annual deficits of the company and the decrease in gross earnings, the directors came to the conclusion that they were not justified in attempting to borrow funds for the payment of bond interest, and accordingly the Aug. 1, 1916, default in bond interest occurred.

"In the opinion of the officers the falling off in gross earnings is due to two causes: first, the general business depression prevailing in the district where the company's property lies; and, second, the use of the privately owned automobile.

"The directors are giving serious consideration to the financial affairs of the company and after the gross earnings for the next quarter are ascertained they will have a further communication to make to the security holders."

#### NEBRASKA LINES SHOW DECREASES

During the year ended Nov. 30, 1915, according to the Nebraska State Railway Commission, the gross earnings from operation of all electric railways under its jurisdiction amounted to \$3,742,703 as compared to \$3,764,667 in the preceding year. Operating expenses, however, increased from \$1,882,751 to \$2,149,140. As a result, after the inclusion of non-operating income, the income before taxes fell from \$1,907,589 to \$1,664,126. Dividends showed an increase from \$539,366 to \$557,812, but the amount reserved for depreciation dropped from \$294,605 to \$2,812. The expenditures for additions and betterments also showed a great falling off from \$568,464 to only \$12,255. The number of fare passengers decreased in the last year from 68,234,000 to 67,288,561, while the total number of revenue car miles rose from 13,016,501 to 13,174,366.

#### INSULL INTERESTS ASSUME CONTROL OF CHICAGO & MILWAUKEE ELECTRIC

The reorganization of the Chicago & Milwaukee Electric Railroad, Highwood, Ill., now known as the Chicago, North Shore & Milwaukee Railroad, has been completed after eight years of litigation. Britton I. Budd, president Chicago Elevated Railways, has been elected president of the reorganized company, and Samuel Insull has been made chairman of the board of directors. George M. Reynolds, president Continental & Commercial National Bank; R. Floyd Clinch of Crerar, Clinch & Company, and Mr. Insull have been chosen as the three voting trustees. Mr. Clinch has also been elected vice-president. The board of directors consists of Messrs. Insull, Clinch and Budd and H. L. Stuart, John R. Thompson, H. S. Osler and E. A. Shedd.

Under the reorganization plan there will be an authorized issue of \$10,000,000 of first mortgage twenty-year 5 per cent bonds, a first lien on the entire property. No bonds can be issued in excess of \$5,000,000 except for additional property acquired, and at not more than 85 per cent of its cost or fair value. Of the first \$5,000,000 of bonds \$3,620,000 will be issued immediately. In addition \$400,000 of one, two and three year notes (callable at par on any interest date, and to provide for the retirement of which \$440,000 of first mortgage bonds are reserved) will be put out. The remaining \$940,000 of the bonds will be issued for improvements and betterments as needed from time to time.

The capital stock of \$100,000 will be held by the trustees, and against it participation certificates without par value will be issued in three classes. The first, designated as Illinois participation certificates, will be an authorized issue of 50,000, paying dividends at the rate of \$5 on each certificate per annum, cumulative after Jan. 1, 1918. The dividends on these certificates will have priority over those on other certificates. The second-class certificates will be called Wis-

consin participation certificates, of which there will be a similar authorized issue of 58,000. For the third class, common participation certificates, there will be an authorized issue of 62,000.

The Illinois bondholders will receive ten Illinois participation certificates for each old Illinois bond. The Wisconsin bondholders will receive five Wisconsin participation certificates and in addition five common participation certificates for each old Wisconsin bond. For the present at least the operating organization which has been in charge of the property will be continued. The new management contemplates improving the physical property in the near future.

**Boise (Idaho) Railroad, Ltd.**—In the United States District Court at Boise on Aug. 3 the Germantown Trust Company, Philadelphia, Pa., trustee under a mortgage by the Boise Railroad dated Dec. 1, 1906, which was executed to secure first mortgage 5 per cent sinking fund gold bonds in the sum of \$389,000, filed a bill of complaint to foreclose under the mortgage and asking for the appointment of a receiver for the railroad. It is alleged in the complaint that on June 1, 1915, there became due and payable on the bonds secured by the mortgage, a semi-annual installment of interest amounting to \$9,725; that payment was not made at that time, and that the default still exists. Similar allegations are made with reference to interest due on Dec. 1, 1915, and on June 1, 1916.

**Buffalo (N. Y.) Southern Railway.**—Nathan A. Bundy, receiver of the Buffalo Southern Railway, has been authorized by Justice C. W. Cole in the Supreme Court to issue receivers' certificate for \$7,000 with which to meet expenses during the strike of platform men. No settlement of the strike is in sight. No cars are being operated.

**Honolulu Rapid Transit & Land Company, Honolulu, Hawaii.**—The Supreme Court of the Territory of Hawaii on July 25 handed down a decision overruling the appeal of the territory from a preceding decision by Judge Stuart to the effect that the Honolulu Rapid Transit & Land Company might increase its capital stock from \$1,207,500 to \$1,600,000. Previous references to this case were made in the *ELECTRIC RAILWAY JOURNAL* of Nov. 27, 1915, and March 4, 1916. The main argument was over the franchise right of the company to issue securities up to the actual value of the property, plus 25 per cent thereof, the territory alleging that present value instead of original cost should be the measure of "actual value." This has now been twice overruled. The higher court finds a cost of \$1,937,631 for the property, representing money actually and properly expended.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—The proposed sale of a controlling interest in the common stock of the Northern Ohio Traction & Light Company to Eastern interests was not formally discussed at the meeting of the stockholders of the company in Akron on Aug. 15. The meeting, however, was adjourned to Sept. 5. It is understood that representatives of the Eastern interests had not completed their appraisal of the property when the meeting was held. Hodenpyl, Hardy & Company, New York, and E. W. Clark & Company, Philadelphia, are reported to be interested in the proposed deal. The stockholders approved the plans of the directors for the creation of a first lien and refunding bond issue of \$14,075,000. Of this sum \$4,000,000 is already under an agreement of sale.

**Quebec Railway, Light, Heat & Power Company, Quebec, Que.**—The deal for the purchase by the Canadian Government of the Quebec & Saguenay line of the Quebec Railway, Light, Heat & Power Company, made in accordance with legislation passed last year, has been ratified by the Cabinet. The Exchequer Court will now settle the exact price to be paid for the road. In addition to the Quebec & Saguenay Railway, the Lotbiniere & Megantic Railway is included in the purchase. The government assumes the payment of interest on the \$2,500,000 of bonds outstanding and agrees to meet the issue at maturity. It will purchase outright at par as soon as the deal is completed \$373,000 of the bonds held by the Quebec Railway, Light, Heat & Power Company and will also pay the balance of the purchase price, if any, in cash. The lines of the company to be taken over will be operated by the company until



actual possession of them is taken by the government, and the company must render an accounting to the government from June 30 until the lines pass into the possession of the Dominion.

**Seattle (Wash.) Municipal Railway.**—A. L. Valentine, superintendent of public utilities of Seattle, in a report to the City Council states that Division "A" of the Municipal Street Railway System was operated during July at a loss of \$1,733, and Division "C" at a profit of \$139. According to Mr. Valentine, Division "C," known as the Lake Burien Line, has been operated at a profit for the past three months, due to heavy freight revenues which will undoubtedly continue until late in the fall.

**Southern Traction Company, Dallas, Tex.**—The consolidation of the Southern Traction Company and the Texas Traction Company has been delayed by the inability of the bankers to carry out their contract to purchase bonds, according to statements mailed to stockholders of the companies by J. F. Strickland, president. Mr. Strickland said: "The developments do not change the consolidation plans, but simply delay them."

**Sunbury & Susquehanna Railway, Sunbury, Pa.**—Judge Cummings in the County Court at Sunbury, Pa., has ordered the sale of the property of the Sunbury & Susquehanna Railway as a whole under foreclosure.

**DIVIDENDS DECLARED**

**Central Arkansas Railway & Light Company, Hot Springs, Ark.,** quarterly, 1 3/4 per cent, preferred.

**Central Mississippi Valley Electric Properties, Keokuk, Iowa,** quarterly, 1 1/2 per cent, preferred.

**Washington Railway & Electric Company, Washington, D. C.,** quarterly, 1 1/4 per cent, preferred; quarterly, 1 3/4 per cent, common.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

**BERKSHIRE STREET RAILWAY, PITTSFIELD, MASS.**

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '16	\$83,085	*\$52,327	\$30,758	\$27,850	\$2,908
1 " " '15	78,667	*84,464	75,795	17,058	†22,853
12 " " '16	959,190	*788,700	170,490	257,545	†187,035
12 " " '15	952,867	*864,438	88,429	206,520	†118,091

**CONNECTICUT COMPANY, NEW HAVEN, CONN.**

1m., June, '16	\$809,211	*\$501,178	\$308,033	\$101,524	\$206,507
1 " " '15	708,743	*461,469	247,274	98,310	148,964
12 " " '16	9,192,924	*6,054,068	3,138,856	1,184,182	1,954,674
12 " " '15	8,236,323	*5,726,882	2,509,441	1,185,984	1,323,457

**GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.**

1m., June, '16	\$158,080	*\$95,274	\$62,805	\$36,582	\$26,222
1 " " '15	165,028	*106,184	58,843	36,058	22,785
12 " " '16	1,903,532	*1,207,628	695,904	435,458	259,446
12 " " '15	2,185,512	*1,241,232	944,280	435,742	508,538

**NEW YORK & STAMFORD RAILROAD, PORT CHESTER, N. Y.**

1m., June, '16	\$36,634	*\$25,465	\$11,173	\$7,979	\$3,193
1 " " '15	35,335	*21,632	13,703	8,000	5,703
12 " " '16	379,152	*302,799	76,353	95,899	†19,545
12 " " '15	376,543	*303,535	73,008	95,051	†22,042

**NEW YORK, WESTCHESTER & BOSTON RAILWAY, NEW YORK, N. Y.**

1m., June, '16	\$80,250	*\$45,436	\$34,814	†\$23,434	\$11,379
1 " " '15	41,886	*17,921	23,965	†13,286	37,286
12 " " '16	566,077	*558,755	7,322	†91,955	†84,632
12 " " '15	469,227	*494,562	†25,335	†56,297	†81,632

**PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.**

1m., June, '16	\$632,890	*\$408,443	\$224,447	\$184,649	\$39,798
1 " " '15	592,376	*382,357	210,379	181,341	29,037
12 " " '16	7,710,458	*4,937,933	2,772,525	2,199,373	573,151
12 " " '15	7,908,397	*4,825,827	3,082,579	2,151,770	930,807

**RHODE ISLAND COMPANY, PROVIDENCE, R. I.**

1m., June, '16	\$527,510	*\$313,401	\$214,109	\$122,158	\$91,951
1 " " '15	442,809	*281,600	161,209	113,530	47,679
12 " " '16	5,604,657	*4,069,016	1,535,641	1,402,067	133,574
12 " " '15	5,205,892	*3,910,983	1,294,909	1,410,337	†115,428

**WESTCHESTER STREET RAILROAD, WHITE PLAINS, N. Y.**

1m., June, '16	\$22,907	*\$22,588	\$319	\$1,808	†\$1,489
1 " " '15	22,477	*18,712	3,765	1,473	2,291
12 " " '16	252,613	*257,103	†4,489	20,399	†24,888
12 " " '15	258,303	*265,540	†7,237	16,106	23,343

\*Includes taxes. †Deficit.

‡Excludes interest on bonds, charged income and paid by the N. Y., N. H. & H. R. R. under guarantee, also interest on notes held by the N. Y., N. H. & H. R. R., not credited to income of that company.

**Traffic and Transportation**

**USE OF SINGLE-TRUCK CARS SUSTAINED**

The Massachusetts Public Service Commission has dismissed a petition of residents of North Fairhaven relative to service on the Oxford line of the Union Street Railway. The petitioners asked that the company be compelled to use double-truck cars on this line, claiming that in using single-truck cars the road was violating the terms of its location grant. This specified, among other things, that the company should use upon its lines between New Bedford and Fairhaven "only such cars of late construction as are in good repair and equipment." The petitioners held that the cars operated on the line were not cars of recent construction.

In its finding the board points out that its duty under the law is to determine whether or not the equipment, appliances and service in general which is afforded are in any respect "unjust, unreasonable, unsafe, improper or inadequate" (Stat. 1913, Chap. 784, Sec. 23), and that conditions relating to such matters which may be imposed in grants of location have no controlling force so far as its duties and powers are concerned. The company has for some years paid regular dividends at the rate of 8 per cent per annum. While the company alleged that the Oxford line fails to earn fixed charges, the commission states that the figures submitted to prove this contention were based on averages with no allowance for the fact that the first cost of single-truck cars and the cost of operation are materially less than in the case of larger cars. The board concludes that, on the whole, it is probable that this short line earns its due proportion of interest and taxes and perhaps some profit. In any event, the finding sets forth, "The line is only a part of a compact city system which yields as a whole an excellent return and all its patrons have a right to expect reasonable and adequate service."

The single-truck cars of the Oxford line are of a type which a street railway would not be likely to adopt at the present time and are not suited to the usual requirements of modern service. Many such cars, however, the decision notes, are still in service in Massachusetts and their use must be judged by the conditions which they are called upon in any particular case to meet. The board holds that "so long as adequate seating capacity and the means for safe and reasonably comfortable and expeditious transportation are provided the type of car is of secondary importance."

Conditions on the Oxford line have been investigated by the inspection department of the commission. The line is short (about 2.33 miles), and "the question of speed is relatively unimportant." While the cars in use were originally constructed about twenty years ago, some of these recently have been renovated and the department found all of them to be maintained in good condition. Complete passenger counts by the department on four days under varying weather conditions showed that the loads rarely exceeded the seating capacity. The commission found that track conditions need remedying, and the company has stated that it will renew the joints during the present month, the work having previously been held back by the failure of the municipality to make necessary highway repairs. The petition was dismissed on the basis of the completion of these track repairs by the company, also presupposing that the volume of traffic handled does not in general exceed the capacity of the service rendered by the existing rolling stock.

**MAYOR SIGNS SAN FRANCISCO JITNEY MEASURE**

Mayor Rolph, of San Francisco, Cal., on Aug. 4 signed the jitney bus ordinance which prohibits the use of Market Street, between Sixth and Fremont Streets, by jitneys between the hours of 10.30 a. m. and 4 p. m. The ordinance will go into effect in ten days. In a statement Mayor Rolph sets forth his reasons for signing the ordinance. While favorable to the regulation of the jitneys, he said that he was not ready to banish them. He said he did believe,



however, that regulation was necessary. The chief clause in the ordinance relates to the regulation of Market Street traffic, but there are several other provisions which the jitney men claim will, in effect, put many of them out of business. In the morning and evening the jitneys are crowded one way and run almost empty the other. During the middle of the day traffic between the ferries and the City Hall is brisk and people ride both ways. Another provision only allows one driver to each jitney. At present there are about 1200 jitney drivers and only about 750 machines. Jitneys also must go to the end of their route, and this will still further restrict their operations. Instead of being able to turn around when they have delivered their last passenger they must continue.

The San Francisco *Call*, in commenting editorially on the action by the Mayor, said:

"Mayor Rolph has signed the jitney ordinance, and he deserves the city's gratitude for having taken the stand with a majority of the Board of Supervisors.

"That is much better than allowing it to become a law without his signature—it gives the measure a stamp of finality that should characterize all municipal legislation.

"The ordinance will become effective within ten days—possibly we shall see results within less time.

"The ordinance was passed through the efforts of the Lower Market Street Association, which organized for the particular purpose of investigating the jitney problem, to determine just how much of it was evil and how much was good. It found more evil than good, it marshaled its facts and figures, and these facts and figures resulted in the legislation which is soon to become a law.

"The method adopted by the Lower Market Street Association illustrates the effectiveness of organization and investigation in the preparation of remedial legislation."

#### PORTLAND'S FIRST JITNEY FRANCHISE UNDER CONSIDERATION

City Attorney La Roche, of Portland, Ore., is considering the first jitney franchise to be drawn up to meet the law that became operative on Aug. 19, and will present his recommendations to the City Council for its consideration. The ordinance has been framed for the Union Motor Bus Company, operated by L. J. Whitaker from the center of the city to Multnomah Lodge and points on the Columbia Highway. The franchise prescribes the route over which the buses of the company shall be operated, and no deviation from the route will be allowed, except with the consent of all passengers, when the driver may stop at streets contiguous to the route to unload or pick up passengers. The franchise also provides for the payment of a city license of \$60 yearly, and that tariff charged shall not exceed 3 cents per mile inside the city limits. A licensed chauffeur must drive the cars, and cars must comply with regulations as to periodic inspection. The ordinance discontinuing the present system of jitneys operating under license from the city will take effect on Nov. 15. The franchises to be granted will become effective on that date.

#### NEW YORK SUBURBAN FARE QUESTION CONSIDERED BY COMMISSION

The Public Service Commission for the First District on Aug. 9 heard the pleas of representatives of 6000 petitioners from various sections of Queens Borough, principally from the Third Ward, in respect of a proposed agreement with the Long Island Railroad for use of its tracks east of Corona to Whitestone and Little Neck as a rapid transit line at a 10-cent fare. The delegation which visited the commission to urge this traffic arrangement was made up very considerably of residents of the College Point section. During the course of the proceeding one of the speakers announced that of the 6000 petitioners in favor of the 10-cent fare, 5500 were registered voters in the Third Ward out of a total voting population of 7500. Speakers in behalf of the project declared that the northeastern section of Queens has virtually no rapid transit of any sort, and that railroad fares were too high to permit of adequate home development of that section. There was also presented during the proceeding a report from Chief Engineer Alfred Craven of the commission, in which he stated

that as a result of investigations, his belief that on the two-fare basis the initial annual deficit resulting from operation to the two points above named over the Long Island tracks would not be more than \$26,000. At best, he states this is only a guess as to the probable results of the lease of the Long Island tracks as an extension of the Corona rapid transit line to the eastward. His report states, however, that in his belief enhancement of property values in the territory affected and increased riding which would naturally follow from better transit facilities would soon obliterate the deficit. The commission took the matter under advisement.

**Automobiles a Menace in Paducah.**—The chief of police of Paducah, Ky., is seeking an order from the City Commission which will enable him to regulate use of the streets by automobiles. His chief cause of complaint is that the prevalence of automobiles has become a serious obstacle to traffic.

**Lake Shore Electric Railway Will Warn Travelers.**—On Aug. 1 the Lake Shore Electric Railway, Cleveland, Ohio, announced that it would have 250 large warning signs made and placed along all highways 300 ft. from the company's right-of-way. This will be done under the guidance of the company's safety committee.

**Electric Roads Must Be Considered.**—The Public Utilities Commission of Kansas, in a recent order following complaint of the Union Traction Company, Coffeyville, requires that steam roads, in the preparation of their traffic sheets, give electric railways that carry freight the same consideration that is accorded other steam roads.

**Freight Cars Run Wild in Seattle.**—Three freight cars of the Seattle, Renton & Southern Railway, Seattle, Wash., careened down a long hill near Riverside Station shortly after midnight on Aug. 2 and after a half-mile dash crashed head-on into a steel electric passenger coach owned by the company, seriously injuring one passenger and bruising and cutting three others.

**Service Complaint in Trenton.**—George B. La Barre, director of public safety of Trenton, N. J., has announced that he will ask the City Commission to request the Board of Public Utility Commissioners to take up the matter of service as furnished by the Trenton & Mercer County Traction Corporation on its lines in Trenton. He considers the present service to be inadequate.

**Permission Granted for One-Man Cars in Ballard.**—The City Council of Seattle, Wash., has received the recommendations of the franchise committee that permission be granted to operate one-man cars on the Loyal Railway in Ballard. The line covers Market, Twentieth, Twenty-eighth, Sixty-seventh and Eightieth streets, from Twenty-fourth Avenue and Market, the southern terminus to Eighth Street and Thirty-second Avenue, N. W., the northerly terminus.

**Twenty-five Killed in Head-on Collision.**—Twenty-five persons were killed and many injured in a head-on collision on Aug. 12 between two cars on the line of the Southern Cambria Railway between Echo and Brookvale, 7 miles from Johnstown, Pa. Fourteen were instantly killed, while eleven others died after being removed from the wreckage. The company in a statement made on Aug. 12 said it was absolutely without data on which to base a report of how the accident occurred.

**Booklet on Courtesy in Birmingham.**—A booklet of suggestions for serving the public has just been issued to all the employees of the Birmingham Railway, Light & Power Company, Birmingham, Ala. It contains numerous suggestions for little courtesies that ordinarily are not expected by the public, but which, when accorded, please the recipient immensely. The pamphlet devotes much space for suggestions as to the conduct of conductors and motormen on cars, and suggests that they never contradict, or, as to that matter, get into an argument with a passenger. Many suggestions are contained for helping passengers on and off cars, especially if the passenger happens to be a woman, child or cripple. J. S. Pevear, president of the company, in a foreword to the booklet, explains that its purpose is to help trainmen "give the public the best possible service at all times, which is the kind of service our company desires to give and which the public has a right to expect."



## Personal Mention

E. F. Blaine has been appointed chairman of the Public Service Commission of Washington by Governor Ernest Lister to succeed C. A. Reynolds, resigned. Mr. Blaine will also act as the representative of the Public Service Commission on the State Highway Board.

Max Prill, Sr., president of the Centralia & Central City Traction Company, Centralia, Ill., has also taken over the duties of general manager of the company as the successor to J. M. McRoy. He has also succeeded Mr. McRoy as general manager of the Centralia Traction Company.

Edward T. Moore, manager of the Dallas (Tex.) Electric Company, has been appointed managing trustee of the Dallas Interurban Terminal Association. Mr. Moore succeeds Oliver M. Chadwick, Boston, who has been called to the Mexican border with the National Guard of Massachusetts, of which he is a member.

L. McAllister has resigned as master mechanic of the Great Falls (Mont.) Street Railway to engage in another line of work. Mr. McAllister was connected with the company fifteen years. He is a native of Indiana and was graduated from Purdue University. He was first employed at Baltimore as an inspector of ordnance. Before coming to Great Falls he conducted the McAllister Machine & Boiler Shops at Logansport, Ind.

James O. Carr of the Public Service Commission for the Second District of New York, who went abroad in June to study the transportation systems of France, England and Italy under war conditions, has returned to the United States. It is Mr. Carr's opinion that railroad transportation in England and France has been most admirably handled since the outbreak of the war, and that very serious conditions were met and dealt with satisfactorily.

S. B. Severson, secretary, treasurer and general manager of the Manhattan & Queens Traction Corporation, Long Island City, N. Y., and Robert Thompson, Jr., assistant general manager of the company, were presented silver loving cups at the carhouse of the company in Long Island City on the evening of Aug. 11 by the trainmen. During the recent strike on the lines in Greater New York none of the conductors or motormen of this line went out. When the men received their pay on Aug. 10 each conductor and motorman found an extra \$10 in his pay envelope and each inspector received \$20. The presentation to Messrs. Severson and Thompson was made by the men as a token of their esteem of their superiors.

### OBITUARY

Will Christy, vice-president of the Northern Ohio Traction & Light Company, Akron, Ohio, brief mention of whose sudden death from an attack of appendicitis was made in the *ELECTRIC RAILWAY JOURNAL* of Aug. 12, was born in Akron in 1859 and was educated in the public schools of that city. As a young man he entered the tanning and leather business. After ten years of activity in this line he turned to railway work and in 1883, with Ira Miller, W. E. Metlin, his brother James and others, started the first horse-car railway in Akron. Later he became interested in promoting the Akron, Bedford & Cleveland Railway, a pioneer interurban electric railway. He also assisted in founding the Cleveland Construction Company, which built many electric railways in Ohio and elsewhere throughout the United States. He was one of the founders and the first vice-president of the People's Telephone Company, now the Ohio State Telephone Company. At the time of his death, besides being vice-president of the Northern Ohio Traction & Light Company, Mr. Christy was president of the Youngstown & Ohio River Railroad, Leetonia, Ohio; president of the Hamilton Building Company and the Central Savings & Trust Company, Akron; a director of the Citizens' Savings & Trust Company, Cleveland, and a director of the Firestone Tire & Rubber Company. Mr. Christy is survived by his widow.

## Construction News

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

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

### FRANCHISES

Newport, Ky.—Petitions asking for a referendum on the resolution to accept the bid of the South Covington & Cincinnati Street Railway for a street railway franchise have been filed with the city commission. There were more than enough names signed to insure legality of the petitions. The commissioners state, however, that many people signed without a clear understanding of the issue.

Lockport, N. Y.—The City Council has approved the application of the International Railway, Buffalo, N. Y., for permission to lay double tracks through West Avenue, from Hawley to Main Street. This extension of its Lockport city lines will afford better facilities for handling traffic on the Buffalo, Lockport & Olcott Beach division. The new line will afford additional track facilities to the new \$30,000 interurban terminal which will be erected by the company in Lockport.

### TRACK AND ROADWAY

Jacksonville (Fla.) Traction Company.—This company has again signified its willingness to construct under reasonable supervision from the city the proposed extension of its Ostrich Farm line on Eighth Street from Evergreen Avenue to Tallyrand Avenue and thence to the city electric light plant, representing an expenditure of about \$40,000.

Atlanta & Anderson Railway, Atlanta, Ga.—For the purpose of preparing the way legally for the construction of the proposed interurban electric railway from Atlanta to Anderson, S. C., a bill has been introduced in the Senate to amend the section of the constitution which provides for the incorporation of railroads, so as to include interurban lines. It is understood that as soon as this amendment is made the Atlanta & Anderson Railway will make application for charter. It will take thirty days to obtain such a charter after application, and as soon as the charter is granted the actual work of construction of the road will begin. The amendment is asked upon a decision of the Supreme Court, which points out that when this act was approved, Dec. 7, 1892, electric railways were not in general use, and no provision was made in the act for the extension of such railways. This decision calls the attention of the General Assembly to the fact that accurate provision should be made for such enterprises. Julian McCurry, Hartwell, is interested.

Waycross Street & Suburban Railway, Waycross, Ga.—This company is planning to extend its railway line along Washington Avenue from Gilmore as far as Wardlaw Avenue. This will carry the line through Gilchrist Park and to Sheba Park.

Chicago (Ill.) City Railway.—This company has purchased from the Chicago & Western Railway the tracks and franchises on West Sixty-third Street from South Cicero Avenue to Central Avenue, on Central Avenue from Sixty-third Street to Sixty-third Place, and on Sixty-third Place from Central Avenue to Austin Avenue, for \$150,648. This is in accordance with an ordinance passed by the City Council directing the surface lines to take this property over under the franchise ordinance of 1907, as this part of Stickney is now within the city limits.

Chicago, Fox Lake & Northwestern Electric Railroad, Chicago, Ill.—Surveyors for this company have completed their work between Evanston and Palatine, Ill. The company plans to start work on the new line soon. The road will connect with the Palatine-Wauconda line, which, it is reported, will be purchased and electrified. From Wauconda the company expects to extend the line through the Fox Lake region to Lake Geneva.



**Indianapolis Traction & Terminal Company, Indianapolis, Ind.**—Double tracks have been laid by this company on Alabama Street from Market Street to Washington Street. This company has also built turns at Washington and Delaware Streets and at Meridian and Maryland Streets.

**Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.**—This company is reported to have drawn plans for the double-tracking of its Crawfordsville division between the western limits of Indianapolis and the Speedway, involving a probable expenditure of about \$100,000 for construction.

**United Railways, St. Louis, Mo.**—The Board of Public Service of St. Louis has authorized the United Railway to build a single track on St. Charles from Fourth to Broadway, so as to constitute a new loop for the Hodiadmont cars. At present the Hodiadmont cars turn south on Sixth Street and then run east from Sixth to Fourth Street, making the loop back to Locust Street. The last strip of land for a private right-of-way in St. Louis County about half a mile in length, that will enable the United Railways to reroute its cars so that fifteen minutes will be saved between Webster Groves or Kirkwood and St. Louis, has been purchased by the corporation. The right-of-way runs from the Edgebrook bridge, in Maplewood, on the Manchester line to the junction of the Brentwood line and Hanley road.

**Missoula-Polson Electric Railway, Missoula, Mont.**—A. A. White, according to report, has started preliminary surveys on the proposed electric railway from Missoula to Polson, and has employed N. D. Miller, St. Paul, as chief engineer. The line will pass through St. Ignatius and St. Mary's Pass. [E. R. J., April 8, '16.]

**Keating Gold Mining Company, Helena, Mont.**—Survey work on the proposed 12-mile electric railway to be built from Toston into the Radersburg district by the Keating Gold Mining Company, and allied interests, has been started. Jesse R. Roote is the resident director of the company in the city of Helena.

**New York Municipal Railway Corporation, Brooklyn, N. Y.**—The contract for the installation of tracks in the Broadway-Fourth Avenue subway system in Manhattan and Brooklyn, from Fifty-ninth Street and Seventh Avenue to the Flatbush Avenue Extension in Brooklyn, has been awarded by the Public Service Commission for the First District to the T. H. Reynolds Contracting Company, Inc., the lowest bidder, for \$288,400. The Board of Estimate and Apportionment will be asked to approve this contract as soon as possible, so that the work may be gotten under way without delay, to make early operation possible. The Public Service Commission for the First District of New York is now advertising for bids, to be received on Aug. 30, for the supply of special work, order No. 9 (frogs and switches), for use in the construction of the Culver line in Brooklyn. The special work is to be delivered in installments, the entire delivery to be completed within five months from the delivery of the contract.

**International Railway, Buffalo, N. Y.**—This company has asked the City Council of Lockport for permission to extend its line through West Avenue from Transit to Hawley Street, where the company's new \$30,000 concrete passenger terminal will be erected. The new structure will not be built on the site of the present terminal as was anticipated. It will be a two-story fireproof structure and will be used by the Buffalo & Lockport, Lockport & Olcott and Buffalo, Lockport & Rochester lines.

**International Railway, Buffalo, N. Y.**—Unable to force the Grand Trunk Railway of Canada, owners of the International bridge across the Niagara River connecting Buffalo and Bridgeburg, to construct additions to the structure so as to provide facilities for vehicular traffic a bill has been introduced into Congress authorizing the construction of a second bridge across the Niagara River at Buffalo. Among the men interested in the promotion of the project is Edward G. Connette, president of the International Railway Company. The members of the interstate and foreign affairs committee of the House recently investigated traffic conditions across the river at Buffalo and were impressed with the necessity for a vehicular bridge upon which street cars could be operated between the Buffalo and Canadian points.

**New York & Queens County Railway, Long Island City, N. Y.**—The Public Service Commission for the First District of New York has adopted an order directing this company to construct, maintain and operate a single-track temporary extension or connection of its street surface railroad from the present terminus of its Corona line on Summit Avenue, through Summit Avenue and Pell Street to Jackson Avenue if a temporary permit can be procured from the Board of Estimate and Apportionment. On condition that such temporary extension shall be built and operated, the order of the commission permits the company to suspend the operation of cars on the Flushing Meadows between Summit Avenue and Jackson Avenue in the second ward of Queens for the period of one year from July 29, 1916.

**Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.**—The directors of this company have decided to build a line skirting the town of Berea. This will make a more direct route for the limited service and eliminate a number of stops. The time gained will be ten minutes. The franchise for the main line through Berea expires on Dec. 16. According to the Town Council a portion of another grant has nine years yet to run. The people hope to secure a local service by enforcing this alleged grant, but expect the limited cars to use the new route for which right-of-way has been secured and options taken.

**South Carolina Light, Power & Railways Company, Spartanburg, S. C.**—Recommendation that this company be required to extend its line of railway to Whitney mills and reconstruct the line between Clifton No. 1 and Clifton No. 3 will be presented before a circuit judge for confirmation, under the report of S. T. Lanham, master in equity. The master says in his report: "I recommend that an order be passed by the court requiring the defendants within sixty days to begin work upon the extension of its railway to the town of Whitney and Clifton mills No. 3, and to complete the same within four months from that date, such extension to conform to the general plan and policy of the system already completed and in operation so as to become an integral part thereof." The action to require the company to construct the railway was begun by A. T. Thomas, a citizen, in behalf of himself and all other citizens. After the case was docketed the circuit court judge ordered that the case be referred to S. T. Lanham, master in equity, to take testimony and arguments and report his findings of law and fact involved. The plaintiffs alleged in their complaint that the defendant company was violating its franchise, granted by the city, May 3, 1899, in its failure to make the extensions demanded in the action. The defendant company alleged that the franchise with the city did not obligate the company to make the extension.

#### SHOPS AND BUILDINGS

**Tri-City Railway & Light Company, Davenport, Iowa.**—This company reports that it has let a contract for its new repair shops to be built in Rock Island, Ill. Work will be started on the buildings immediately and it is contemplated that they will be ready for occupancy by December this year.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—Plans for its new terminal at Akron were submitted to the building inspector on Aug. 10 by this company and a building permit was requested. The structure will be four stories high. The basement and first floor will be used for machine shops, power storage, waiting rooms and general offices. The upper floors will be fitted up for offices. The cost will be \$125,000.

**Columbus (Ohio) Depot Company.**—Three pieces of property have been acquired by this company recently. These give it the entire half of the block extending from Town to Rich Street and from Wall to Front Street. E. R. Sharp is quoted as saying that the company is now in a position to proceed with the construction work. The southern half of the property will be used for interurban train sheds. The Exposition Hall Company has secured control of the second floor of this portion and an exposition hall will be erected over the sheds. The depot company will probably complete this portion of its work first in order to give the Exposition Hall Company an opportunity to proceed with its construction work.



## Manufactures and Supplies

### COPPER PRICES FIRM—LITTLE BUYING

Observations on copper market conditions are of continued interest. One authority states that "but little copper is available for delivery until after October and the major market at the time is for October-December delivery. August and September copper is very scarce and buyers are compelled to pay premiums for it, but there is only an occasional demand for those near-by deliveries." The average price of Lake copper for the month of July, based on daily quotations in *The Iron Age* was 25.84 cents and of electrolytic 25.57 cents. At present the quotations are 26.75 cents and 26.50 cents respectively.

The large copper producers are said to be speeding up their output, but the enormous contracts for delivery to foreign nations offsets the greatly increased production.

For six months or more manufacturers here and in England and France have absorbed what one large producer characterizes as "a terrific tonnage." This was in preparation for the big drive. The foreigners had bought well and did not suffer for lack of delivery, but when the military needs became nearly met, then copper stocks, under foreign contract, began to accumulate on the docks.

Within two weeks past a tremendous new buying movement has set in, purchases as great as 150,000,000 lb. being rumored, with possibly larger purchases ahead.

In some lines of manufactured copper and brass the demand is still greater than the supply. Prices remained high and did not drop along with ingot copper. This may partly be attributed to the labor troubles that have occurred during the past six months at several of the plants which manufacture bare wire. Electric railways are big buyers of bare copper, but now are not purchasing in any large quantities. Very little construction work is under way.

However, insulated wire and cables are quoted for four to eight weeks delivery. Quick delivery cannot be made because there are no warehouse stocks.

From the above it is evident that at the present time conditions do not warrant any observations on a possible break in the price of manufactured copper.

### CAR BODIES READY—NO TRUCKS

Forty-one city and suburban and eight large interurban car bodies are stored awaiting the delayed delivery of trucks before they can be put in service by the Detroit United Lines. *Electric Railway Service*, the publicity medium of the Detroit Company, in its last issue shows three views of car bodies awaiting trucks and tells the public the exact situation, as follows:

"We certainly are up against a tough situation—one that is mighty discouraging. Never in the history of the Detroit United Lines has our traffic within the one-fare zone and on the interurban lines been as heavy as this summer, never have we needed additional equipment so badly as now, never have the manufacturers of cars and car equipment been so slow in making deliveries. This slow delivery is all due, of course, to the excessive demand for material throughout the country. It has been absolutely impossible for the manufacturers to get the raw materials on anything like prompt time, and hence the absolute impossibility of turning out the finished product. As our patrons know, we have already added to our equipment this year many new cars, but only part of our orders has been filled up to this time, whereas all the orders should have been executed weeks and weeks ago. We are still short in passenger cars, in freight cars and in work cars. . . . Considering the vast amount of work before them, the manufacturers have done better by us than they thought possible two months ago, but the big fact remains that all the cars we ordered ought to have been in service weeks ago. They aren't in the service and they cannot be until all the parts are here and assembled."

### OVERHEAD MATERIALS ACTIVE

#### Widespread Buying Characterizes the Condition in the Line Material Market

That the business condition is good is said to be due not so much to a few large orders but on account of a generous scattering of smaller orders. The roads seem to be buying for immediate use rather than for reserve stock. It has been the observation that a great many of the roads during the depression of the last two years not only exhausted their storeroom supplies of line materials but permitted the overhead to wear itself into such a state that now a general rehabilitation is required. With the improvements in earnings and business prospects, many electric lines are practically rehabilitating their overhead, and therefore the pendulum seems to be swinging the other way. The prices for overhead fittings are about 40 per cent above those of a normal year. The manufacturers report difficulty in obtaining raw materials, particularly malleable iron and steel parts. The high cost of copper, of course, accounts for the increase in selling price. The copper used in making overhead fittings is high-grade scrap, such as second-hand trolley wire, commutator bars and steel coils. As a basis on which to judge the increase in price of the iron parts, it is reported by one manufacturer that the cost of gray iron castings is 33 per cent above normal and that delivery is very hard to obtain.

### LESS LUMBER CUT IN JUNE THAN IN MAY

The National Lumber Manufacturers' Association's official figures of the lumber cut from the mills represented in that organization, the monthly barometer of the trade, show that in June the mills represented materially reduced the production of both hard and soft woods. As compared with the May cut there was a decrease in the cut of soft woods of 35,000,000 ft. and of 22,000,000 ft. in hard woods. The shipments of soft woods were 215,200,000 ft. more than production, indicating a reduction of stocks.

### ROLLING STOCK

Northern Ohio Traction & Light Company, Akron, Ohio, is reported to be considering the purchase in the near future of thirty-five cars of the Cleveland front-entrance, center-exit type.

New York Central Railroad, New York, N. Y., has ordered ten electric locomotives from the General Electric Company. These are to be similar to the "T" type which were purchased about two years ago and are for passenger service on the main line.

Havana Central Railroad, Havana, Cuba, noted in the *ELECTRIC RAILWAY JOURNAL* of June 3 as being in the market for additional equipment, has ordered seven motor coaches from the American Car & Foundry Company. These are to be 54 ft. 4 in. over platforms and are to be equipped with GE 240-A motors. One semi-convertible car, equipped with GE-67 motors has been ordered from The J. G. Brill Company.

Salt Lake & Utah Railroad, Salt Lake City, Utah, is in the market for two 61-ft. interurban motor cars, to contain a ladies' compartment, smoking compartment and a small express compartment, with seating capacity for sixty-six passengers. These cars are to be of all-steel construction, mounted on Baldwin trucks, and are to be equipped with four Westinghouse motors with a total rating of 460 hp. with H L control.

### TRADE NOTES

Railway Improvement Company, New York, N. Y., has received an order for coasting recorders and anti-climbers for the forty-two elevated cars being built by the Pressed Steel Car Company for the Boston Elevated Railway.

Atlas Preservative Company of America, New York, N. Y., has received a contract to apply the Atlas "A" method of weed killing on the entire line of the Western New York & Pennsylvania Traction Company, Olean, N. Y., work to be started at once.



Elcon Company, New York, N. Y., announces that the appointment of William M. Wampler as Eastern sales manager of the Acme Supply Company, Chicago, Ill., will in no way affect Mr. Wampler's interest and activity as vice-president and general manager of the Elcon Company.

Page Woven Wire Fence Company, Monessen, Pa., announces that it has made arrangements with the Copper Clad Steel Company, Pittsburgh, Pa., whereby it secures exclusive control of this company's product of copper-clad rods for the purpose of drawing the same into copper-clad wire. This product will be known to the trade and advertised as "Copperweld."

Peter Smith Heater Company, Detroit, Mich., announces the following recent orders for hot-water heaters: Chicago & Milwaukee Electric Railway, fifteen of the new O-C-2 design; Northern Ohio Traction & Light Company, fifteen O-C-2; Pittsburgh Railway, fifteen type 1-C; Michigan United Railways, eight O-C-2; the Michigan Railways, two O-C-2, and the Detroit United Railway, twenty-four 1-C.

Frank N. Grigg, Richmond, Va., advises that in addition to his appointment as Southeastern sales manager of the Acme Supply Company, Chicago, Ill., as noted in the *ELECTRIC RAILWAY JOURNAL* of Aug. 12, he represents the following firms: Henry Giessel Company, Harlan & Hollingsworth Corporation, Heywood Brothers & Wakefield Company and the Transportation Utilities Company.

R. Martens & Company, Inc., New York, N. Y., who handle American made mechanical goods in Russia, have formed the "Russia Trade Corporation of America," to handle non-mechanical lines in Russia. The general offices are in the Maritime Building, New York, N. Y., and all business transactions will be entirely separate and distinct from the parent company. Frank G. Bolles, former manager of the export trade publication, *International Trade*, Chicago, has been made vice-president and will be in immediate charge of affairs.

Cement-Gun Construction Company, Chicago, Ill., reports that in addition to other work it is at present lining two tunnels in Montana for the Northern Pacific Railway; lining a tunnel near Unionville, Ind., for the Illinois Central Railroad; protecting the steel work on the Nickel Plate Railway bridge at Seventy-ninth Street, Chicago, where it crosses over the Illinois Central Railroad and also is covering with 2-in. reinforced Gun-crete siding the entire head-house, total approximately 200,000 sq. ft., for the Chicago & Northwestern Railway grain elevator at South Chicago.

Robert H. Belknap was appointed sales agent of the Bethlehem Steel Company in charge of the Chicago office, effective July 10. Mr. Belknap for a long period was Chicago representative of the Pennsylvania Steel Company and built a wide acquaintance among the electric railways. More recently he was appointed district manager of sales for the Pennsylvania Steel Company in the New York territory. The Chicago territory in which Mr. Belknap's efforts will now be centered includes all or part of the state of Indiana, Illinois, Kentucky, Tennessee, Iowa, Nebraska, Colorado, Wisconsin, Minnesota, upper Michigan, and Canadian territory lying north of Minnesota and Michigan.

G. A. Trube has been appointed export manager of the Westinghouse Air Brake Company and the Westinghouse Traction Brake Company, effective Aug. 1, 1916, with headquarters at Pittsburgh, Pa. Mr. Trube has had a wide foreign experience, having been associated with the Westinghouse Air Brake and Westinghouse Electric interests for many years, both in this country and abroad. He went to England in 1900 to carry out some special work and soon afterward made his headquarters there until January, 1912, when he was transferred to Paris to become managing director of the French Westinghouse Company, which position he has now resigned in order to return to this country and take up his new duties here.

#### ADVERTISING LITERATURE

Dayton Manufacturing Company, Dayton, Ohio, has issued catalog No. 200 containing 1600 pages replete with more than 11,000 illustrations of articles used chiefly in the construction and operation of railway cars. These, in connection with descriptive matter relating to patterns and ar-

ticles not illustrated, represent a book of considerable value to railway officials and others interested in the line of material it presents. Illustrations and descriptive matter of new patterns, originated too late for use in this catalog, will be furnished on loose pages for later insertion.

#### NEW PUBLICATIONS

**Standards for Electric Service.**—Department of Commerce, Bureau of Standards, circular No. 56. Two hundred sixty-two pages. Copies can be secured from the superintendent of documents, government printing office, Washington, D. C., at forty-five cents per copy.

This circular is designed to be of value to public service commissions, central-station operators and municipal boards and commissions. It deals with the factors entering into adequate and safe electric service, and involving standards of adequacy, meters, central-station operation and power distribution. Included is an elaborate compilation of the rules and regulations of state commissions, city ordinances and state laws relating to this subject. Rules for the regulation of electric service by state commissions and ordinances for the same purpose in towns and cities are suggested. The circular will be of value and interest to electric railways concerned directly or indirectly with the supply of power for lighting and industrial motors.

**Mechanical Engineers' Handbook.** By Lionel S. Marks. McGraw-Hill Book Co., New York, N. Y. 1836 pages. Limp leather, \$5 net.

The field of mechanical engineering has become so extended that it is no longer possible for a single individual, or a small group of individuals, to have so intimate an acquaintance with all its branches that critical judgment in the statement of current practice and selection of engineering data may be satisfactorily exercised. Only by the co-operation of a considerable number of specialists is it possible to obtain a high degree of elaboration in essential details, and it is for this reason that the handbook under review has been prepared by no less than fifty specialists well known in the various phases of the field of mechanical engineering.

The book divides itself into two main halves, the first half being devoted to the more theoretical topics and the last half to the statement and discussion of current practice. The more theoretical portion is subdivided into seven sections dealing with the following subjects: Mathematical tables, weights and measures, mathematics, mechanics of solids and fluids (including friction), heat, strength of materials, materials of engineering, machine elements. The portion treating of practice is divided into eight sections under the general headings of power generation, hoisting and conveyance, transportation, building construction and equipment, machine-shop practice, pumps and compressors, electrical engineering, and engineering measurements, mechanical figuration, etc. The number of contributors to these different sections varies considerably. In a few cases a section is the product of a single contributor, while in one case as many as thirteen contributors are listed.

This brief statement of the contents of the book will give some idea of its scope but can hardly indicate its character, because it is unquestionably the most thorough and comprehensive mechanical engineer's handbook in the English language. It may well be found on the desk of every engineer and of everyone who has contact with the engineering profession. In addition, it should be of great value as a textbook, the sections on mathematics, mechanics and the like being sufficiently detailed to serve as a basis for a course of study on the subject. Certain features of the make-up are very important in rendering the book's contents available. Both the front and back end pages contain an index to the major topics and a list of the more important tables. Thumb tabs are provided so that the reader, after looking at the index on the end pages and finding there the section number, can return immediately, by the use of the thumb tabs, to the section in which he is interested. The important reference tables given also on the end pages show the page references in each case. In general, the index is unusually simple and well arranged, and by judicious use of bold-face type, it has been made easy to pick out all of the main headings.