

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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How Glasgow Collects Its Fares

The third and concluding article on the Glasgow tramways, which we are publishing in this issue, will, we believe, prove to many readers the most interesting in the series, because it deals largely with the duties and pay of the employees and the method of checking and auditing the differential system of graded fares.

Perhaps the point which will impress the average railway reader first in this account is the difference in pay of platform employees in England and America. Thus, the motormen and conductors in Glasgow start in at slightly more than 25½ cents an hour and work up to about 29½ cents an hour at the end of seven years. The women employees, who constitute more than half of those who work on the platform, receive somewhat less because the men are more steady in showing up for duty and also because they expect to stay in the business. The women conductors start in at 14 cents an hour and work up to 22 cents an hour. The motoresses earn about 1¼ cents more an hour. These wages and the proportional lower rush-hour peaks undoubtedly account, to some extent at least, for the lower fares which are charged in Glasgow. Articles on other properties in Great Britain and Ireland will appear in early issues of this paper.

Engineering Talent and Judgment Are Needed in Public Life

WHY has the engineer in general not taken the part in public life in which his talents and training fit him to be most widely useful? Some such question as this must have been in the minds of those who planned the conference on "The Engineer as a Citizen" which was held in New York City this week. Members of a dozen or more engineering societies of national standing participated in the conference, which was held for the purpose of securing constructive suggestions for the benefit of the several committees on development of these associations. The discussion was significant of the awakening conviction on the part of engineers that it is "up to them" to show how they can be more serviceable to the country. The war has helped them in this regard, for they were quick to seize the opportunity to place themselves at the disposal of the government when diplomatic relations with the then Central Empires were broken off, and they were given many opportunities and responsibilities in the preparations for and prosecution of the war.

The true engineer ought to be a useful citizen not only in doing first-class work in his profession but in applying engineering principles to the solution of civic problems. The same principles underlie both the technical and the general phases of the country's life, but undoubtedly in the past the engineers have been so

wrapped up in their own peculiar and fascinating problems that they have not given sufficient attention to the broader aspects of the situation. Other professions, notably the law, bring their members more naturally and prominently into the public eye than does engineering, and this also is a factor in bringing about the disproportion of engineers that exists. The engineer ought to be a good public servant because he is in the habit of dealing with realities rather than theories.

Do Railway Companies Overlook Their Best Publicity Medium?

MANY thousands of dollars are spent annually in publicity. And provided the spending is placed under wise jurisdiction it would be well if many additional thousands were so spent. We believe in publicity. Give the public credit for some brains, tell them the facts straight to the point and keep them posted on all subjects in which they are interested and upon which they seek information.

However, things we say about ourselves do not carry the same weight as things said about us—whether they are good or bad, although in this case we refer to favorable statements. It was this thought which was back of a suggestion made at a recent electric railway convention that due to the natural antagonistic feeling of the public toward the railways, publicity advertising conducted by the large manufacturing companies would have more value in assisting the electric railways to combat the motor truck than would advertising issued by the railways themselves.

It is the same thought also which causes us to inquire whether electric railway companies do not often overlook their best publicity medium, namely, their employees. When the 6-cent fare went into effect in a certain city the railway company, pending a decision of the validity of the increase, gave a receipt for each extra cent. A certain man instructed all members of his family to refuse the receipts and to tell the conductor that the service was worth 6 cents. During the period the receipts were being given out, this man and his family did this about 200 times and in only three instances did the conductor show any appreciation, one conductor having thanked two members of the family.

This incident gave our investigative friend an idea, and he instructed all his plant managers to notify him by memorandum of each instance coming to their notice where an employee went out of his way to boost the company. From 1000 employees about two memoranda a week are received.

It would seem that in many instances the utility employees are being overlooked as instruments of propaganda to spread information about their company and to create a favorable public opinion. Actually, they are vitally interested in the prosperity of the company for

which they are working, and most of them realize it when the matter is brought to their attention, but most of them are not sufficiently well informed about the company's business to talk intelligently about it without seeming to be continually praising. If the company will take the trouble to supply them directly with the facts and so give them something to talk about, they will spread the propaganda among the public at large. Their influence will have more weight than a great deal of the advertising publicity often put out because they will be enthusiastic boosters without realizing it. Why not think it over?

Facts Should Not Be Silently Disregarded

IN A RECENT editorial commenting upon the proposal of the Public Service Railway to establish a 5-cent charge for each first mile-zone and 1 cent per zone thereafter, the Philadelphia *Public Ledger* speaks in part as follows:

The Public Service Railway wants all the benefits of the old flat fare and an additional fare for long-distance riders besides. By making the initial unit 5 cents for the first zone-mile, the railway would inflict a double injustice upon its riders—a gross overcharge for the short rider and an undue burden on the suburban residents who have established homes on the outskirts of the city on the faith of low transportation charges to and from the business centers.

The *Public Ledger* usually has cogent arguments as the basis for its attitude of support or disfavor, but in the present instance its opposition seems to be merely that of begging the question.

We grant that there may be some justification for the statement that suburban residents founded their homes upon the "solid rock" of a 5-cent fare. There is a myth to this effect largely manufactured for the occasion by designing public leaders. Why do we assert this? In the first place, because, in the absence of a definite policy of city payment of railway deficits through taxation, most men are not foolish enough in these days to move into the suburbs with the hope of erecting a squatter's right to a 5-cent fare. In the second place, because the car-fare expenditure of even the average workman's family, according to authoritative statistics, is such a small portion of his annual budget that he seldom if ever considers this in deciding whether he can afford to pay suburban rents—which, by the way, are always high when car fares are low.

But we will pass over this point to the wholly unjustified premise of the *Public Ledger*, i. e., that the proposed fares in New Jersey will grossly overcharge short-haul riders and unduly burden long-haul riders. Such a statement without proof is not admissible. There is nothing new in the fundamental theory of the proposed fares; a "terminal" or "readiness-to-serve" or "stand-by" charge and a "consumption" or "movement" charge have been accepted by many courts and commissions for gas, water, electric light and steam railroad rates. The system has not yet been applied to electric railway rates, but such a fact does not prove it unfair.

As a matter of fact, it is interesting to note that in 1911 the Board of Public Utility Commissioners of New Jersey itself made the following statement in an electric railway case before it:

It would thus appear that a uniform basic rate or charge which permits, without additional charge, a ride of short but definite length might properly be accorded for a uni-

form basic fare, and that every mile or fraction thereof in excess should be paid for at a stipulated rate per mile.

Precisely what price should be charged for the basic part of the fare, and what rates per mile for the excess distance over the minimum ride covered by the basic fare, are practical questions which experience must determine, but that economic necessity will eventually establish such a fare seems as probable as it is necessary.

The proposal in theory is not unfair to either the short-haul or long-haul rider. Is it so in practice? This is a question of fact. The sole object of the plan is to make every rider pay for the amount of service used. Taking all its costs of operation, the Public Service Railway has apportioned them upon bases approved by leading commissions and public consultants, and it has arrived at a figure of 4.038 cents as the cost of standing ready to serve any passenger, no matter what his length of ride, and 0.99 cent as the additional cost of each mile of haulage.

The company has presented these figures for public scrutiny. If the *Public Ledger* can prove that a miscalculation has been made, it is welcome to do so, but it has no right to disregard the figures. It has fallen into error by jumping to the conclusion that a present stand-by cost of 4.038 cents cannot be correct because the old fare, providing for reasonable profit, was only 5 cents. Can it not realize that under operating conditions a few years ago the stand-by cost would have been say only 2 or 3 cents? If then did not cost 5 cents to carry the short-haul rider, but he was paying part of the fare of the suburbanite. Had the proposed system of fares been installed say in 1912, the fares for all concerned would undoubtedly have been less than they must be now, but that fact by no means proves their inequity now.

Touching the High Spots in Maintenance Work

THE past two or three years have brought out previously unthought-of, or at least unrealized, schemes for cutting down maintenance costs. Last week's issue of this paper was taken up very largely with an account of some of the practices that have been evolved. The plan of the issue was not to produce a comprehensive text on the subject but rather to point out some of the places where worth-while savings are possible on almost any property.

At least three things stand out prominently as one studies the issue as a whole. First is the availability of concentrated heat, especially in the electric arc, the oxy-acetylene flame and the thermit reaction crucible. A new art has been created in this field and a national society was formed only this week to foster it. Electric railway track and equipment men will need to make the most of this art.

A second maintenance possibility is in timber preservation. Electric railways use an enormous quantity of wood; in ties, in bridges, in poles, in miscellaneous structural work. Heretofore the art of wood preservation has made some, but rather slow, progress. Conditions now favor much greater attention to prolonging the life of timber, and electric railway men are alive to the possibilities of conservation here.

A third point is the importance of inspection. Some time ago S. L. Foster wrote an article for this paper on the suggestive topic "Keep Up versus Pick Up." His argument, of course, was that it is more economical to maintain line work by means of watchful care than

by expensive emergency repairs. Inspection reveals the need for replacement or repair before the danger of interruption to service has developed.

There is one factor in maintenance also that has nothing to do with maintenance directly, namely, care in the selection of supplies in the first place. Inspection plays an important part here, especially as an adjunct to skillfully drawn specifications.

This Is the Time For Action and Not Merely Words

“THE problem is not merely local or political, but of nation-wide business importance, and, if it is not fairly met, is capable of having a widespread and disastrous effect on business—an effect which every business interest, directly or indirectly, but inevitably, must share.” In these words, Francis H. Sisson, vice-president Guaranty Trust Company of New York, at the mid-year meeting of the American Electric Railway Association, sounded the warning of impending cataclysm for the public utilities of the nation. And, as if to emphasize his warning, announcement was made within a week of the appointment of receivers for the New York Railways and its holding company, the Interborough Consolidated Corporation.

While these developments, like that affecting the Brooklyn Rapid Transit Company, are serious, they are by no means local in significance. A statement that more than one-tenth of the electric railway mileage in the United States is in the hands of receivers is ominous, but when we consider that practically every transportation company in the country is approaching the brink, the outlook is certainly most threatening. This can be illustrated no better than by study of a statement which is printed in the Financial and Corporate columns of this week's issue, reviewing a year's results on twelve of the largest railway properties in the United States.

The story told in those statistics, representing almost one-tenth of the mileage in the industry, is too plain to need much comment. It shows that the “big fellows” are governed by the same economic laws as the smaller properties. It is a sad commentary on the fairness of the public authorities that living rates have not been allowed and that only seven out of the twelve companies are permitted to charge more than a straight 5-cent fare. Data of this kind have a value for the executive. He can discover that his troubles are not peculiar to his own property and perhaps in studying the results elsewhere he may see the way in which his own situation can be improved. He should at least “get into the game” for co-operation.

An editorial in our Annual Statistical Number touched on the financial history of 1918 and the outlook for the current year. In that we said: “The concentration of trained minds on this problem is bound to find a solution in time.” The recent gathering of leaders of the industry in New York proved that these executives, the bankers and the public authorities have not despaired of finding a solution. Many constructive suggestions were offered, and we have no doubt that good will result from them. As one of the speakers said: “There are manhood, brains and energy enough to pull the industry up the grade which it is now climbing. The situation is not hopeless. It is going to clear.”

We quite agree with this view, even while facing such developments as those in New York. We insist, how-

ever, that all those who are interested in saving the situation must realize that the present is a time for action and not merely for optimistic words.

Committee Work of the Two Railway Engineering Societies

THE American Railway Engineering Association held its annual meeting in Chicago last week and the reports, while not so extensive as those prepared when the several committees were not working under the stress of war conditions, represented a great amount of work and progress. The results justified the decision of the association to continue committee activities during the war period. The handicaps arising from the war and particularly from governmental control of the railroads must have made committee work very difficult. The reports are the more creditable for this reason. They bring out the fact that the engineering departments of the two great divisions of the railway field have much in common. Electric railway men will benefit by much of this work performed by their brethren in the steam railroad field; hence several of the reports are abstracted in this issue.

Committee work of the American Electric Railway Engineering Association is under way again after a period of suspension and the assignments to the several committees are as listed last week in this paper. The work outlined is not unduly extensive. Our only criticism of the program is that the program is quite long, in view of the time available for committee work, and some of the topics assigned, while important, do not seem to be of a nature which require immediate solution because of war conditions. This situation can be helped by the committees in charge if they treat their topics in a way which will put “pep” into their reports. Some, at least, of the assigned subjects will allow this.

In addition to the topics assigned there are certain others which have assumed such special importance within the last year or two as to deserve consideration with respect to the possible need for the appointment of special committees to consider them. Among these are tie and timber preservation and corrugation of rails. The former is treated by the committee on wood preservation of the American Railway Engineering Association, while the latter has had special committee research in Great Britain. We believe that these are subjects of such moment as to warrant the appointment of special committees to study them for the benefit of the American Electric Railway Engineering Association. On subjects, like these, of mutual interest to the two railway engineering associations, it ought to be possible to co-operate and thus save duplication of effort.

We are pleased to note the automatic substation among the assignments for the A. E. R. E. A. committee on power generation. While it might better be considered as a power distribution matter the main thing is to bring out the salient operating features of automatic control. This will be a fine opportunity for men who have had actual experience in keeping automatics going to tell of their successes and their tribulations, if any, with the improvements made to overcome minor defects. No subject at the convention could arouse greater interest among the engineers unless possibly it is the application of welding to electric railway maintenance.

The Zone Fare in Practice—Glasgow

By WALTER JACKSON

This, the Concluding Article on Glasgow's Tramways, Considers the Standard Double-Deck Car, the Make-up of Schedules, the Hours and Rates of Pay of Transportation Employees and the Checking and Auditing of the Differential System of Graded Fares

PART THREE

Cars, Schedule Making, Employees, Fare Accounting

IT WILL be recalled that the first article on Glasgow brought out the fact that the housing and distribution of population of that city had not been adversely affected although the charge for transportation is based on the distance traveled, and the second article showed that Glasgow's combination of short headways and zone fares had encouraged

most intensive street car riding. It is now in order to describe the tools with which this heavy traffic is handled, namely, the car and the traffic employees; and with these the control of the car movement through the schedule department and the handling of the car revenue through the receiving department. Perhaps, it is not out of order to point out here the difficulty of making conclusive parallels between British and American rates of fare, standards of riding and handling of the wage problem. Such parallels are particularly

difficult in the case of Glasgow, which is the only British system of importance that has not had to raise its fare during the war. Rates of fare for given distances must necessarily be higher in the United States because of higher operating costs. In the matter of riding standards, the American is likely to have a better upholstered car, but rougher track and longer waits to offset the faster running of the car. In the handling of employees, the better load curves obtained through the encouragement of mid-day riding, make it relatively easier for British roads to avoid the long hours that have made it so hard for our operators to hold their platform men despite higher wages. These differences in conditions will be brought out in some detail in the following paragraphs.

In accordance with the usual British practice, the

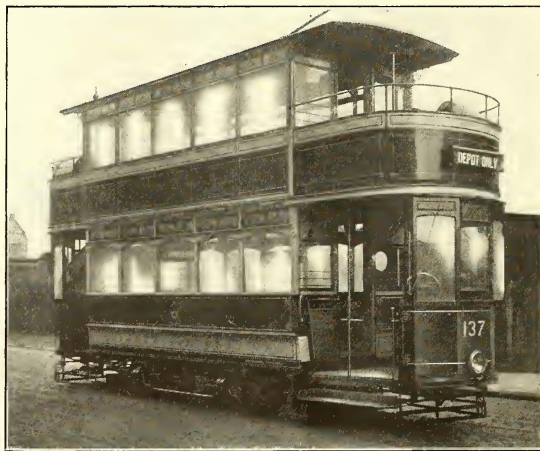
standard Glasgow car is of the double-deck type. As it seats sixty-two passengers and six more passengers are permitted to stand on the lower deck, this car may be said to have a right to the name "large." In fact, it is doubtful whether cars anywhere else come so close to carry their rated capacity for the greater part of

the day! The cars are fitted for train operation. They do not differ materially from those of a decade or more ago, except that first the principle of inclosing nearly all of the top deck was adopted and then the vestibuling of the platforms followed. At present, about one-half of the cars are vestibuled, this reconstruction having been interrupted by the war. They are of wood practically throughout, and, fully reconstructed weigh only 397 lb. per passenger. These cars, operated on an average schedule of 8.18 m.p.h. with possible stops spaced 600 ft.,

average 1.4 to 1.5 kw.-hr. per car-mile for the whole system, but careful motormen under test have actually made the same schedules with less than 1 kw.-hr. per car-mile.

Most of the cars are carried on Brill single trucks. The motor equipment comprises either two Westinghouse 49-B motors, rated at 30 hp. each, or two of the later Westinghouse 220 motors, rated at 35 to 40 hp. each. The controllers embody the electric braking features customary in British practice, but much more frequent use is made of the hand brake. Two sander mechanisms are provided, one is pedal operated, and the other electrically operated as a part of the electric brake when emergency conditions arise and a continuous flow of sand is desirable. Brake rigging is adjusted by hand.

To avoid short-circuiting and burn-out troubles from

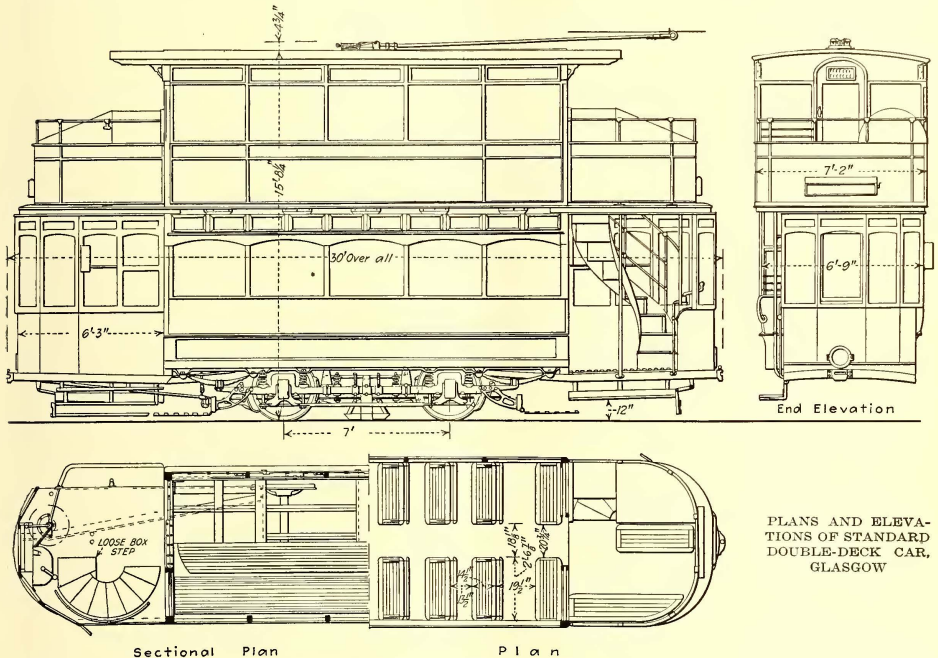


DOUBLE-DECK CAR, BEFORE ADDITION OF FRONT ROUTE-NUMBER SIGN AND WOODEN SIDE SIGNS

snow, the resistor grids are being transferred to a box on one of the platforms. On the other platform are cabinets for the solenoid and rheostat used in connection with the electrically-operated sander, for the main fuse and for the possible installation of a car-checking meter. The main circuits are carried in rubber hose, first under the platform from the controller leads, then inside the car under the longitudinal seating to outlets over the motor leads.

Owing to the lighting restrictions in force on account of fuel shortage, one of the three six-lamp (530-volt) circuits is still cut out. These lamps are rated at 25 cp.

are rarely equipped with central heating systems, and weather that would chill the pampered American to the bone leaves a Briton indifferent. In the Glasgow cars, only the sliding door in the front bulkhead on the lower deck is kept closed while the rear door on this deck is open almost all of the time. However, the passengers are at least spared the blowing in of rain or snow through monitor sash, as the air that comes in from outside through the louvers first enters perforated ducts. These side ducts are connected with longitudinal ducts running through the ceilings of both decks in such fashion as to expel bad air as well as to take in fresh



each. Of the eighteen lamps installed, one is installed on each of the four platforms and in each of the headlights. In each bulkhead is a lens or bull's-eye lamp, illuminated from inside the car by the nearest lamp, which has a slide arrangement to show red when used as a tail-light and whatever the route color may be when used as a destination marker.

The only other auxiliary circuit on these cars is that for the push buttons, dry batteries being used. These push buttons are installed in the bulkheads for operation by the conductors and at two or three places on each side within the car for operation by either passengers or conductors. The signals are of the single-stroke bell type. When the conductor is on the lower deck, the motorman waits for the usual two-bell signal; otherwise he is guided by his mirror.

One large item of operating expense which the Glasgow system is spared is that of car heating; nor does the public expect the cars to be heated. British homes

air. The side louvers which permit the entrance of air are under the control of the conductor.

When the first vestibules were installed it was found that the inclosure of one side did not prevent heavy drafts from coming down the stairway. It was necessary, therefore, to hood this stairway with a rolling shutter. The hood, incidentally prevents upper-deck passengers from trying to leave by way of the front platform.

The car interior is finished in American three-ply maple veneer. The lively appearance given by the variety of artistic car cards found in our cars is missing as the only advertising carried is of the non-revenue sort, such as notices to passengers and government war placards; nor is there any kind of advertisement on the outside of the cars—something entirely contrary to British tramway and bus practice.

Practically everything on the Glasgow cars, exclusive of the trucks and electrical equipment, is made by the

Route: *Roads or Alexandra Park and Paisley Road Toll*
Wickhams Time: _____ Depot: *Springtown*

Table Dated: _____

Date	Report	WEEK				Time, Minutes				Relief	Special
		Table	From	To	Time	From	To	Total	Relief		
1	5 2	2 5 10	10 26	10 31	5 29						
		6 12 21	18 31	4 6	5 15	9 14	1 50	11 4			
2	4 58	4 5 8	9 29	14 31	5 21	2 25	10 16				
	11 59	11 59	5 29	5 14	5 50	8 21	2 25	10 16			
					17 55	4 15	21 50				
					8 19	2 10	10 55				
3	7 2	1 7 12	12 14	5 59							
		14 5 29	4 11	6 56	5 27	9 6	2 108	11 54			
4	7 52	5 7 52	11 45	14 59	14 59	9 13	4 6	13 17			
		6 5 21	8 24	8 11	8 50	9 13	4 6	13 17			

CARHOUSE RUN OR DUTY RUN, GLASGOW CORPORATION TRAMWAYS

Glasgow Corporation Tramways. This home manufacture extends even to the seats, which are of wood and much simpler in construction than American roads feel they have to provide for their passengers.

In concluding these notes on the rolling stock, it may be mentioned that cars are inspected two or three times a week; that armature clearances are gaged, oil cups filled and gear cases examined about every 4000 miles and that a general overhauling is carried out every twelve months in peace times, war conditions having extended this period to eighteen months.

SCHEDULE MAKING

In spite of the heavy traffic in Glasgow, no cars whatever are operated between midnight and 4 a.m., plans for owl-car service having been interrupted by the war. If the labor union plans of two or three shifts a day in industrial plants are carried out, the addition will be made.

The work of the crews is laid out upon the basis of a fifty-one hour week at regular pay with a permissible addition of three hours at time and one-half. These crews are divided into three classes: "W" men, the oldest, who get their runs early and who finish early; the extras or trippers who are assigned for the morning, noon and evening peaks or Saturday afternoons and

who get a full week's work; and, third, the most recent employees who finish early one week and late the following week. Individual choice of runs according to seniority is not practiced. As a matter of fact, this method is unnecessary in view of the easier hours. The runs are assigned directly by the chief time-table clerk according to the three classifications.

Two swings a day are usual, but no continuous assignment is desired to exceed six hours. Adherence to schedule is properly held to be a matter of prime importance. Motormen must take their time daily from the timekeepers and punch their time of arrival on Bundy time clocks. They also punch similar clocks just before reaching terminals and on their way back. Lay-overs average only two and one-half minutes, which is not surprising in view of the short headways and the use of cross-overs.

For the guidance of the motormen who handle the same car in the course of the day, the time-table department prepares an individual time-point form, which shows when the car is due to pass certain important places on its route. One of these forms is pasted on a board, varnished over for preservation and then hung in the vestibule of the car to which it applies. Thus every car carries its individual schedule. Copies of these individual schedules are retained by the time-table department in a master record book so that duplicates, in case of loss, can be made at once.

A typical run or duty sheet, which the men at a given car station consult before beginning their day's work, is reproduced on this page. The reporting time is ten minutes in advance of the taking out of the car and this period counts as part of actual working time. Allowance is also made for time needed to make out daily reports.

In this particular instance, the man at the head of the list has one straight tour of five hours twenty-nine minutes, a relief of one hour fifty minutes and a second swing of three hours forty-five minutes, giving nine hours fourteen minutes working time within eleven hours and four minutes. In general, the longest total working period is nine hours thirteen minutes and the longest spread, thirteen hours nineteen minutes. Hence, even under the better conditions afforded by better load factor and absence of owl service, the Glasgow Corporation Tramways would be hard put to it to obey the Massachusetts nine-hour-in-eleven law!

Another blank reproduced is the "cycle of duties" sheet, which is made up for every depot to show each man's work for the whole week in order to take care of days off. It is customary for every platform employee

GLASGOW CORPORATION TRAMWAYS.

CYCLE OF DUTIES.

Route: *Roads or Alexandra Park and Paisley Rd Toll*

Depot: *Springtown*

Date: *13th May 1914*

Date No.	SUNDAY			MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY			SATURDAY							
	Day No.	Report	Finish	Day No.	Report	Finish	Day No.	Report	Finish	Day No.	Report	Finish	Day No.	Report	Finish	Day No.	Report	Finish	Day No.	Report	Finish					
1	Day Off			1	5 2	4 6	9 14	2	Day Off			1	Day Off			1	Day Off			1	5 2	3 52	9 28	5 14	6	
2	2	9 24	8 32	3 68	2	4 68	3 44	8 21	Day Off			2	Day Off			2	Day Off			2	4 68	4 22	8 26	5 14	28	
3	Day Off			11	12 16	12 2	9 6	11	Day Off			11	Day Off			11	Day Off			11	13 12	12 4	9 1	5 14	21	
4	4	11 14	10 24	9 13	Day Off			5	14 0	14 6	9 1	5	Day Off			5	Day Off			5	4 9	3 24	9 4	5 14	21	
5	5	11 16	10 24	9 23	1	9 4	9 15	9 1	4	Day Off			4	Day Off			4	Day Off			4	14 12	14 11	7 59	6 26	21
6	Day Off			12	13 11	12 4	8 33	12	Day Off			12	Day Off			12	Day Off			12	12 11	0 12	9 23	5 12	28	

CYCLE OF DUTIES SHEET FOR A GIVEN CARHOUSE SHOWING ASSIGNMENTS FROM WEEK TO WEEK

to have one day off weekly, the arrangement calling for Sunday off one week and some other day off during the following week. This cycle sheet shows at a glance also whether every mans is getting within the fifty-four-hour maximum and whether at least nine hours has been allowed between his runs on successive days.

TRAINING AND RATES OF PAY FOR TRANSPORTATION PERSONNEL

It is hardly necessary to say that the tremendous sacrifices of man-power which Great Britain has had to make in the Great War sadly upset its labor conditions and nowhere more so than on the street railways. What facts could tell more in a few words than this: Out of 3234 platform employees in service on Dec. 21, 1918, about 1800 were women—1500 acting as conductresses and 300 as motresses. A group of women conductors standing by a car is published on this page. Such figures imply an enormous change from the condition obtaining at the close of the fiscal year ending May 31, 1913, when it was reported that out of 2905 employees only 540 had resigned. The four classes of front-end operators instructed

bonus of 3d. for every day they have a student. To become a full-fledged motorman the indorsement of the instructor and the motor inspector is necessary.

That the zone-fare system cannot be very complicated as carried out at Glasgow would appear from the short period allowed for the training of conductors—one day in the classroom and seven days on the car under an instructor. The lesson in the classroom is carried out by assuming that the students are passengers. Each one comes out in turn to collect fare, make change, punch tickets, give signals and perform the other functions of the job. The students are taught to collect fares from the front of the car when on the lower deck, but to face forward on the upper deck in order to prevent passengers from departing without paying.

At the end of the eighth day, the student is due for indorsement by the instructor conductor, the depot clerk and the local ticket inspector. If the inspector thinks the student is not ready for service, he may recommend either dropping the student or an extension of the instruction period. The same form carries the student's signed acknowledgment that he has been taught correctly according to the rules.



A GROUP OF GLASGOW CONDUCTRESSES, WITH ENLARGED INSERT AT CENTER, TO SHOW MANNER OF CANCELING TICKET IN THE BELL PUNCH AND COUNTER

during December, 1918, and the week previous thereto were the first womanless classes handled in a long time, and it is hoped that the progress of demobilization will make the employment of more motresses unnecessary.

The instruction of motormen or motresses, who must come from the rear platform, comprises three days in school, four days with a platform instructor, one day return to school for a preliminary examination, three days more with the platform instructor and then return to school on the twelfth day for the final examination. Upon this follows a probationary period of thirty days. The students are on their full pay during the entire period. The instructor motormen receive a

The conductors who teach students also receive a daily bonus of 3d. The probationary period is three months, during which the student is paid 30s. (\$6.90) a week, at the exchange rate of \$4.60 to the pound sterling, which is the rate assumed in the following calculations.

All platform employees receive their uniforms and operating equipment, such as the bag and punch of the conductors, without charge and subject to return upon resignation. No surety bonds are demanded from either class of platform workers. All that applicants for employment need do is to refer to two previous employers and one other person of proved character.

On entering the service, each platform employee is

provided with a rule book containing instructions for both motormen and conductors, a list of telephones for emergency use, instructions for ticket inspectors and depot clerks, the corporation by-laws governing the conduct of passengers, various enactments relating to tramway construction and operation and an alphabetical list of streets, squares, places, etc. Transportation employees are also furnished with a handbook showing routes, stops, first and last cars, places of interest and importance, etc., so that they can give intelligent answers to almost any traffic inquiry.

A distinction is made in the rates of pay according to sex because the men are more steady in showing up for duty and also because they expect to stay in the business. Quite a number of the women are satisfied to work but five days instead of six. Motresses and conductresses are on the following scale of wages:

Original Rate	Per Week	War Bonus	Present Rate Fifty-one-Hr. Week	Total Earnings Fifty-four-Hr. Week
First three months	29s.	1s.	30s.	32s. 7d.
Thereafter	47s.	...	47s.	51s. 2d.

The extra three hours in the fifty-four-hour week are at overtime rates. Motresses are allowed an additional 5d. per diem, and their total earnings amount to 35s. 7d. (\$8.19) and 54s. 2d. (\$12.46), respectively.

The scale of wages for motormen and conductors follows:

	Pre-War Rates per Week	War Advances	Present Rate Fifty-one-Hour Week	Total Earnings Fifty-four-Hour Week
First year	27s.	28s. 6d.	55s. 6d.	60s. 5d.
Second year, first six months	28s.	28s. 6d.	56s. 6d.	61s. 6d.
Second year, second six months	29s.	28s. 6d.	57s. 6d.	62s. 7d.
Third year, first six months	31s.	28s. 6d.	59s. 6d.	64s. 9d.
Third year, second six months	32s.	28s. 6d.	60s. 6d.	65s. 10d.
Fourth year	33s.	28s. 6d.	61s. 6d.	66s. 11d.
Fifth year	34s.	28s. 6d.	62s. 6d.	68s.
Sixth year	34s.	28s. 6d.	62s. 6d.	68s.
Seventh year	34s.	28s. 6d.	62s. 6d.	68s.
Thereafter	35s.	28s. 6d.	63s. 6d.	69s. 1d.

From the foregoing table it will be seen that all grades of platform men received a total war advance of \$6.55 weekly, which is more than equal to the original starting wage of \$6.21. The maximum wage today is \$15.89 per week.

A bonus of 26s. (\$5.98) or at the rate of 1s. a week is paid every six months to platform employees who have incurred no accidents. All classes of transportation employees also receive six days vacation per annum with pay.

DUTIES AND PAY OF PETTY OFFICERS

At Glasgow, the uniformed supervisory force is differentiated into ticket inspectors and timekeepers, 100 in all for 3234 platform employees. Of this number, thirty-six act as timekeepers and fifty-four as ticket inspectors. About ten plain-clothes men, who are conductors on special service, are also employed to report on violations of speed ordinances by other vehicles, to watch for ride-stealing boys, etc. There is no secret service.

The chief duty of the ticket inspector, as the name indicates, is to examine the tickets of passengers on the cars to ascertain if the proper fares have been paid and the tickets issued and punched correctly. On boarding a car, they require the conductor to produce his waybill (trip sheet) and the working packet of tickets in use in order that they may check the passengers' tickets. If a passenger refuses to show his

ticket or to pay the proper fare, it is sufficient to secure his name and address for a report to the general manager; but if the passenger refuses even this information, the police may be called. Ticket inspectors must also report every case of a passenger who has paid a fare being without a ticket, or having an unpunched or improperly punched ticket, or having a ticket the number of which does not correspond with the fare paid or the waybill. This report must be accompanied by the name and address of the passenger and of any witnesses of the occurrence.

The miscellaneous duties of ticket inspectors include reports on the efficiency shown by instructor conductors, on reckless car operation and on failures to adhere to time points, and the inspectors are expected to telephone at once concerning accidents, fires, damage to car, track and line, etc. In general, the ticket inspectors are authorized to enforce proper operation, car cleanliness, and the like. If necessary, they may suspend (but not discharge) any motorman, conductor or outside traffic employee in case of insubordination, drunkenness, neglect of duty or other improper conduct, reporting the facts in writing to the general manager.

The chief duty of the timekeepers is to see that the cars are run according to schedule. These men are generally stationed at crew relief points where they note the on and off times of departing and arriving platform employees. At depots, crews must report ten minutes before the time of taking out the car, but at junctions and other relief points they are expected simply to be on time for their cars. The place at which every car employee first reports for duty is at a depot. Timekeepers may use their discretion in asking the depots for substitutes for absentees.

Both the ticket inspectors and timekeepers receive more pay than the ranks from which they come. During the first year they are on probation at their old platform pay. Their days off, vacation, etc., are planned as in the case of platform employees; in addition, no time is deducted for illness. No better instance of the effect of the war on wages could be afforded than the following comparison of the pre-war and present wages of the supervisory officers:

TICKET AND MOTORMEN (STREET) INSPECTORS		
First year from 35s. to 70s.	.....	\$8.05 to \$16.10
Second year from 37s. to 71s.	.....	8.28 to 16.33
Third year from 39s. to 74s.	.....	8.97 to 17.02
Fourth year from 41s. to 76s.	.....	9.43 to 17.48
Fifth year from 43s. to 78s.	.....	9.89 to 17.94
Thereafter from 45s. to 80s.	.....	10.35 to 18.40

TIMEKEEPERS OR TRAFFIC REGULATORS		
First year from 35s. to 70s.	.....	\$8.05 to \$16.10
Second year from 36s. to 71s.	.....	8.28 to 16.33
Third year from 37s. to 72s.	.....	8.51 to 16.56
Fourth year from 38s. to 73s.	.....	8.74 to 16.79
Fifth year from 39s. to 74s.	.....	8.97 to 17.02
Sixth year from 40s. to 75s.	.....	9.20 to 17.25
Thereafter from 42s. to 77s.	.....	9.66 to 17.71

Thus Glasgow's war wages are about the same as America's pre-war wages.

AUDITING OF ZONE FARES FROM CONDUCTOR TO TREASURY

Every conductor begins the day's work with packets of the serially-numbered fare receipts applicable to his route. These receipts are obtained from the depot clerk. The tickets of each classification are made up in pads of twenty-five or fifty and bear an initialing identification in addition to the colors and numbers.

Glasgow Corporation Tramways.									
LONDON ROAD AND DALMUIR.									
Conductor's Name,		Date,		Car No.		Date,		No.	
Consecutive No. of Cash Bag handed into Office.									
CLASSIFICATION		FIRST NUMBERS		LAST NUMBERS		SOLD.	A.	B.	D.
From No.	To No.	From No.	To No.	From No.	To No.				
1d									
1d									
1 1/2d									
2d									
2 1/2d									
3d									
3 1/2d									
4d									
Totals.									

As many as eight rates of fare (1d. to 4d.) are used at Glasgow, which corresponds to the number of sections in the conductor's ticket-holder. However, as the 1d. tickets are sold in greater quantity than all the others combined, the conductor at his discretion uses several sections for these tickets

GLASGOW CORPORATION TRAMWAYS.									
CAMBUSLANG and ANNIESLAND.									
Route No.		Car No.		Driver, C. Cochran		Date,		10 DEC 1919	
TOTAL WAY BILL									
Fare.	Letter.	Quantity Issued to Passengers	Number of Last Package	Number of First Package	First Numbers	Quantity Issued to Conductor	Fare.	Amount	
1d.	Je	12 1/2	1900	0788	1550	719	1d.	1	9 1/2
1d.	kg	558	2800	0343	0684	342	1d.	1	8 6
1 1/2d.	cd	237	7000	6863	6997	134	1 1/2d.		16 9
2d.	sd	287	0300	0113	0202	19	2d.		14 10
2 1/2d.	hd	110	3800	1699	1697	7	2 1/2d.		1 5 1/2
3d.	hd	94		5006	5007	1	3d.		3
3 1/2d.	hd	33		5567			3 1/2d.		
4d.	hd	13		3787			4d.		
Total Sold,						1295			4 11 9
Punch Register,						1256			4 11 1
Over,									
Short,						X 38			

punch clippings counted

I beg to acknowledge having received the Tickets entered on this Way Bill, together with Pencil and Bag and Punch No. 22827

Mary Hunt Conductor

CONDUCTOR'S WAYBILL OR TRIP SHEET, SHOWING RECORD OF TICKETS RECEIVED AND ISSUED AND THE CHECK BY THE RECEIVING DEPARTMENT

and places the less popular varieties in his reserve ticket cabinet. Conductors issue as many as 2000 tickets a day. Reproductions of tickets were shown in the second Glasgow article on page 448 of the issue of this paper for March 8. They are canceled by a punch mark in the destination section.

A record of the first number and letter identification of each classification issued is made on the conductor's waybill (trip sheet), reproduced, which is issued in duplicate. Receipt for the tickets and their correctness in numbering a quantity is knowledge by his initialing of the waybill.

During the day, the conductor makes his returns to cash clerks en route and not to the depot clerks. In making the return for either a half or round trip as the case may be, he hands in the original of the waybill with his own record of the top numbers left on the pad of each classification. It is the function of the cash clerk, and not of the conductor, to figure how many of each class of ticket have been sold, what the revenue per classification is and what the last numbers of each kind of ticket are. In other words, the conductor makes a blind return by giving up all the money in his bag

CONDUCTOR'S TOTAL WAYBILL MADE UP AND CHECKED THROUGH BY THE RECEIVING DEPARTMENT FROM THE INDIVIDUAL TRIP OR HALF-TRIP SHEETS

exclusive of the 3s. 6d. with which he starts the day, leaving the cash clerk to note down the shorts or overs. On concluding his last trip at the depot, the conductor turns in his tickets, cash and punch to the depot clerk. The latter simply counts the cash and leaves the checking of the ticket numbers to the receiving department. The receipt of this cash for individual conductors is entered in a cash receipt book which goes to the receiving department daily. Part of a page from one of these books is reproduced on this page.

The transactions shown on the individual waybills are summarized on the "total" waybill, which is also reproduced, and covers a conductor's full day's work. This record which is made up by the receiving department, shows not only the actual total discrepancy based on the difference between the tickets issued and the cash received but also whether the punch registration itself is equivalent to the number of tickets issued. So far as the cash discrepancy are concerned, 1 1/2d. in one day or 1s. in one

RECEIPT.				RECEIPT.			
Brought Forward	£	s	d	Brought Forward	£	s	d
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Conductor.....	19			Conductor.....	19		
Amount,				Amount,			
Carried Forward, £				Carried Forward, £			

Glasgow Corporation Tramways.									
Route,		Conductor,		Date,		Depot.			
A comparison of your Punch Register Tickets, and Cash Returns shows a deficit as under									
You will please sign and return to Head Office immediately, making any explanation you can offer.									
JAS. DALRYMPLE, General Manager.									
A Deficit in Money amounting to						£ s d			
A Deficit of 1 1/2d. Tickets, amounting to									
Do 1d. do. do.									
Do 1 1/2d. do. do.									
Do 2d. do. do.									
Do 2 1/2d. do. do.									
Do 3d. do. do.									
Do 3 1/2d. do. do.									
Do 4d. do. do.									
Lock not returned.									
Key not returned.									
Damage to Tin Box.									
Damage to Punch.									
EXPLANATION.									
Signature.....									

week is admissible. Discrepancies between the registration shown by the punch and the number of tickets issued generally are due to failure to punch every ticket as issued. A difference in excess of 6 means the counting of the punchings. This is a tedious job since it is necessary to assort more than 1000 punchings of different colors, a separate shade being used for each rate of fare. In ordinary times, it is necessary to make checks of this kind from thirty-five to fifty times a day; at the present time, however, the figure is about 50 per cent greater because of the large number of inexperienced conductresses.

As soon as shorts have been entered, the original waybills containing the notation of error are returned to the conductor's depot for his signed acknowledgment. On going back to the receiving department, entry is made in the "shorts" ledger and the waybills are filed for a time for reference in case of dispute. The final blank reproduced shows a more elaborate form which must be filled out by conductors whose reports are grossly incorrect or who have failed to turn in their cash and ticket-handling equipment at the end of the day.

Overs are not returned to the conductors. Formerly they were divided among the men at the end of the year; now they go directly into their benefit organization known as the Friendly Society.

Should a conductor catch himself issuing a higher-rate ticket by mistake, he may turn it in for credit provided he gives the name and address of the passenger affected. In any event, if he retains the wrongly-issued ticket, he must issue another one of the correct denomination since every passenger must have a receipt. Occurrences of this kind are rare. He may also put aside and turn in any ticket which is too thick for the bell punch.

SIZE OF STAFF REQUIRED

The personnel employed by the receiving department in connection with the auditing of cash and tickets comprises 131 women or girls classified as follows: Cash room, ten; outside cash offices, thirty-eight; ticket room, sixty-eight; traffic sheets, nine, and punches, six. All counting and checking are done by hand, the management having found that the individual amounts handled are too small to justify the use of calculating machines. It is probable, nevertheless, that a decimal coinage would simplify the work, judging by the fact that the clerks may be seen referring to calculating tables.

The returns from the depot clerks and cash clerks go to the receiving department in locked cases which are fitted with compartments for copper, silver, punches, waybills, etc. Delivery is made in motor trucks twice a day.

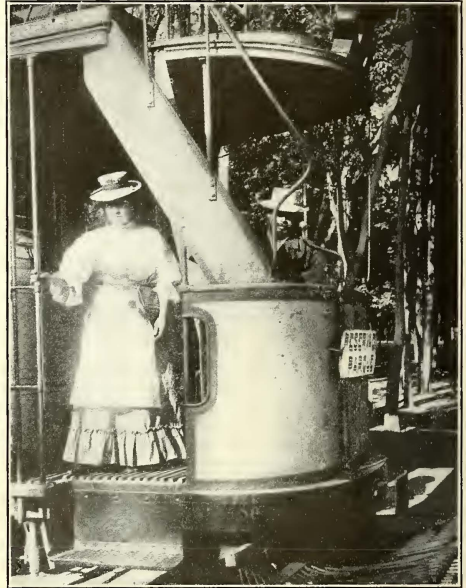
The fare receipts used at Glasgow are printed by the Glasgow Numerical Ticket & Check Book Printing Company. The Tramway purchased 430,946,566 tickets for the fiscal year ended May 31, 1918, of which 2,877,300 were scrapped. The punches are leased from the Bell Punch & Printing Company, London. As no work is done at the receiving department on Sundays, it is necessary to have at least two punches per conductor since the punchings chamber cannot hold more than 2000 cuttings comfortably.

From the foregoing account, it will be seen that the handling of fare receipts in Glasgow is a comparatively simple affair, especially as there are no transfer tickets

to complicate the situation. Furthermore, the checking up of the fare receipts is far easier than the checking of the time limit and other features of the American transfer.

Women Conductors in Chile

THE electric railway companies of Valparaiso, Chile, found it possible to employ women as conductors on the railway cars of that city long before they were so employed in the United States. For that reason the accompanying photograph, which has been loaned to the Washington correspondent of this paper by the Pan-American Union, will perhaps prove of interest.



WOMAN CONDUCTOR AT VALPARAISO

This view was taken almost ten years ago, it is stated at the Pan-American Union in Washington, with the additional remark that the picture holds good for to-day, even to the fact, it is declared, that the women conductors go about their work in voluminous skirts rather than the shorter ones used by the women conductors in the United States, although, as women's fashions in Valparaiso change as frequently as they do in other communities, there is a possibility that the skirts worn by the conductors in Chile now are not quite so voluminous as those shown in the picture.

Conservation of Fuel by "Daylight Saving"

Because of the fact that the clocks of this country will be moved forward one hour at 2 o'clock to-morrow morning March 30, in compliance with the "Daylight Saving" law, the statement by the United States Fuel Administration is interesting that it estimates 1,250,000 tons of coal were saved during seven months last year through the operation of this law.

How the Public Feels About It

Representative Public Leaders of Various Classes Give in Replies to Questionnaire Their Opinions Regarding Guarantee of Return, Aid Through Taxation, Municipal Versus State Ownership, and Indeterminate Franchises

RECENTLY the ELECTRIC RAILWAY JOURNAL, it will be recalled, sent out a questionnaire to more than 400 public service commissioners, mayors, representatives of chambers of commerce and other leaders interested in municipal affairs. The desire was to secure helpful expressions of public opinion in regard to the electric railway situation.

Although only about 15 per cent of the total mailing list replied, it was possible in the issue of Feb. 22 to present a striking summary showing that the difficulties encountered by electric lines in trying to secure higher fares were due generally to the lack of public understanding, politics, defects in the regulatory system, and utility sins of omission and commission.

Similarly, in the issue of March 1, it was possible to give a résumé of what to the various public representatives seemed constructive suggestions for overcoming the above-mentioned difficulties. It seemed to be the consensus of opinion that the railroads can convince the public of their needs by frankly stating all the facts, subject perhaps to public verification, asking only for a fair return on a reasonable investment and winning the public confidence through efficient and adequate service and a manifest desire to please.

These two summaries covered the replies to about two-thirds of the questionnaire. The replies to the remaining queries will be summarized in this concluding article. In advance of a statement of the questions and answers, it may be remarked that the third section of the questionnaire covered certain moot points of franchise construction, municipal ownership and railway economics, and the constructive suggestions resulting were somewhat limited because of the complexity of the subject matter.

The several questions and a brief analysis of the replies follow:

Can the franchise relationship fairly be made to provide a guaranteed return upon the invested capital, and if so, should this return be fixed at a uniform percentage throughout the life of the franchise or should the return on the portion of the investment made in any particular period be made to vary according to the circumstances of that time?

The replies to the first part of this question were both favorable and unfavorable, but the supporters of a guaranteed return seemed to have slightly the better of the argument. In the advocacy of a guaranteed return, however, there was in some cases the reservation that public representation in control was a necessary adjunct.

As for the second part of the question, those who met the issue squarely seemed inclined, in the case of the commissioners and civicists, to recognize the advisability of a flexible rate of return so that the current market rate for new money invested in any particular period might be met. The mayors and representatives of chambers of commerce, however, favored to a small degree a fixed return to avoid "confusion" and "disagreement." One business man averred that this policy

would check extensions in periods of high costs and encourage them in periods of low costs, "thus resulting in the good of both the public and the company."

Some of the more detailed replies are published below:

COMMISSIONERS

If possible, the franchise should provide for a guaranteed minimum rate of return on the property value to be fixed or ascertained yearly or at stated intervals.

A fair return should be guaranteed or provided, but in a great crisis like the one just gone through, the public should not be required to bear all the burden. The utility should stand its share in the lean years, having enjoyed the advantage in the fatter ones.

It would be very difficult, for traffic costs and other elements are fluctuating. A fixed rate of fare sufficient to provide an operating surplus to be held in trust for the preservation and continuance of the service is a reasonable suggestion.

Under commission regulation the franchise granted by a municipality should contain no provision as to rates or return upon the investment.

A guaranteed rate of return can fairly be provided upon stockholders' capital, subject to adjustment every ten years in harmony with prevailing interest rates on prime securities.

A guaranteed return is feasible and desirable under a cooperative plan of operation, but with the necessary proviso that capital expenditures cannot be made without approval of standards and extent of track, equipment, etc., and that the public shall not be financially responsible for obsolescence due to changes or improvements in the art of transportation.

The return should not be fixed as a uniform percentage throughout the life of the franchise, but it should be made to vary according to the circumstances of the time.

I do not favor a guaranteed return as a general legislative policy, but I do believe that the basis of the return should be made a definite matter. It should be clear in any case what the investors are entitled to receive, and the rates should be such as to give full opportunity to obtain a fair return, but the risk of getting the business in most cases would probably better remain with the companies.

The rate of return on the investment in any period should vary according to the conditions of that period.

The rate of return should be uniform, as indicated by average over many years. But the fare should be flexible to maintain the fixed rate of return plus a reasonable surplus in prosperous years, to meet cost changes.

MAYORS

The new ordinance in this city provides for a fixed return on the investment with an additional return as fares are reduced as an incentive to economical management.

The rate of return should vary according to circumstances.

A fixed percentage would be preferable, as it would remove an additional point of contention.

No guaranteed return should be thought of unless the public receives a representation in the management.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

To be perfectly fair, the rate of return should vary with the interest rate.

I believe that the first point is to obtain the actual, liberal fair value of the property without regard to capitalization; allow the company a fixed percentage (about 8 per cent) on this as return on investment. Capital expenditures after that should be added to the fixed valuation and the same percentage paid. There should be an elastic fare but no guarantee by the public treasury. Service and capital expenses should be controlled by the municipal government, through a department with an administrator paid by the city. The return should be guaranteed at a uniform percentage

in order that capital may be willing to help finance such properties.

The nearest thing I have heard toward a fair solution is the proposal to fix a definite rate of return to the stockholders, the earnings beyond that point to be divided between the stockholders and the city. Franchises to be drawn up in the future will have to carry a large element of public control in order to enjoy any popularity among the laboring classes.

The rate of return should be agreed on in the franchise. Any other plan would lead to uncertainty, confusion and possible juggling.

The return can fairly be guaranteed, and it should be made a uniform percentage on the investment during the term of the franchise. A varying return subject to the changes of the general economic status would result in disagreements. While this might be regarded as an arbitrary rule, yet it would check extensions during periods of high costs and encourage them during periods of low costs, thereby resulting in the good of both the public and the company.

The franchise relationship can and should be made to provide a guaranteed return upon invested capital, and at a rate to correspond to that obtainable in comparable enterprises at the time of the investment or adjustment. This may be adjusted from time to time as conditions vary, or as security issues are refunded.

The franchise should be sufficiently elastic to provide reasonable investment return under all circumstances. These hard and fast bargains, in which one or the other suffers, are not desirable. They breed trouble all the time.

CIVICISTS

It is, of course, logical that the state which attempts to limit the return to a maximum should protect the investor by guaranteeing a minimum, but I do not believe that this is practicable. If adopted, the return should be uniform.

The return of investment made should vary according to the circumstances of the time.

If the government is going to guarantee a return it should control and direct operation.

The return must be capable of responding to market conditions. There should be no artificial terms in an arrangement.

To what extent, if at all, would social politics justify the support of electric railway service in communities by some contribution through the taxation power of the state?

It is difficult to determine the relative weights of the varying sorts of replies to this question. The trend of thought underlying them all, however, seems to run in this way. It has generally been believed to be theoretically just for the car rider to support the service, and the idea of support through taxation is one up to which the public is not educated, although its proponents are apparently growing.

If for any vital reason, such as the necessity of preventing city congestion or curtailment or suspension of service, public aid through taxation is necessitated as a practical last-resort matter, whatever the theoretical justice of the procedure may be, the public is likely, several replies assert, to insist upon closer union with the utility, even to the extent of ownership of the property.

Various specimen replies follow:

COMMISSIONERS

Tax payers would perhaps properly say that if the state or municipality is going to support public utilities, it would better own them. Public ownership would probably follow efforts to secure tax aid.

Inasmuch as the utilities are publicly controlled and the man who has his money invested has little to say about his own business, the guarantee plan through taxation would seem to be just, but I doubt whether public sentiment has been sufficiently educated up to that.

It has not dawned on the social political mind of the middle west that utility service should be supported by taxation. There is still lurking the other idea—that such companies should contribute to the public fund through franchise taxes, taxes on earnings, paving repairs, etc.

The rates charged by a utility should be sufficient to support it without resort to taxation.

Any actual deficit under a 5-cent fare should be made good from a tax on land values only.

With a guaranteed return I favor support thereof by taxation of all property instead of the entire burden being placed on the traveling public. Every form of property benefits directly or indirectly by these necessary public facilities and should therefore pay its share.

Yes, with substantial public control—not merely regulation subject to court review.

In some cases, in order to prevent undue congestion of population, the cost of service may very well be made up by taxation. But that should not be fixed by general policy but left to local settlement.

Such a policy would be unfair to the taxpayer who makes no use of the electric railway. The users should pay such a price for the use as to give the company a fair return upon its investment or the property should be scrapped.

If there is any valid strong social reason for any kind of preferential rates, such as labor tickets, school tickets, etc., the difference in fair cost of that special service over receipts should be paid out of tax funds rather than loaded onto the other fare payers, who may not be represented in the same proportion as they pay fares. School tickets at low rates are a social necessity.

MAYORS

Support through taxation is justified to prevent congestion of population where a 5-cent fare must be maintained to assure a movement of population to the outskirts of the city.

Municipal ownership either with or without municipal operation would be preferable if resort must be made to direct taxation.

Under existing conditions, the policy of aid through taxation would be indefensible and totally without funds to support it.

There is no justification for support of electric railway service by contribution from state taxes—any more than there would be in the case of newspapers, gas and electric utilities or express companies. It is true that state highways are partly maintained by general taxation, but the time is coming when the vehicle tax will bear the whole cost.

Aid through taxation is justified to an extent large enough to encourage riding—to make electric railways practically moving sidewalks.

Every public utility should stand on its own feet.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

Let those who use utility service pay a just amount for it. Real estate is taxed enough now.

Taxes are high now, and car riders should pay enough to support the roads. State support to the electric lines would open a door through which other privately-owned public service corporations might want to crowd in.

If after thorough examination reasonable cause is shown for community aid, it should be done only when expenditures are controlled by a public official directly responsible to the people.

Public opinion is not ready for this yet. Many people still think public utility operation should yield a profit to the city so as to reduce taxes.

Electric railway service is essential to every community of any consequence, and if private capital unaided cannot be enlisted, then the community would be justified in guaranteeing the deficit from operation and interest on the investment by a general tax levy.

In communities badly needing transportation, the grant of aid would be a local proposition, as through subscription to bonds, capital stock, etc., by individuals.

Electric railways should be self-supported as far as financial support is concerned. Possibly concessions should be made in public works benefits.

Aid through taxation should be granted only on condition that the company make an entirely new contract with the community.

CIVICISTS

The taxing power of the state should not be used to support industries which render variable service to individual citizens.

We may have to come to some arrangement for public subsidies. I do not feel sure that the public ever will be educated to pay more than 5 cents, but with the shrinking

power of the dollar the public may finally look on the dime as they formerly looked upon the nickel.

If the state or cities look over the utilities, there is no question but that general taxes would have to aid in maintaining the utilities, but the people would be in favor of this as long as they owned the roads.

No general rule is possible. If this question is answered in the affirmative, the government should operate the railway.

Aid should be granted through taxation only to the extent that the public adequately participates in the management and in the results of joint investment.

This is entirely a matter of local policy and should be attempted only after every practicable device to develop higher load factors and subordinate sources of revenue have been used.

Free transportation would be as reasonable and as civilizing an agency as free education.

To what extent, if at all, should the car riders in a large municipality support non-paying service to suburban communities?

Several of the replies to this question favored the idea that all railway service to suburban communities should be self-supporting. The majority, however, seemed inclined toward the belief that a limited part of the burden of non-paying suburban lines should be borne by the urban car riders in order to foster suburban development and thus promote the general community welfare. Several urged the desirability of having suburban real estate bear a larger part of the burden than it now does.

Some of the detailed replies follow:

COMMISSIONERS

For a reasonable period pending the development of new districts, all patrons of all transportation lines should bear a share of development costs. The company should be allowed to amortize a share. Many unprofitable extensions and new lines are built to develop tracks of land, in which event the land men should aid or guarantee.

This is inevitable in the building of a city and is not contrary to good government or regulation.

The urban car riders should support suburban service only to such an extent as to prevent prohibitive or unreasonable suburban fares upon lines reasonably demanded by the general welfare of the locality served. No fixed rule any more specific could be made to fit all cases.

For the general public interest a utility should expect to maintain non-paying service to a limited extent, and the loss would have to be made up by the remainder of the system.

None whatever. A tax on land values of the entire zone should be provided.

The property of all communities served should pay its share, and likewise the traveling public should pay in proportion to the service rendered to all suburban additions and towns outside of reasonably defined city limits.

About 15 per cent.

Each service should be self-supporting.

It is undoubtedly an advantage socially to encourage means which reduce crowded living conditions, but this may be carried so far as to mean an uneconomic, wasteful scattering of the population. Low car fares mean almost always higher prices for outlying real estate, so that what the city community pays in carrying low-priced transportation to outlying districts really goes wholly into speculators' pockets. A fare proportioned to cost of service for each reasonably-sized zone seems the logical one.

MAYORS

Only to prevent congestion of population.

Theoretically they should support it, but actually they would not knowingly tolerate it. The public knows that companies in the past have built on to "boom" additions, in consideration of a bonus paid by the land company.

The burden should be put on the real estate benefited.

All lines are parts of one system, and no part can be segregated and its profits or losses separately determined.

A city should bear the burden of a system giving service to suburban districts. In no other way can such districts obtain good service. How far this principle should apply is a question.

A city should support suburban service only to the extent that it benefits therefrom.

It depends entirely on the suburban buying power.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

Urban car riders should not be called upon to support non-paying suburban service, but the railway might ask for assistance in building the lines from the new communities served and from the larger merchants, etc., in the populous center.

Give the suburbs a zone system by which they will pay for what they get. This might delay development of the suburbs, but it seems the only fair way.

The fares paid in the entire municipality should be sufficiently high to pay a just return on the investment on the entire system, taking into account both the paying and the non-paying divisions when operated as one enterprise.

City riders should not support non-paying suburban routes. This loss could be remedied, perhaps, by curtailed service or increased rates to suburbs.

Suburban fares outside city limits can and should be regulated on the zone or mileage system.

Except for unreasonable distances, the fare should be exactly the same in the suburbs as in the crowded sections.

While the municipality may be benefited by ready transportation service to its suburban communities, it is also true that the suburbs are as much beholden to the center municipality. Their interests and benefits are reciprocal and, with the exception of specific cases, each should pay its own way.

Practically not at all. The dweller outside of the municipality chooses that residence to avoid taxation and other burdens of city residence, and he should properly pay a higher rate of car fare.

CIVICISTS

Theoretically, not at all; practically, I see no way to avoid it.

At the present time we permit real estate speculators to take off the cream of real estate values created by the extension of electric railway lines to the suburbs. It would seem that some method should be devised for making the land owners directly benefited pay for these extensions. The principle of special assessment ought to be applied here. If this were done, there would not be much of a problem left.

It frequently would be advantageous to a community to provide suburban service for the sake of promoting business, facilitating the accommodation of workers and laying the basis for urban development. The question so much depends upon local conditions that I do not believe it is susceptible of any general answer.

I believe there is much to be hoped for from a zone system of fares for large cities. It is logical and wholesome.

It would not be necessary for city car riders to support suburban service if the municipality had the power to collect the unearned investment on the property values created by improved transportation.

Is it necessary that, in any new relationship between electric railways and the communities they serve, provision be made for public ownership at the option of the public?

Although a good many of the respondents felt constrained to avow their disapproval of municipal ownership, they and most of the others stated the conviction that it would be desirable, if not necessary, to give the public an opportunity to take over electric railways if and when it so desired. Several felt that the public would lose interest in municipal ownership if it knew that it could buy the properties. Those who answered the above-stated query in the negative constituted a small minority in the first three classes, *i. e.*, except the civicists.

Some of the more striking replies are given below:

COMMISSIONERS

It would be a wise provision, because if the public knew that it might acquire properties at its pleasure the public would lose interest in the case.

It would probably be wise and would make it easier for the utility to secure an adjustment by making such a provision.

Such a provision would doubtless contribute to a more favorable public sentiment on the theory that it furnished the public with a possible remedy in the event of unsatisfactory private operation. Note I say "on the theory" that it provided a remedy.

No objection if this will stimulate public confidence and interest, the real object to be attained.

While I do not favor a general public ownership program, the communities should be free by law to determine for themselves how they will use their local utilities with, of course, fair dealings with the investors. The basis of purchase might very well be made a matter of general policy.

Most certainly. The public is more and more viewing a utility as only its temporary substitute in management and investment. When a definite basis for taking over the property is outlined in the franchise and accounts are open to audit by public authority, the pressure for public ownership will be reduced, for I can scarcely see how unfair practices can exist under this condition.

MAYORS

Provision should be made for municipal ownership at the option of the public, and if the franchise is not a limited one, there should be also the provision that if a new franchise is granted to any other company, it shall purchase the property of the old company at some fair valuation. If this is not done, it will not be possible for the operating company to finance any improvements or to keep up its property during the growing years of the franchise period.

Yes—or something approaching an equivalent like the "London Sliding Scale" in gas franchises with a city director in the board.

Public sentiment leans in this direction now.

No franchise should be granted without this provision.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

The giving of such an option might disarm suspicion.

A purchase provision can be included in the franchise and would be a beautiful dream to help the contract through, but most companies are bonded for more than any liberal fair value and the community could not purchase for less than the indebtedness. In time depreciation might bring the two amounts together. Most thinking people are opposed to municipal ownership.

This would be a wise provision to make, to be taken advantage of or not, as the public demand might dictate.

Such a provision is not necessary, but most communities would insist upon it.

It might be best, so as to avoid lengthy proceedings should the community decide for public ownership.

CIVICISTS

A provision for purchase is not necessary but seems desirable. Government should have the option upon fair terms always.

Necessary and desirable. But with enlightened management and greater education the resort to public ownership will be long postponed.

Potential public ownership is imperative for the promotion of scientific transportation and public morality.

If ultimate public ownership is an aim to be attained, should such ownership of electric railways be vested in municipalities or in the state, the fact being borne in mind that most electric railways serve communities other than the largest municipality in their district?

In regard to whether public ownership, if it were to come, should be vested in municipalities or the state, the mayors and civicists took for the most part the city side. The commissioners and representatives of chambers of commerce, however, were divided almost evenly.

The idea was expressed in a large number of instances that the territorial extent of the railway should be the determining factor. A purely urban system would thus be left in the hands of the city, but a railway extending out into the suburbs and into other cities would better be placed under state ownership. An alternative in the latter case, however, would be the formation under state authority of a utility "district" with power to issue bonds.

Various detailed replies to this question are given in the following paragraphs:

COMMISSIONERS

The state should own the properties if the lines are partly within and partly without municipalities, and the city if the lines are strictly intra-city.

If public ownership comes at all, it should be through the organization and medium of "private companies" in hands of trustees for the public investment or guarantee.

It should be vested in a separate public corporation covering the entire transportation district.

Both state and municipality. The state should have superior jurisdiction and the power to use the city system as the terminal and operating organization for the lines serving the suburban towns.

In the municipalities under state regulation and supervision.

In most instances municipal ownership would probably prove the better, but in others state or even national ownership would doubtless be necessary.

All public utilities radiating from a populous center should be controlled by a metropolitan district, in which the state should be represented but the local communities largely in joint control, so adjusted that one community should not dominate the whole situation.

MAYORS

Ownership would be vested in municipalities. It would not be difficult for several municipalities to get together. Perhaps laws might be passed extending the jurisdiction of cities outside their limits as in the case of the Metropolitan Park Commission of Boston. This would take care of the situation up to the point where the service becomes interurban.

State ownership, except where a railway serves a municipality exclusively.

Possibly a so-called "district" which would have power from the state to issue bonds, and which would be made up from the communities served.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

Ownership should be vested in the governmental unit to which the utility is by jurisdiction responsible.

Railways should be owned in zones of service, like a school district, but this is probably impracticable.

State ownership would be more likely to be satisfactory, as it would keep the roads out of the field of local politics.

Of the two evils, state ownership would be the less.

Ownership of city electric railways should be municipal, and traffic arrangements should be entered into between municipalities and private suburban companies using the city streets. Suburban electric railways would probably continue under private ownership until public opinion justified their acquisition by the state.

Fundamentally such ownership should be vested in the state, but such a plan would not be popular because it kills all local interest and pride in the proposition.

The railways should be owned by the cities, with state regulation of service to outside communities.

Control should lie with municipalities, for cities have had more experience in operating utilities, and control would be vested only in the hands of the patrons.

CIVICISTS

No civic unit should attempt to operate except for its own people, and therefore ownership should vest in the state.

State ownership would not be feasible. Ownership should be vested in the predominating municipality, irrespective of the number of communities served.

The "public utility district" of California points the way to the necessity of home rule in the administration of transportation as of all other public services. Public regulation is a failure.

If an electric railway were owned by one municipality, how could suburban communities be assured of adequate service and fair rates?

In the event of public ownership by cities, the question of control over suburban service and rates would be of more than usual importance. It was the opinion of some mayors that the municipalities could be trusted

to give fair rates and adequate service to the suburban communities, especially in view of their self-interest in suburban property.

Other mayors doubted this, but only one suggested that the only safe method would be to have control over suburban service and rates in the hands of the state regulatory body. The majority of the commissioners, business men and civicists agreed as to the advisability of this latter method. Two commissioners would supervise even municipally-owned urban utilities.

Some of the replies were as follows:

COMMISSIONERS

Unless the regulatory body of the state had jurisdiction over the municipal authorities, a very difficult problem would be presented. If the state could have authority over joint rates and service, the matter would be simplified, but it is not likely the cities would submit in states where power is vested in cities.

Let state control and regulation apply to municipally owned utilities just as it now applies to those privately owned.

Only through the exercise of state police power of rate regulation and control.

The interest of the municipality in becoming the commercial center of the community would prompt suburban extensions. Indeed, the tendency would be to over-build rather than to refuse to make extensions.

Self-interest of the larger municipality could be depended upon to give satisfactory service and rates to suburbs.

The municipality would become a public utility and as such the state would regulate it as it now regulates private utilities.

Through the formation of a municipal utility district.

This is a problem which would unquestionably cause no end of trouble, unless some larger authority sufficiently free from domination by the principal city were created to have final authority. The metropolitan district idea appeals to me as feasible.

All electric service outside of the municipality should be under control of the state railway commission.

MAYORS

The railway should be left subject to the public service commission as it is now.

Adequate control of extensions by municipalities with authority to establish reasonable rates of fares on a particular extension, even though higher than the general city fare, backed by public opinion, would probably take care of such situation.

I should expect no difficulty here.

Suburban patrons probably would not get adequate service and fair rates.

The patrons of suburban lines would be treated fairly by the city.

Assurance can probably not be given, but the service can be made as adequate as it is now. What a private corporation can do the municipality can do.

That is easy. How are water rates kept fair in publicly owned plants? The management stands or falls on the judgment of the voters on this matter.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

By the establishment of a state public service commission, with authority to fix rates and schedules.

Through commissions formed to adjudicate such matters, as the Interstate Commerce Commission has controlled the practices of the steam roads.

Suburban railways should be under regulation and control of state commissions and be permitted to effect proper traffic arrangements with municipally owned lines just as they do at present with privately owned lines.

It would be impossible to handle satisfactorily the charge for service if the railways were controlled by one community.

CIVICISTS

The present state commissions would have to make the necessary adjustment. This would not be a vital problem as cities are more and more interested in the suburbs since they realize that suburbs are a main factor in a healthy city.

Outside companies could receive running rights into centers of large towns.

It is done in Great Britain. State public utility commissions do not deal fairly with municipalities here. There must be worked out an organic relationship governing the spheres of federal, state and municipal ownership.

If under a franchise public ownership could be secured at any time, at the option of the public, would there be any objection to having the franchise not otherwise limited as to duration?

This last question brought a swarm of answers to the effect that an indeterminate franchise is not objectionable provided the public can at its will secure ownership of the railways. Several, however, preferred term franchises because of the opportunity for bargaining and revision under changed conditions. One combination view was that there should be definite terms with recurring periods of privilege of purchase.

A few of the replies follow:

COMMISSIONERS

I like the Wisconsin law, which provides for continuing franchises, with full control vested in the state.

No. A public utility franchise should be unlimited but subject to cancellation or revocation under proper circumstances and by a proper tribunal.

No, granted gradual amortization is provided.

If a property may be taken over any time by the public, I see no reason for any other time limit on the franchise.

Absolutely none—provided the fares and conditions of service as originally defined are subject to adjustment at reasonable intervals according to costs, etc.

All franchisees should have a limitation.

MAYORS

It is very undesirable from the point of view of the municipality to grant franchises unlimited as to time.

Complete municipal control over the operation of the property with a simple method for its purchase by the municipality, with the allowance of an additional return on the actual investment, should give better results than the limited franchise.

There should be no time limitation as to date of expiration if the franchise contains a provision for public ownership at the option of the public.

I believe in a fairly long term franchise.

Yes. Public ownership might not be possible or desirable. Yet some local control is necessary, and the only way to obtain this is in revision at the end of the period.

REPRESENTATIVES OF CHAMBERS OF COMMERCE

Yes. Franchisees should be limited, so that the two parties—railway and citizen—can arrange their affairs as conditions change. A franchise with option to purchase at any time could be drawn which would be fair to all, but I doubt if any railway is as yet so hard up that it would agree to one fair to anyone but itself.

I can see no objection, unless that it might offer a precedent for other public service corporations, not open to public ownership, to ask unlimited franchisees.

It seems to me that the franchise should be subject to review at stated intervals.

The policy of giving only revocable locations and not franchisees of definite or unlimited periods appears in the practice of years to be sound and best.

I prefer definite franchise terms with recurring periods of the privilege of purchase on reasonable notice.

CIVICISTS

I see none, except that in a community which does not believe in public ownership this might be equivalent to a perpetual franchise.

Yes, there should be some other limitation as to time. Cities are not always in a position to finance such projects.

Yes—unless an amortization plan were adopted. It is possible so to draw a grant as to make it indeterminate and yet protect the public.

An unlimited franchise under any circumstances would be undesirable because of changing conditions which would make necessary the adjustment of provisions other than those relating to option of purchase by the public.

Theoretically the indeterminate franchise is best, but the experience with it in Massachusetts is not reassuring.

The Traffic Check and What It Showed on the Public Service Railway

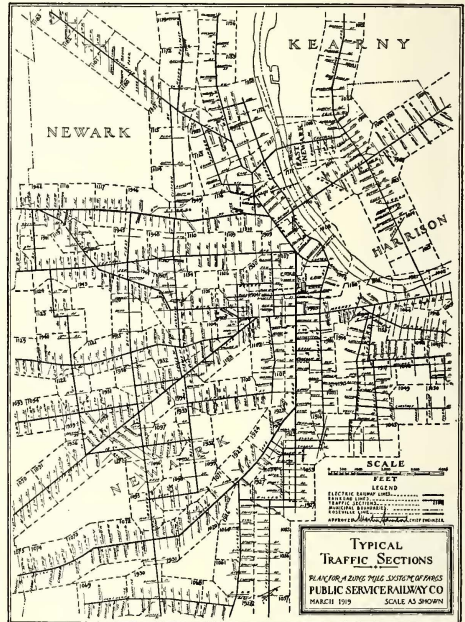
Extensive "Origin to Destination" Check of Passenger Traffic, Conducted During Latter Part of Last Year, and Study of Location of Various Traffic Centers, Indicated Desirability of Multiplicity of Zones with Low Progressive Charge per Zone — This Principle Was Adopted in Zone System Proposed

IN THE TWO preceding issues of this paper an account has been given of the proposed zone fare system of the Public Service Railway, as described in a report submitted on March 11 to the Board of Public Utility Commissioners of New Jersey. The conclusion in the report as to the adoption of the particular fare system selected was based on a traffic survey taken on the entire system between Aug. 19 and Oct. 11, 1918. The report describes three kinds of traffic count, which have been used in the past, namely, the "on and off" check, the "cordon" count and the origin to destination check."

The "on and off" check, the report explains, is obtained by stationing checkers on as many cars as the circumstances require to record the number of persons boarding and alighting at each stop of the car. From this record, when tabulated, can be determined the number of persons riding in the car past any given point. This method of traffic count has generally been employed in connection with the determination of the adequacy of the service. In the cordon count, observers at designated points note the number of persons on each car as it passes. If the points selected are possible zone limits, this count will determine the number of persons riding from one zone to another.

According to the report, the great defect of both of these kinds of check is the fact that the traffic information obtained by them is necessarily incomplete. Under either method it is impossible to determine the distance traveled by any particular passenger or group of passengers. The "on and off" check shows where a person boards the car but it does not show where that particular person leaves the car. It is impossible to determine by this method the number of people taking short rides or the number taking rides of any given length. As soon as a passenger boards the car his identity is lost. He becomes one of the total number on the car. It is impossible to tell whether he gets off at the next stop or rides 5 miles or more. All that can be determined from the use of the "on and off" check, or this check combined with the "cordon count," is the number of persons who board or alight within a given area and the number of persons passing a given point. It is impossible to determine the amount of short riding which exists between two or more zones or whether persons boarding a car at a transfer point began their journey at that point or whether they traveled to the transfer point on another car. Even though the character of fare paid by the passenger is noted, no information can be secured as to the length of the ride previously taken on other cars by persons boarding at transfer points and presenting transfers.

The report also observes that the experience of companies in other cities in which a zone system has been tried, showed that in almost every case there was a wide divergence between the traffic estimated under the zone



PORTION OF TRAFFIC SECTION MAP FOR ESSEX DIVISION, MADE FOR TRAFFIC COUNT

system and that which was actually handled after the system became effective. In every instance the travel was overestimated and the earnings were correspondingly overestimated. This led the management of the Public Service Railway to the conclusion that the traffic data upon which these previous decisions were based were faulty and that in its case a more elaborate method of traffic count should be adopted. In consequence, the third method, which was very similar to that employed by the Director of Transit of Philadelphia in 1913, was employed. In this, a record is taken of the point at which the passenger gets on the car and the point to which he travels.

PREPARING FOR THE TRAFFIC CHECK

The first step was to divide the territory covered by the lines of the Public Service Railway into arbitrary districts or sections, known as traffic sections. These sections were usually $\frac{1}{4}$ mile in length, that is to say, in the direction in which the line runs. In thinly settled territory, sections of $\frac{1}{2}$ mile, and in some cases

1 mile, were adopted. The subdivision of each operating division into traffic sections was begun from the main points of traffic, such as for example, Broad and Market Streets and the Public Service Terminal in Newark, and each traffic section was given an individual number. A portion of the traffic section map for the Essex division, showing the district surrounding Broad and Market Streets, is illustrated by the map on page 644. The boundaries of the sections and the number of each section are indicated in the original map in red.

The 3/4-mile division adopted was smaller than that in the Philadelphia count mentioned where districts 1 mile square were used, but the purpose of the traffic count on the Public Service Railway was different from that which inspired the Philadelphia count. The latter check was taken to determine the necessity for rapid transit lines and the traffic which would be handled by such lines when and if constructed. The traffic section of 1 mile square was not considered advisable for the Public Service Railway because, while it simplified the work of compilation, it did not permit of sufficient elasticity in later applying the traffic data for the purpose of accurately determining proper zone points or the revenue which would be derived under a zone plan.

Following the division of the property into traffic sections, the next step was the preparation of "stop number cards." The stops on each line at which passengers may board or leave the cars were listed in sequence in each direction. An arbitrary number was then assigned to each stop. A list was then prepared showing the stops, in sequence, in each direction, together with the stop number and the section number for each stop. This information was then printed upon heavy Manila cards, showing on one side the stops in sequence "outbound" and on the reverse side the stops in sequence "inbound."

METHOD OF TAKING THE CHECK

The method of taking the check on the cars was to provide two checkers on each car, one of whom, called the "distributor checker," was required to station himself at the rear of the car near the conductor (when prepayment cars were under check) in a position where he could see the character of fare paid to the conductor by the passenger. This checker was supplied with "count slips," the appearance of which is shown in the cut on this page. On the reverse side of this slip the following words appeared:

Collection of this information is necessitated by an order of the Board of Public Utility Commissioners of the State of New Jersey. We ask your co-operation.

HOW TO FILL OUT THIS SLIP

Please write in space opposite words "I will end my car ride at" the street to which you intend to ride. If that street is on some line to which you intend to transfer, write in your destination on the transfer line and not the point where you leave this car to transfer.

These slips, identical in form, were used in two colors, white slips being used on all inbound trips and pink slips on outbound trips. As the passenger boarded the car the distributor observed whether he paid a cash fare or presented a transfer. A passenger presenting a transfer was not given a count slip, because of the fact that his journey on the transfer was presumably covered by the information furnished on the count slip given to him on the original line at the time he boarded the car and paid his initial fare. If the passenger paid a cash fare the distributor was instructed to observe

whether he purchased a transfer. If he did so, the distributor crossed the large T appearing on the right-hand side of the count slip; the purpose of doing so being to call the attention of the second checker, known as the "collector checker," to the fact that the passenger had bought a transfer and was destined to some point on another line than that on which the check was then being taken. While the passenger was paying his fare the distributor checker noted in the upper right-hand corner the number of the stop at which the passenger boarded the car, ascertaining this number from his "stop number card." Having filled in the "stop number," the distributor handed the count slip to the passenger, with the request that he write in his destination. After the passenger had been seated and had had sufficient time to look over the slip and fill in the desired information, the second checker, known as the "collector checker," approached the passenger and requested the slip. In practice, a large proportion of passengers did not themselves write in their destination, owing to the

OFF AT STOP No.	PUBLIC SERVICE RAILWAY CO. PASSENGER COUNT RECORD OUTBOUND	ON AT STOP No.
SECTION No.		SECTION No.
Date.....		Line.....
Starting Time.....		A. M. P. M.
PASSENGER WILL PLEASE FILL OUT		
I will end my car ride at.....		
.....Street-Ave.		
.....Municipality		
SEE EXPLANATION ON OTHER SIDE		

FRONT OF "COUNT SLIP"—ONE OF THESE WAS FILLED OUT FOR EACH PASSENGER

fact that they did not have a pencil with them. In such cases the collector requested the passenger to hand him the count slip. The collector observed whether the T was crossed, thereby ascertaining whether the passenger had bought a transfer. The collector requested the passenger to inform him as to the passenger's destination. As an extra precaution checkers were instructed to ascertain from passengers giving their destination a transfer point whether the passenger intended to transfer to another line. The information as to the destination of the passenger was written in on the lower part of the count slip, the name of the street intersection and the municipality being given. If the passenger for any reason refused to give the desired information, the collector was instructed to thank the passenger and to note the fact that the passenger had refused to furnish the information. In a large proportion of such cases, which were comparatively few in number, the collector secured the blank count slip from the passenger and wrote across the face of it "Refused," turning this slip in, together with the others.

Incidentally it might be said that a notable spirit of co-operation was displayed by car riders, as evidenced by the comparative infrequency of refusals to furnish the desired information. This co-operation was fostered by a series of newspaper advertisements and posters displayed in the cars, explaining the reason for the check and the necessity for public co-operation to enable the company to carry out the order of the Board of Public Utility Commissioners concerning the formulation of a

zone plan. It will be remembered that the reverse side of the count slip carried an explanation to the effect that the collection of the information was necessitated by an order of the Board of Public Utility Commissioners.

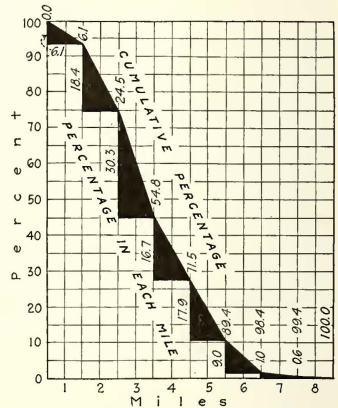
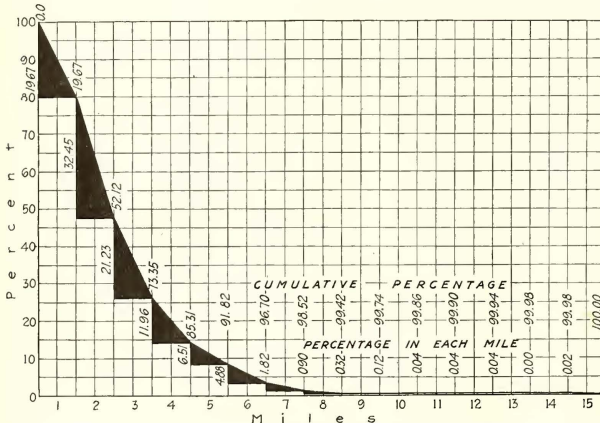
At the end of each half trip the "collector checker" inserted the count slips collected during that half trip in an envelope, which he sealed, filling out the following information on the face of the envelope:—date, name of line, inbound or outbound, run number, trip number, time of beginning half round trip, number of count slips inclosed, number of persons refusing information, any unusual circumstances, such as delays due to street blockades, the name of the distributor and the name of the collector.

PROPORTION OF CARS CHECKED

The matter of the proportion of service or the percentage of cars which should be checked was given most careful consideration. The investigation by the Director of Transit of the City of Philadelphia, already mentioned, was based upon counting the passengers on about one car in every five (eighteen-hour) cars oper-

believed possible to recruit the required number of checkers from the student bodies of some half dozen colleges and universities. Because of the large number of men called for military service under the selective service act, however, it was necessary to make many substitutions and it was found necessary to extend the field from which the substitutes were recruited to include seniors in high schools and other men possessing the required education. At the outset, at the time the check was inaugurated on Aug. 19, forty-seven men were available for service. The number was steadily increased, reaching a maximum of 100 men. The men were thoroughly trained for their duties; in addition, careful supervision of the work was provided through the regular street inspectors of the company.

The company followed the same plan used in the Philadelphia investigation of confining the check to what might be termed the normal days of the week, that is, Monday to Friday, both inclusive; in other words, no checks were taken on Saturdays, Sundays or holidays, or on the day following a holiday. Special provision was made for checking the lines entering the Public



A NUMBER OF THESE CHARTS WERE PREPARED, SHOWING THE DISTRIBUTION OF HOMES OF EMPLOYEES OF MANUFACTURING ESTABLISHMENTS SERVED BY THE COMPANY. THAT AT THE LEFT IS THE AVERAGE OF TWELVE SUCH CHARTS; THAT AT THE RIGHT SHOWS THE SITUATION IN THE WESTINGHOUSE LAMP WORKS

ated. The percentage of service thus checked was fully as great as had been covered in other checks previously taken. In view of the great importance of an accurate record it was deemed advisable by the Public Service Railway to take a larger percentage of the cars than were covered in Philadelphia and to extend the check to include not only eighteen-hour cars operated but also to make provision by which the desired percentage of service could be checked in the rush-hour period as well as when the lines were operated on the base schedule. The percentage of cars checked varied somewhat between the different lines, depending upon the headway and the traffic characteristics of the line, but averaged for the system 5 per cent of the total number of trips.

ENGAGEMENT AND TRAINING OF CHECKERS

The problem of securing a large number of competent persons to take the check at a time when war industries had practically depleted the labor market was one which required some time for its solution. Owing to the season of the year in which the check was taken, it was

Service terminal and other points where a system of prepayment areas prevailed.

The compilation of the results of this check was a stupendous task and required a large staff of clerks until the data showing the movement in both directions between each traffic section and every other traffic section on the system were finally compiled.

OTHER STUDIES CONDUCTED

While this traffic count was being taken and tabulated, the company made a study of other factors which had a bearing on the fare system to be selected. These included: (1) a distribution of the population in the district served; (2) the location of the factories, railroad stations and other centers controlling or creating traffic; (3) trackage built by the company within recent years to indicate tendencies in traffic movement; (4) growth in assessed valuations of sections served; (5) fares on competing steam railroads; (6) equalization of fares over the system, and (7) effect of the zone fare system on various classes of riders.

Maps showing the distribution of population were pre-

pared and clearly demonstrated the impossibility of creating central fare zones, sufficiently small to permit of a charge of a 5-cent fare and include therein even a considerable part of the built-up city areas. The situation in this respect, the report says, is entirely different from that which prevails in the smaller cities of New England served by the Bay State Street Railway, or the conditions existing in Providence or Pawtucket served by the Rhode Island Company. Not only is the territory comprised in Hudson, Bergen and Essex divisions more thickly populated than any sections in which a zone system has heretofore been tried, but the thickly populated area covers a wider range of territory than any city in America in which a zone experiment has been undertaken. Reproductions of two of these maps, those for the Essex Division and for the Hudson and Bergen Divisions, were published on pages 526 and 527 of the issue of this paper for March 15, although the titles under those maps were transposed.

LOCATION OF FACTORIES AS DETERMINING SYSTEM

Maps of the locations of the various factories, schools, theaters, etc., were also made and showed a condition which had an important bearing on the selection of the fare system finally adopted. The commonly assumed condition of cities with a central district in which is found not only office buildings and retail stores, but in which manufacturing establishments, giving employ-

DISTRIBUTION OF FACTORIES AROUND NEWARK

	No. Factories	Total Employees
Located within 1 mile from Broad and Market and Market	29	19,190
Located between 1 and 2 miles from Broad and Market	19	29,230
Located between 2 and 3 miles from Broad and Market	18	14,075
Located between 3 and 4 miles from Broad and Market	13	28,900
Located between 4 and 5 miles from Broad and Market	10	10,240
Totals	88	94,625

ment to the workers of the community, are also located did not exist in the communities served by the Public Service Railway. It is true, of course, that there is a concentration of retail establishments, department stores and office buildings in the limited area ordinarily referred to as the business center of the city, but the large manufacturing establishments which give employment to the major portion of the population are widely scattered. Thus, if Broad and Market Streets, Newark, the business heart of the city, is taken as a center, the distribution of factories, employing 250 or more men each, is as indicated in the table above. The same general condition applies to Jersey City. It is less true of Paterson and Passaic, but even in these communities, the larger proportion of the establishments and their employees are found outside the 1-mile zone. A study was also made of the distances at which the employees in some of the larger factories lived from the works, and typical diagrams are shown. These facts had an important influence in deciding the company in favor of the zone system adopted, with its multiplicity of zones and small added rate per zone.

DETERMINING STANDBY AND MOVEMENT COSTS

There remains to be given a description of the process by which the fairness and reasonableness of the proposed rates of 5 cents for the first zone and 1 cent per zone-mile thereafter were determined. The Public Service Railway followed the general method

employed by the Wisconsin Railroad Commission in the Milwaukee Electric Railway & Light case, with such variations from the Milwaukee basis of apportionment of terminal and movement expenses, and the basis used by Sloan, Huddle, Feustel & Freeman in the Bay State Street Railway case, as were necessary to fit conditions peculiar to the New Jersey company.

APPORTIONMENT OF OPERATING ACCOUNTS TO DETERMINE COST OF SERVICE OF PUBLIC SERVICE RAILWAY

Way and Structures:	Track-Mile	Car-Mile	Car-Hour	Revenue Passengers Carried
1 Superintendence	a	a		
2 Ballast	100%			
3 Ties	100%			
4 Rails	10%	90%		
5 Rails, rail fastenings and joints	10%	90%		
6 Special work	10%	100%		
8 Roadway and track labor	40%	60%		
9 Miscellaneous track and roadway expense	b	b		
10 Paving	50%	50%		
11 Cleaning and sanding track	90%	10%		
12 Removal of snow and ice	90%	10%		
14 Elevated structures and foundations	90%	10%		
15 Bridges, trestles and culverts	90%	10%		
16 Crossings, fences and signs	100%			
17 Signal and interlocking apparatus	90%	10%		
18 Telephone and telegraph lines	90%	10%		
19 Miscellaneous way expenses	c			
20 Poles and fixtures	100%			
21 Underground conduits	100%			
22 Distribution system	100%			
23 Miscellaneous distribution expense	d	d		
24 Buildings, fixtures and grounds	90%	10%		
25 Depreciation of way and structures was distributed among the various accounts affected.				

Equipment:			
29 Superintendence	e 4.02%	e 95.98%	
30 Passenger and combination cars *	f	f	
32 Service cars		100%	
33 Electric equipment of cars		100%	
36 Shop equipment	g 4.02%	g 95.98%	
37 Shop expenses	g 4.02%	g 95.98%	
38 Repair of vehicles	g 4.02%	g 95.98%	
40 Depreciation of equipment distributed to various accounts, as shown above.			

Power:		
59 Power from other sources		100%

Conducting Transportation:			
63 Superintendence	h	h	h
63c		100%	
64 Passenger conductors, motor-men and trainmen		100%	
66 Miscellaneous car service employees		100%	
67 Miscellaneous car service expenses			
68 Station employees			100%
69 Station expenses			100%
70 Carhouse employees			100%
71 Carhouse expenses			100%
72 Operation of signal and interlocking system			100%
78 Other transportation expenses	i	i	

Traffic:			
79 Superintendence and solicitation and advertising			100%
80 Injuries and damages			100%

General and Miscellaneous:			
97 Rent of tracks and facilities		100%	

Summary of Other General and Miscellaneous Expenses and Taxes:				
	7.28%	39.67%	41.06%	11.99%

(a) Overhead, Accounts Nos. 2-24.
 (b) Overhead, Accounts Nos. 2-5 and 10-11.
 (c) Overhead, Accounts Nos. 2-16.
 (d) Overhead, Accounts Nos. 17-18 and 20-22.
 (e) Overhead, Accounts Nos. 30-38.
 (f) Twenty-five per cent of depreciation (for obsolescence) charged to track miles and 100 per cent of the balance to car-miles.
 (g) Overhead, Accounts Nos. 30-33.
 (h) Overhead, Accounts Nos. 63c and 64-78.
 (i) Overhead, Accounts Nos. 63c and 64-72.
 * One-half of 61 per cent of Account No. 30 (for painting cars) is charged to track-miles.
 † Inspectors, assistants and starters represent 50 per cent of Account No. 63 taken as Account No. 63c.
 ‡ Account No. 67 is apportioned as follows: 55 per cent—Lamp Lubricants, Waste and Miscellaneous Supplies, 100 per cent to car-miles, \$158,400; 40 per cent—Inspector expenses, 100 per cent revenue passengers carried, \$115,000; 5 per cent—Miscellaneous Car Service Expense, 100 per cent to car-miles, \$14,400.
 ** All general expenses and taxes are treated as overhead and apportioned on basis of total direct expenses, with exceptions of Account No. 92, "Injuries and Damages," and Account No. 97, "Rent of Tracks and Facilities."

The theory underlying the apportionment of operating costs, as expressed by the Wisconsin commission, is that, in the first place, costs such as a portion of maintenance and repair of roadway and rolling stock, power expenses varying with the demand, depreciation due to the elements, and a portion of the return on the investment are dependent upon the size or location of the plant and are not affected by any possibility of increased traffic. These are terminal costs.

SOME COSTS PARTLY VARIABLE

With a limited demand for service, however, certain additional costs are occasioned. Among these are wages of conductors and motormen, the output cost of power, and that portion of maintenance and depreciation of roadway and rolling stock caused by travel and wear. A portion of such costs will vary with the number of passengers hauled. These expenses are partly fixed and partly variable and may hence be divided between movement and terminal costs dependent upon traffic conditions on each line. The ratio of the average carload to the comfortable load will determine the division.

Moreover, there are additional costs which undoubtedly vary with the number of passengers carried or density of traffic. Among these are the cost of injuries and damages and a certain part of the transportation expenses, notably the cost of car station employees, dispatchers, operation of the telephone system, and the cost of printing tickets and transfers. This entire group of expenses is included in movement costs.

In addition to the foregoing three groups there is a small additional portion of the total expenditures which cannot be definitely localized, such as administrative costs. Such overhead costs are prorated in the proportion that the direct movement and terminal costs bear to their total.

The rule promulgated by the Wisconsin commission and since generally followed in such investigations, the report of the Public Service Railway says, has been to select for expenses varying with the volume of traffic a traffic unit, such as the car-mile or the car-hour, and for expenses not affected by the volume of traffic a stationary unit, such as the track-mile. In addition, there remains a class of expense varying directly with the number of passengers carried. Accordingly the operating accounts prescribed by the Board of Public Utility Commissioners of New Jersey were apportioned among these four groups, as shown in the accompanying table on page 647.

TRANSFER PASSENGERS COST MORE

The most important variation in the present case concerns the matter of a repetition of the full terminal charge against a transfer passenger. The "readiness-to-serve" cost for the person about to board a car on a transfer is as great as that of the person paying a cash fare. The same facilities must be provided for each. The transfer passenger uses two cars, boards and alights twice—increasing the accident hazard from this source—requires the issuance of a paper ticket and the expense of checking, auditing and accounting for the same, and in other ways is a more expensive passenger to haul for a given distance than the passenger traveling on only one car.

If the terminal or "stand-by" costs were figured on the basis of the total number of persons boarding the cars, irrespective of whether they paid a cash fare or

secured a transfer, the average stand-by cost of the Public Service Railway for the year ending June 30, 1920, would be about 3.384 cents. This sum would represent, on a strict basis of accounting, the stand-by cost which should be paid by the transfer rider when he boarded the initial car and again when he boarded the transfer car, the movement cost also being paid for the distance ridden on each car.

While the company felt it to be manifestly impractical to work such a radical revision in American practice, it believed that the transfer passenger should contribute something toward the extra expense which he causes. It decided to recommend that of the total stand-by cost of a transfer passenger 1 cent should be charged to him and the balance of 2.384 cents distributed over those using transfers and those riding on only one car. The transfer for which the passenger would pay 1 cent on the initial car would enable him to escape the payment of the stand-by charge on the transfer car, and, therefore, would effect in substance a saving of 4 cents below the rate which would be charged a person beginning his journey on the transfer car at the transfer point and paying an initial fare.

The company, therefore, calculated its cost of ride as follows for the year ending June 30, 1920:

Expenses varying with car-mile	\$7,463,197
Expenses varying with car-hour	7,724,471
Fixed charges	5,350,000
Contingencies and return on investment	1,228,988
Total	\$21,766,656
44.29 per cent (percentage of passenger-miles to seat-miles) represents movement costs	9,640,452
55.71 per cent (for extra seats) represents stand-by costs	12,126,204
Stand-by costs are made up as follows:	
Expenses varying with track-mile or those independent of traffic	1,368,447
Proportion of movement costs, as above	12,126,204
Total	\$13,494,651
Deduction for revenue from 1 cent for transfer	858,048
Balance for passengers paying initial fares	\$12,636,603
Division by the number of passengers paying initial fare gives 4.0381 cents for the stand-by cost per passenger.	
Movement costs are made up as follows:	
Expenses varying with the passengers carried	\$2,255,745
Proportion of movement costs, as above	9,640,452
Total	\$11,896,197
Division by number of zone miles gives 0.99007 cent for the movement cost per zone-mile.	

A table showing what would be the total cost of handling passengers for rides up to ten zone-miles was published in the ELECTRIC RAILWAY JOURNAL of March 15, page 528.

How Soldiers Are Trained

Those interested in the training of railway employees according to army methods will have an opportunity to examine an exhibit on this subject on the third floor of the Engineering Societies Building, New York, from April 1 to April 12, 1919. The exhibit shows the methods developed by the committee on classification of personnel in the army and consists of a collection of wall charts, forms, photographs and models showing how the army finds out what men can do best and how it uses that information, how officers are rated and fitted into place and how their work is checked and supervised. The collection is being shown under the auspices of the National Association of Corporation Schools and the United Engineering Society. It was on exhibition for several weeks at Washington where it attracted so much attention that in response to many requests the adjutant-general consented to its display in other cities.

A. R. E. A. Holds Post-War Convention

Assembly of Railway Engineers at Chicago Last Week Was the Largest Gathering in the History of the Association—A Summary of the Reports of Interest to Electric Railways Is Given

THE twentieth annual convention of the American Railway Engineering Association was held at the Congress Hotel, Chicago, on March 18, 19 and 20, while the National Railway Appliance Association simultaneously held its exhibit in the Coliseum. That the return to peace conditions and the prospects of the return of the railroads to private operation has had a stimulating influence on this industry is evidenced by the exceptionally large attendance. The registration at the A. R. E. A. sessions reached the high-water mark of 509 and it is stated that the attendance at the Coliseum aggregated more than 23,000. No little credit for this large attendance is due to the fact that the Railroad Administration urged all engineering and maintenance of way officers who could be spared to attend, and also to the fact that little construction and maintenance work is now being done.

The A. R. E. A. program began on Tuesday morning at 10 with an address by President C. A. Morse. He spoke of the benefits to be derived from the arrangements by which the association is to work in closer connection with the American Railway Association and of the importance of the fact that the report of the track committee giving recommendations for standard frogs and switches had been approved by a committee of manufacturers, and he urged a wider adoption by the larger railroads of the standards of the association. Greater uniformity is needed in the matter of forms for reports and records in connection with maintenance of way and structures and in the rail sections used.

Following the reports of the secretary and the treasurer which showed ninety-seven new members admitted during the year and more than \$37,000 on hand on Dec. 31, 1918, the various reports were received and acted upon. Those reports which are of especial interest to electric railway men are abstracted very briefly below.

REPORTS PRESENTED

Signals and Interlocking—A very complete report was presented on the problem of signaling single-track roads with reference to the effect of signaling and proper location of passing sidings on the capacity of the line. In order to apply and test formulas and methods in use, the committee worked out an analysis of the effect of passing track locations on 88 miles of line. Results were given in the form of graphical charts showing results obtained with the present as well as with proposed arrangements of passing sidings. A report was also given on automatic train control, which should be of particular interest to large electric railway rapid transit systems.

It was brought out in the discussion on this report that all the matter submitted has been passed on and approved by the Signal Association.

Economics of Railway Labor—In a report on labor-saving devices the committee presented a list of sixty such devices with short descriptions of these machines and their purposes.

The discussion on this subject concerned the advisability of giving the roadmaster more latitude in the placing of men on his division and emphasized the fact that the low rate of efficiency of laborers is due to the housing and food furnished these men by the railroads. At an evening session this report was continued by the presentation of a series of slides illustrating the use of labor-saving devices.

Track—The committee on track presented plans for split switches, split-switch fixtures, rigid frogs and spring frogs. A progress report was also presented on the matter of reducing the taper of the tread of wheels from 1 in 20 to 1 in 38, and on canting the rail inward.

A considerable discussion arose as to the wisdom of adopting the committee report recommending the bolted frog as standard practice without showing any alternate or permissible plan including the clamped frog, for many thousand miles of railroad are using this latter type successfully. The plans were adopted with the provision that the committee at the next convention recommend a plan for a clamped frog and report further on adjustment of the connecting rods.

CONCRETE FENCE POSTS FAVORED

Signs, Fences and Crossings—The reports of this committee consisted of the presentation of the subjects of the protection of grade crossings, of the operation of crossing signal bells and of concrete and steel fence posts. Many data were presented on concrete types of posts, together with steel fence posts and braces. Comparatively few steel posts were used during the year. Those roads on which wood posts are standard were not inclined to change to other types at present prices. In general, those roads using concrete and steel posts report satisfactory service.

Wood Preservation—Important revisions were made in specifications for creosote oil and for creosote coal-tar solution. The method for determining absorption was revised to include a method covering creosote coal-tar solution. The wording and details of the analysis of creosote oils was revised to include fuller details. Important revisions were also made in the specifications for zinc chloride to bring them up to date. A specification was adopted covering a method for determining the strength of the zinc chloride solution, as well as a revision in the specification for treatment of ties by the Burnett process.

An extensive report was presented on zinc-treated ties. Particular attention was called to the need for thoroughly air seasoning zinc chloride-treated ties at least sixty days before placing them in the tracks. This will increase their spike-holding power, save in shipping weight, reduce the tendency to leaching, and prevent signal disturbance. Climatic conditions control results obtained with this treatment more than with any other, and in localities where excessive rainfall is found, as on the Gulf and Atlantic coasts, the zinc chloride treatment will not give as good results as in

the Central and Western states, but in any event the treatment will double the life of the timber. The committee recommended as a subject for future consideration "the availability and use of sodium fluoride as a preservative for cross-ties."

These revised specifications adopted are the same as proposed for adoption by the American Wood Preservers' Association.

Stresses on Track—The work of this important committee was hindered by the war, and comparatively little progress was reported, although considerable data have been gathered on stresses under and in the tie, and work is progressing on the principles governing the design of tracks.

Roadway—This committee presented conclusions on the methods of preventing and curing water pockets in the roadway, and included an abstract of the report of the deputy commissioner of public highways for the State of New York on the subject of frost action with reference to the maintenance of pavements. Considerable information was presented on rolling roadbed with a steam roller.

After some discussion as to the value of the profiles submitted as indicating losses due to shrinkage of embankments, because nothing was said about subsidence or materials, they were received as information. The remainder of the report concerning the prevention of water pockets was also accepted.

REVISED SPECIFICATION FOR STEEL RAILS PRESENTED

Rail—This committee presented a report on the methods of testing rail joints, together with a revised specification for steel rails. This latter includes a change in the manganese content, an increase in the carbon content for rails over 111 lb. per yard in weight, a change in the acceptance analysis so that acceptance depends on a sample from the finished rail instead of a ladle test ingot. The quick bend test was also included as an alternative for the drop test.

The results of an investigation of heat treatment of joint bars shows that while ordinarily the rail joint has a lower elastic limit than the unbroken rail, still joints made with bars of suitable design and heat treatment have elastic limits higher than the continuous rail. A further report of interest was presented on the subject of transverse fissures in rails. Investigations have shown that failures from this source have been much less numerous in rails from reheated blooms than from direct-rolled rails. A report on the results secured by seventeen roads with frictionless rail on curves gives data of interest.

The revised rail specifications were accepted for discussion and printing in the Proceedings and the recommended method of testing rail joints was adopted.

Electricity—This committee submitted a list of definitions of electrical terms for insertion in the Manual.

Delegates from the committee have met with a committee from the American Electric Railway Engineering Association and discussed the subject of specifications for transmission-line crossings over railroad right-of-way and the report is now being printed. It will be ready for action of the fall meeting of the A. E. R. E. A.

Ties—Reports for information were presented covering the effect of the design of tie plates and track spikes on the durability of ties, and on the methods used by railroads for controlling tie renewals. The usual report on substitute ties contains one item of interest in its reference to the test of the Goodlett ties

on the Oakland, Antioch & Eastern Railway. This type of track tie was described in the ELECTRIC RAILWAY JOURNAL of Jan. 11, page 100.

As usual, considerable discussion developed on the screw spike. One statement was to the effect that this spike would undoubtedly prolong the life of soft pine ties and another was that one of the errors made in its use was the substitution in a tie of the screw spike by another with the same diameter of shank, but a different thread. This naturally spoils the thread in the wood. The Lackawanna uses the screw spike with flat-bottomed plates to eliminate the excessive wear of flanged plates on creosoted bridge ties. The committee reported that it was not prepared to present conclusions on the relative merits of cut and screw spikes.

It was urged that preliminary inspection of ties for renewal rather than post mortem examination be given more consideration. One road stipulates that a track foreman cannot renew more than a designated number of ties per rail length without inspection and permission by his superior. The reports were received as information.

INCREASED ATTENTION GIVEN TO CONCRETE SLAB BALLAST

Ballast—The report of this committee contained additions to bibliography of ballast and ballasting. The elimination of soft spots in roadbeds by means of concrete slab ballast is receiving increased attention and merits further study. The diagram of a ballast gang of seventy-seven men was accepted as a suggested diagram for such a force, but some of the members felt this was a larger force than necessary.

Economics of Railway Location—The report of this committee included the effect of curvature on the cost of maintenance of way and equipment.

It should be pointed out here that the theory heretofore accepted is that curve expenses, including rail wear, generally vary directly with the degree of central angle irrespective of the degree of curve, while this committee suggests that excess rail wear on curves and some other curve expenses, vary with the square of the degree of curve. This report brought out extended debate in which it was stated that rail wear depends to some extent on elevation in curves and upon the class of traffic using the curves. High elevation in track used by both passenger and freight causes excessive wear of rail. It was also suggested that co-operation with the motive power engineers would be helpful as flange wear on certain types of electric locomotives is much greater than on other types.

Further reports of other types of electric railway officials were those presented by the committee on uniform general contract forms, which included a form of agreement for railway grade crossings; a report by the committee on buildings, which contained conclusions covering the design and merit of high and low station platforms, and a comparison of "umbrella" vs. "butterfly" sheds at stations.

OTHER REPORTS

A report of the committee on conservation of national resources included recommendation of the Fuel Conservation Section of the Division of Operation, United States Railroad Administration, covering the saving of fuel in stationary power and heating plants. A report of the committee on wooden bridges and trestles included results on the effect of preservative treatment on long-leaf and loblolly pine and Douglas fir bridge

timbers, and an interesting report by the committee on water service included the design of impounding reservoirs and conditions under which they are economical. This also included a report on the types of water meters for use in railway service and methods of testing and reading meters.

NEW OFFICERS

The convention adjourned on Thursday afternoon, following the announcement and installation of the following new officers: President, Earl Stimson, general superintendent maintenance of way Baltimore & Ohio Railroad, Baltimore; first vice-president, H. R. Safford, engineering assistant to regional director Central Western region, Chicago; second vice-president, J. A. Atwood, chief engineer Pittsburgh & Lake Erie Railroad, Pittsburgh; treasurer, George H. Bremner, district engineer Division of Valuation, Interstate Commerce Commission, Chicago; secretary, E. H. Fritch, Chicago.

Reclaiming Contact Shoes by Welding

Wrought-Iron Plate Is Welded into Wearing Face of Worn-Out Shoes at \$1 Less than Cost of New Shoe

WROUGHT-IRON contact shoes of the type shown in the accompanying illustrations are used by the Brooklyn Rapid Transit Company on its elevated cars. These are forged and machined in the shops of the company. The construction is very simple and the expense of making these shoes is very low.

Due to war conditions, the obtaining of material from which to make these shoes was very difficult during the past year. It thus became necessary to provide a means for repairing worn shoes in order to keep the cars in service. Examination of the worn shoes showed that a wrought-iron plate of the same thickness as the wearing portion of the shoe could be very readily welded into place and the shoes thus made as good as new. The Eastern Division elevated shop of this company is used largely for the manufacture of various equipment parts required for car operation. The shop is equipped with three different types of welding equipment, electric, oxy-acetylene and thermit, and so was admirably adapted to carry on this work.

An accompanying illustration shows several of the contact shoes as they have been removed from cars for

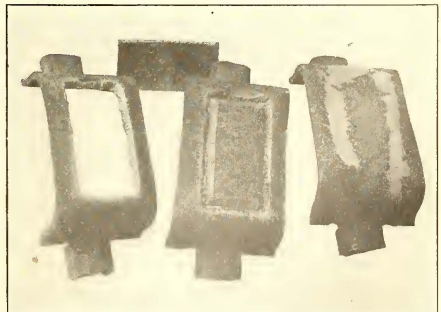
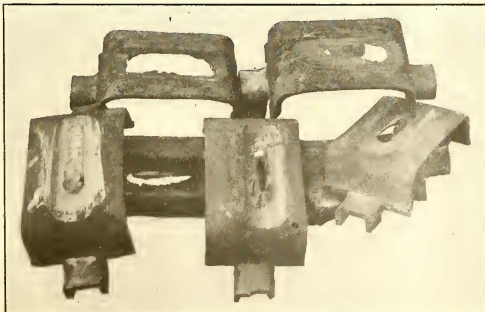
being excessively worn. It will be noted that the wear is confined to a space of approximately 4 in. x 8 in., and that outside of the worn portion there is ample metal to provide for welding in a plate. The process as now being carried out consists first of cutting out a square hole in the wearing surface of the contact shoe. The edges of this hole are beveled so that when the plate is inserted a V will be formed for holding the welded metal. This cutting out of the face of the contact shoe is done with an oxy-acetylene torch. These holes are cut to uniform dimensions of 4 in. x 8 in. The plates are of the same dimensions as the hole cut and of the same thickness as the wearing surface of the shoe. The edges of the plate are also beveled to form the other side of the V already referred to.

After inserting the plate in position, it is held in place by welding the corners slightly, after which the welding by filling in the V may be done by either the oxy-acetylene or electric methods. Both have proved equally efficient.

The various steps in the repair of the shoes are shown in the accompanying illustration. This work, which was originally begun as a war measure, has shown a decided saving in the cost of maintaining the contact shoes. In comparing costs under the present prices it is found that a saving of approximately \$1 per shoe is made by welding in the plate instead of scrapping the shoe and making a new one. As approximately 6,000 of these shoes are replaced each year this would result in a considerable saving.

Electric Railways in Japan

According to a recent report of the Department of Commerce there are forty-two electric tramways in Japan and forty-eight combined tramway and lighting systems. American manufacturers have sold most of the equipment used on these lines in the past. The Mitsubishi Dockyards & Engineering Company is a Japanese manufacturer which has recently entered the construction field for electric railway equipment. In connection with the railway shops of the South Manchuria Railway at Darien in Manchuria, this company is reported to be making electric locomotives for service where American and German apparatus was previously purchased. Another large company which is apparently entering the electric railway field to some extent is the Hidachi Company, which has built several electric locomotives for its own use.



RENEWING WEARING FACES OF CONTACT SHOES

At Left, Several Worn-out Shoes. At Right, Hole Cut Out for Plate, Plate Inserted and Repaired Shoe Completed.

Wisconsin Association Discusses Service and Securities

Papers Delivered at Annual Convention of the Wisconsin Electrical Association Contained Views of Utility from Standpoints of Banker, Commissioner and Operator
—Safety Car Was Not Forgotten

SERVICE FIRST" was the paramount thought of the first day's session of the Wisconsin Electrical Association meeting held at Milwaukee on March 26 and 27. This was the eleventh annual convention of the association. The greater part of the first day was devoted to a joint meeting with the Wisconsin Gas Association at which papers of a general character were read.

A BANKER'S VIEWS ON THE UTILITY SITUATION

The first speaker was Chester Corey, Harrison Trust & Savings Bank, Chicago, whose topic was "Public Utilities and Securities." He stated that public utility securities, omitting those of the steam railroads, are a creation of a comparatively few years. He divided the duties of the utility into three groups arranged in order of importance as follows: (1) Furnishing good service; (2) furnishing this service at reasonable rates; (3) making extensions of service which may not at first prove paying investments. He explained the unrealized interest which the public has in the success of the public utilities on account of the direct influence upon banks and insurance companies holding the securities, these institutions being the depository of the public's savings. The investment banker is responsible for financing the utilities along sound lines, and the utilities' chief problem is to maintain proper credit.

In speaking of credit Mr. Corey said it is generally conceded that an interurban railway which does not earn more than \$2,000 a mile is not entitled to credit; neither is a company having faulty capitalization. If fixed charges amount to 85 per cent of earnings, fluctuations of prices and periods of poor business may very easily wipe out the 15 per cent margin. Any company to retain good credit should earn one and one-half times its charges. As a result of the war the electric railways have suffered more than any other utilities and increased costs have destroyed the railways' credit. The investment bankers are on record as believing in the public service commissions and look to them to give assistance to the railway companies. One of the unfair conditions, however, which the utilities and the investment bankers are up against is that some commissions do not have the authority that they were intended to have.

In Mr. Corey's opinion the public must pay for the service which it gets and will be willing to do so if properly educated. He expressed a belief that some form of zone system of fare payment may be the scientific solution of the present predicament of the railways; also that private ownership under public management conduces to most economical and efficient management.

The afternoon joint session opened with an address on safety and sanitation by R. McA. Keown, engineer Industrial Commission of Wisconsin, followed by one

on the value of the quality of service by Hon. John S. Allen of the Wisconsin Railroad Commission. After a brief recess the Electrical Association convened and, following routine business, John St. John, assistant general manager Milwaukee Northern Railway, Cedarburg, Wis., delivered his presidential address. An important recommendation covered in the address was that hereafter the second session of the convention be divided into two parts, one to deal with problems relating to light and power companies and the other to take up those of interest to railways. This arrangement the speaker believed will increase the membership in the association and the attendance at the conventions. For the past two years there have been but few papers of interest to electric railway representatives. A committee was appointed to formulate a plan along the lines of this suggestion.

After the appointment of a nominating committee, N. J. Whelan, Wisconsin-Minnesota Light & Power Company, Eau Claire, read a paper on "Public Utilities' Services to Industries," which is abstracted elsewhere.

As this issue of the ELECTRIC RAILWAY JOURNAL goes to press the March 27 session is being held. Papers are scheduled to be presented by F. A. Robbins, Superior Light, Water & Power Company, entitled "Comments on Overhead Distribution"; by Alfred Alfaker, consulting engineer, Chicago, Ill., on "High-Tension Outdoor Substations and Switching Equipment"; by A. J. Goodjen, statistician Wisconsin Public Service Company, on "A Review of Policies of Service Extensions," and by H. L. Andrews, General Electric Company, Schenectady, N. Y., on "Safety Cars." An abstract of Mr. Andrews' paper follows:

Why the Safety Car Is Popular

Its Use Results in Increased Receipts and Decreased Cost Per Passenger Carried

By H. L. ANDREWS

Railway and Traction Engineering Department General Electric Company, Schenectady, N. Y.

OF SEVERAL possibilities before the electric railways that will enable them to continue in business the most promising consist in making the service more attractive and effecting substantial operating economies. The means for obtaining the greatest operating economy and increasing the service is the safety car.

This car, which was designed some three years ago and has been operating for nearly that length of time on many properties, has a body 28 ft. long, seats thirty-two passengers when arranged for double-end operation and thirty-five when arranged for single-end operation. It is mounted on a single truck with 26-in. wheels and a wheelbase of 8 ft. The equipment consists of

two 25-hp. motors, a drum controller, and a "10-ft." air compressor. The safety features are incorporated in the controller handle and the motorman's valve, which are so arranged that should the motorman become incapacitated the power will automatically be cut off, the brakes will be applied in emergency position, sand will be blown on the track and the front and rear doors will be unlatched so they can be opened by hand. Only one operator is required, who is seated to the left of the center of the car platform with the fare box to his right and with foot pedals conveniently located for operating the fare registers.

The savings in platform labor by the use of one operator represent but little more than half the possible economies in the application of this type of car. By way of illustration of the possible saving due to the use of the safety car, we may compare the operating costs of a two-man car with the possible cost of operation of a safety car.

DATA FROM ELEVEN TYPICAL CITIES

The average operating cost for a two-man car on eleven representative roads operating in the smaller cities of the Middle West is approximately 22 cents per car-mile. The minimum is 15.69 cents and the maximum 25.81 cents. These figures include maintenance of way and structure, maintenance of equipment, power, conducting transportation, conducting traffic, and general and undistributed accounts. The average cost of each subdivision is as follows: Maintenance of way and structure, 2.2 cents; maintenance of equipment, 2.14 cents; power, 4.2 cents; conducting transportation, 8.7 cents; conducting traffic, 0.68 cent; general, 2.1 cents; undistributed, 1.93 cents; total, 21.95 cents. The average platform wage is 32 cents per hour, the minimum 29 cents and the maximum 37 cents. The average cost of power is 1.3 cents per kilowatt-hour, the minimum 0.58 cent and the maximum 2.1 cents.

The schedule speeds on the above roads vary from 7.7 m.p.h. to 10 m.p.h., with an average of 8.7 m.p.h. Headways vary from ten to thirty minutes with sixteen minutes as an average, and receipts per car-mile vary from 16.8 cents to 30 cents with an average of 24 cents. Car weights on these roads vary from a minimum of 18,000 lb. to a maximum of 40,000 lb. with an average weight approaching 30,000 lb.

The application of safety cars affects mainly the maintenance of equipment, power and platform expense. Actual records of maintenance from several roads which have been operating them for a sufficient length of time to obtain the maintenance costs indicate that the maintenance will not be more than 1.2 cents per car-mile. The saving in power is obvious as the safety car weighs less than half the two-man car. Its construction permits higher rates of acceleration and braking which affect an additional saving. Tests show that the car requires less than 1 kw.-hr. per car-mile for power, and including heat and light, about 1.5 kw.-hr. The saving in platform expense is obvious as only one operator is employed. It has been the custom to give the operator an increase in wages to compensate for the additional responsibility placed upon him, the usual increase being 10 per cent. The reduction in platform cost is therefore approximately 45 per cent.

A comparison of the totals of these three items for two-man and safety-car operation shows for the former 15.04 cents per car-mile, and for the latter 7.95 cents.

The reduction is nearly 50 per cent in the main items which affect the cost of producing service.

Consider these operating costs and assume an eighteen-hour car operating at 8.7 m.p.h. schedule speed. This car will operate 6570 hours annually. Allowing 5 per cent reporting time, the total of car-hours becomes 6900, and that of wages \$4,416 annually, allowing a rate of 64 cents. At 8.7 m.p.h. this car will run 57,159 miles annually and the cost for power at 4.2 cents per car-mile will be \$2,400. Maintenance, at 2.14 cents per car-mile, will cost \$1,223 annually, making the total cost of operation \$8,039.

A safety car making the same mileage will cost \$2,419 for platform labor, assuming 35 cents per hour as a rate for the safety-car operator. The maintenance cost at 1.2 cents per car-mile will be \$685, while the power cost at 1.95 cents per car-mile will be \$1,113. The total cost of operation is thus \$4,217, or \$3,822 less than that with the two-man car.

The safety car can be purchased for approximately \$6,000 ready to roll or, including 10 per cent for spares, the car will cost \$6,600. The annual reduction in operating costs is therefore equal to a return of approximately 58 per cent on the investment, on the basis of car-for-car replacement. Experience in the application of these cars, however, has demonstrated that they are more than a means of reducing the cost of producing service, and that the best results can be obtained by applying them in the ratio of three safety cars to two cars of the old type. In most cases, the schedule speed can be increased 10 per cent or more with the safety car, so that by operating 30 per cent more cars on a 10 per cent higher schedule a 40 per cent better service can be given with no increase in the operating costs. That the effect of improved service is reflected in earnings is shown by the experience that an increase of 40 per cent in service results in at least 20 per cent increase in gross receipts.

MORE SERVICE GIVEN AT LESS COST

Consider now the effects of a service improved by 40 per cent. First—car-hours are increased 30 per cent (since the schedule is increased 10 per cent), or for each car displaced the safety cars will operate 8970 hours annually. Assuming a platform rate of 35 cents per hour, the annual cost for platform labor is \$3,140. The car-mileage is increased 40 per cent, or to 80,000 car-miles as against 57,159 car-miles for each two-man car operating on a longer headway. Assuming car maintenance at 1.2 cents per car-mile and power at 1.95 cents per car-mile, the annual costs for these two items become \$960 and \$1,560 respectively.

The total cost for the above three items is \$5,660 as against \$8,039 annually for a two-man car operating at the lower schedule and with longer headway, a reduction of \$2,379 in operating costs. The improved service will, however, result in increased earnings, and on lines where a two-man car is earning 24 cents per car-mile or \$13,700 annually the operation of the safety car on shorter headway will result in an increase of at least 20 per cent or \$2,740 annually. These increased receipts together with the reduction in operating costs result in an annual increase in net of \$5,119, or equivalent to a return of nearly 60 per cent on an investment of \$8,600 (which would be the approximate price of the safety car, per each old-type car replaced, plus 10 per cent for spares). These savings are estimated from

operating costs. Consider in comparison the results actually obtained in the application of these cars in many cities.

THIS IS WHAT ACTUALLY HAS BEEN DONE

To-day there are more than 600 safety cars operating in more than sixty cities, with over 200 cars on order for twenty additional cities. The cities include those having populations from 36,000 to 345,000. After the initial installation of safety cars in any community their use has spread rapidly. From one car originally in Seattle, three in Bellingham and two in Everett, there are now thirty in Seattle, sixty in Tacoma, thirty in Bellingham and twenty-one in Everett. One of the oldest installations is in Fort Worth, where safety cars have been used for nearly 2½ years. The East has been slower in adopting them, but within the past few months installations have been made at Bangor, Bridgeport, Brooklyn and Trenton, while Philadelphia will shortly place twenty-five in operation.

In Fort Worth ten cars were installed in November, 1916, and twenty additional in October, 1917. Five lines were equipped with these thirty cars and the mileage was increased 27 per cent with a total reduction in operating costs of \$18,000 annually. The gross receipts on these lines have increased \$106,000 annually, which is 57 per cent. Of this \$60,000 or 30 per cent can be attributed to improved service. The net increase is, therefore, \$78,000. Ten additional cars were commissioned in September, 1918.

In Austin, Texas, three cars were placed in operation in April, 1916, and four more in August, 1917. They handle less than half of the total service of the town but the operating ratio for the system has been reduced from 66 per cent to 56 per cent as a result of increased receipts and decreased operating costs.

El Paso, Texas, introduced ten cars in February, 1918, equipping two lines. On one line the car mileage has been increased 47.9 per cent and the receipts 50 per cent. On the other line the increase in mileage has been 50 per cent and in receipts 36.7 per cent. The power consumption shows a reduction of 45 per cent.

Tacoma, Wash., equipped three lines with a total of thirty-two cars in December, 1917. On one the car mileage was increased 20.9 per cent with an increase of 25.8 per cent in receipts. On the second line the increase in car-mileage was 75 per cent and in receipts 42 per cent. On the third line, the increases were 3.4 per cent and 17.31 per cent respectively. Twenty-nine additional cars were placed in service in October, 1918.

In Seattle, Wash., two cars were placed in operation in 1915, two more in July, 1917, and twenty-five more in February, 1918. The first line completely equipped with ten cars, giving 55 per cent more mileage than formerly, shows an increase of 67 per cent in gross receipts or \$26,000 annually. Another line with 21.4 per cent more car-miles showed 29.5 per cent increase in receipts. On a third line 29 per cent increase in car mileage produced 49 per cent increase in receipts.

In Everett, Wash., service was inaugurated with four cars in October, 1916. Ten more were added in October, 1917, together with seven rebuilt cars. The service was increased 24 per cent and the earnings increased 38 per cent or \$47,000 annually. The power consumption was decreased 46 per cent. The annual net increase in earnings is \$75,000.

In Bellingham, Wash., three cars were placed in serv-

ice in December, 1916, thirteen more in August, 1917, and twelve more in 1918. Of the last-named eight were rebuilt cars. The service was increased 26 per cent, the receipts increased 42 per cent, and the power consumption was reduced 43 per cent. Fifteen more cars were added in September, 1918.

In Houston, Texas, one line is equipped with safety cars. Here the car mileage was increased 68.8 per cent and the receipts increased 41.2 per cent.

In Tampa, Fla., on one line the mileage was increased 51 per cent; a 51.4 per cent increase in receipts resulted. On another 29 per cent increased mileage produced 13 per cent increased receipts.

A city in the Middle West of approximately 75,000 population installed twenty of these cars a few months ago. During the first month the car mileage was increased 22 per cent, the receipts increased 13 per cent and the power was reduced 8 per cent. The second month's operation showed 24 per cent increased receipts for 27 per cent increased mileage, and the third 40 per cent increased earnings for 28 per cent increased mileage. Seventy-five per cent of the increase in earnings is attributed to the improved service. On one line the headway was reduced from ten to eight minutes without increasing the number of cars. On another line operating six cars the headway was reduced from eight to seven minutes. The increase in gross receipts due to this improved service was 7 per cent.

BRIDGEPORT AND GARY BRING THE LIST NEARLY UP TO DATE

Bridgeport, Conn., placed nine cars in operation in January, 1919. These operate on a line through the center of the city where traffic is as congested as in any city in New England. The service was increased 50 per cent and the increased gross receipts amounted to 30 per cent.

Gary, Ind., placed ten cars in operation about Feb. 1, 1919. The service was improved 35 per cent and the receipts increased 14 per cent. These cars are operating on a slower schedule than in most installations and it is entirely practicable to increase the service 20 per cent by increasing the schedule speed. Gary is a large manufacturing town and the new cars operate on a line serving the Indiana Steel Company's plant.

The results obtained with the safety car clearly indicate what has been accomplished under all conditions of service and prove conclusively that the field of the safety car is not limited to light riding lines, but that the car can handle all of the service in moderate-size cities and it can be economically applied to a large number of the lines in such cities as Brooklyn, Philadelphia and Chicago.

In conclusion it should be emphasized that the safety features, and the size and location of the controlling apparatus, are essential parts of the new cars. These features facilitate operation, and by minimizing manual labor make it possible for the operator to perform additional duties without interfering with the normal operation of the cars, or sacrificing safety. The safety features make it possible to handle a heavier traffic on a fast schedule with but one operator, and they help to overcome the objections of many public service commissioners to one-man operation. The higher schedule speeds possible with these cars are due entirely to the construction which permits high rates of acceleration and braking.

Public Utilities Rendering Service to Industries

Public Utility Companies Should Establish an Industrial Department and Take an Active Interest in Community Development

By N. J. WHELAN

Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis.

IN TREATING this subject I shall not discuss the good which can be accomplished in rendering service to industrial corporations by street railways, inter-urban railways, electric light plants or gas plants, but shall describe the work carried on in the industrial department instituted about three years ago by the Wisconsin-Minnesota Light & Power Company. This will necessarily limit the paper to a review of what can be accomplished by public utilities to encourage the securing of industries for the communities in which they operate and thereby to become a part in community development.

Our industrial department was organized for the purpose of carrying out several clearly defined lines of work. First, a complete survey was made of the resources of the communities served by the corporation, data were collected as to the number of factories in each community, the numbers of people employed, the unemployed help available in contiguous localities, wage scales, prices of factory sites, railroad facilities, housing accommodations and adaptability of the community to various lines of manufacturing. The department was also at the disposal of each community to assist in the organization of commercial bodies where none existed in the locality and, in places where such organizations were in existence, to co-operate in work of an industrial character.

When conditions warranted and trips of investigation of industrial matters were desired, a representative of the department acted in conjunction with representatives of the board of trade or commercial club of the city interested, and without expense to it took such trips. While I do not claim for this department all of the credit for a number of industrial developments that have taken place, I believe that but for the direct and indirect assistance given through this department, a considerable number of these industries would not to-day be in existence in the localities in which they are now situated.

In addition to the work done along manufacturing lines the department also co-operated in the development of the natural resources of the different localities. A survey of industries in general was made also, with a view to ascertaining which industries promised most for community development. As a result of this work the conclusion was reached that among industries deserving of encouragement were automobile, truck and tractor manufacturing, the rubber industry, the iron-working industry and others.

A summary of the results of the work of the department shows that industries have been placed necessitating the employment of 975 people. In addition to the direct benefits to the communities and to the public utility company, a corresponding benefit of an indirect character must not be overlooked. That is, the increase in population has brought additional business to the grocer, butcher, barber, moving picture man, apartment house proprietor, hotel keeper and many others.

AMERICAN ASSOCIATION NEWS

One-Man Car Committee Prepares Questionnaire

AS A RESULT of the meeting of the joint committee on one-man car operation, composed of representatives of the Transportation & Traffic and Engineering Associations, held in New York City on March 26, members of the association will shortly receive blank forms with requests for data regarding experience with safety cars and opinions on the subject of the operation of such cars. The personnel of this committee is as listed on page 611 of the issue of this paper for March 22 except that since the list was printed C. H. Beck, St. Louis, Mo., has also been asked to serve upon it. The meeting was attended by C. W. Kellogg, Boston, Mass., chairman; S. W. Greenland, Fort Wayne, Ind.; J. K. Punderford, New Haven, Conn.; Clarence Renshaw, East Pittsburgh, Pa., and J. C. Thirlwall, Schenectady, N. Y.

In the preparation of the questionnaire a number of salient points were brought out. The chairman, for example, outlined as the four important features of safety-car operation the following: (1) Decrease in power costs; (2) elimination of jitney competition; (3) saving in trainmen's wages; (4) increase in earnings. A letter was read from an operator who had extended experience with safety cars in which the statement was made that the best results are secured when these are used in eighteen-hour service, such heavy cars as form part of the railway's equipment being used for tripper service. Operating data presented showed somewhat less than 1.6 kw.-hr. per car-mile for typical installations, about one-third of which is for heating, lighting, etc., two-thirds being for motive power. Informal discussion showed that experience of companies using safety cars has been that an increase in car-mileage produces at least one-half as great an increase in receipts and in some places the receipts are even proportional to the mileage.

There was some discussion as to just what constitutes a safety car, and one speaker pointed out that the present safety car is due to an original idea of saving weight in car construction.

Power Saving the Topic at New Haven Meeting

THE Connecticut Company section held its twenty-sixth meeting at New Haven on Feb. 26. A dinner at the New Haven Lawn Club preceded the meeting, and instrumental and vocal music enlivened the program. The principal speaker was William Arthur who directs the power-saving work of the company. He was followed by Neil Lawson, power-saving inspector, who spoke of the motorman's point of view with respect to this matter, and by John Sayers, also of the power-saving department, who gave some reminiscences of the recent naval operations in the Mediterranean Sea.

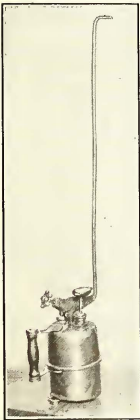
In his talk Mr. Arthur presented figures and charts showing the reduction in coal consumption and in kilowatt-hours per car-mile which had taken place during the past year on each division of the company's lines. These results showed considerable variation, due chiefly to the fact that on certain divisions the power-saving

campaign had been but recently started, and so far only a portion of the cars have been equipped with power-saving recorders. The splendid showing made, however, on every division that was fully equipped was most noticeable when compared with those only partially equipped. During the discussion which followed and in which many members participated the fact was brought out that based upon the month's figures, the coal saving on a tonnage basis when all factors were equated, was about 20 per cent for the entire property.

There was a discussion also as to the effect of the use of power-saving recorders upon safety of operation and maintenance of equipment, and it was generally agreed that both of these features had been favorably affected, although it was not possible to state in figures the exact degree.

At the business session of this meeting the committee appointments for the year were made. Following are the names of the chairmen of the committees: Program, John W. Colton, New Haven; entertainment, W. A. Gordon, New Haven; reception, J. S. Goodwin, Bridgeport; membership, C. H. Chapman, Waterbury.

Pressure Oiling Device Made from an Old Kerosene Torch



PRESSURE OILING DEVICE FOR LUBRICATING INACCESSIBLE PARTS

TO MAKE the oiling of inaccessible parts easier a pressure-oiling device shown in the accompanying illustration is used at the southern division inspection and overhauling shop of the Brooklyn Rapid Transit System. This oiling device has been made from an old kerosene torch by replacing the torch connection with a $\frac{3}{4}$ -in. pipe about 4 ft. long. The pipe is bent slightly at the extreme end in order to make it easier to insert it at some inaccessible point and also so that the oil will not drip and flow down the pipe when it is used.

The regular air-pump attachment supplies the pressure to force the oil through the pipe, and by opening the torch valve the oil is forced out in a steady stream. Much time and labor is saved by the use of this device and there is no tendency on the part of the repairman to slight the oiling of the inaccessible parts. The lubrication of center bearings, side bearings and brake rigging on

electric cars often presents severe difficulties. When cars are over inspection pits the rigging is far above the workman's head and cannot be readily reached from the side of the car. Some roads make use of a short stepladder in the pits to reach parts close to the car body. Others use planks laid across the rails.

The subway cars of the Brooklyn Rapid Transit Company have a rack and pinion working inside the truck bolster for operating the empty and load braking device which forms a part of the equipment of these cars. Previous to the use of this pressure-oiling device it was necessary to jack up the car body in order to lubricate this rack and pinion. By the use of this pressure-oiling device the parts can be reached and lubricated without trouble.

New England Club Dines at Boston Representative Men in Public Life Give Assurance to the Electric Railway Industry of Their Appreciation and Co-operation

THREE HUNDRED AND FIFTY persons attended the annual dinner of the New England Street Railway Club on March 27 at the Copley-Plaza Hotel, Boston. President R. W. Perkins, Shore Line Electric Railway, acted as toastmaster and the speakers were Lieut.-Gov. Channing Cox of Massachusetts, Hon. Thomas F. Sullivan, commissioner of public works, Boston, and United States Senator James A. Watson of Indiana.

Mr. Perkins criticized regulation without responsibility and urged recognition of the necessity for adequate electric railway income with removal of burdensome restrictions inherited from the early days of the industry and continued until the present time. Lieut.-Gov. Cox emphasized the vital importance of trolley transportation to community welfare. He claimed that the public is ready to meet the fair cost of service even if part of the burden must be lifted from the car rider. He said that the public must have a continuance and further development of electric railway service and that Massachusetts seeks to give the electric railways a square deal and a fair return upon the capital invested under state regulation. In closing he made a strong plea for the support of Americanism against Bolshevism.

Commissioner Sullivan brought greetings from Mayor Peters, who had been scheduled to speak. Senator Watson made a powerful attack on the policy of government ownership and operation, illustrating his point by reference to the huge excessive cost of railroad operation by the government. Despite increased rates the railroads had a deficit of \$275,000,000 during the first year of government operation. It has cost \$1,600,000,000 more to run the roads under the government than under private operation. Under these conditions Senator Watson urged the resumption of private operation with rate and security regulation by the Interstate Commerce Commission with abler and more courageous membership. He emphasized the dangers of government control leading to the formation of a great political machine with the fine edge of initiative dulled and socialism threatened. Senator Watson would repeal the Sherman and pooling laws as affecting railroads. In closing, he attacked the League of Nations constitutions as made public to date, and urged the retention of the Monroe Doctrine and national independence.

At the dinner the following were announced to have been elected to the positions named for the coming year: President, J. E. Dozier, Lynn, Mass.; vice-presidents—David A. Belden, Haverhill, Mass., I. A. May, New Haven, Conn., T. H. Kendrick, Manchester, N. H., F. S. Nicholson, Rutland, Vt., Alfred Sweeney, Lewiston, Me., A. E. Potter, Providence, R. I.; temporary secretary, George W. Knowlton, Boston, Mass.; treasurer, Fred F. Stockwell, Cambridge, Mass.; executive committee—R. W. Perkins, Norwich, Conn., C. D. Emmons, Boston, Mass., W. W. Field, Cambridge, Mass., John W. Belling, Boston, Mass., L. P. Morris, Boston, Mass., A. A. Hale, Boston, Mass., W. C. Bolt, Boston, Mass.; finance committee—J. E. Dozier, Lynn, Mass., Charles A. Record, Cambridge, Mass., B. W. Barnwell, Boston, Mass.

Electrical Versus Mechanical Troubles With Railway Motor Armatures

By JOHN S. DEAN

Railway Department, Westinghouse Electric and Manufacturing Company

IN DISCUSSING maintenance of railway equipment, with various master mechanics, representing railway operating companies throughout the country, you will find that, in general, their opinions regarding maintenance matters vary over a considerably wide range. For instance, some operators consider 40,000-mile brush life low, while others never get more than 25,000 miles and are quite well satisfied. Motor bearings on some roads average 75,000 miles, while on others they are changed every 15,000 to 20,000 miles. On some properties, 75 per cent of the armatures sent in for winding trouble are entirely rewound, the other 25 per cent are repaired; while other operators rewind 35 per cent and repair 65 per cent of the windings. The bearings of certain type motors on some roads are oiled every other night, while other master mechanics get along by oiling similar bearings every week or ten days.

These various conditions are, no doubt, brought about to a large extent by purely local conditions, such as the age of motors, service conditions, materials used, method of maintenance and inspection of equipment, grade of available labor and to the enthusiasm and progressiveness of the master mechanic in charge.

In contrast to this wide variation of opinion, regard-

ed short-circuited and open-circuited armature windings. All the other armature troubles are classified as mechanical.

NON-COMMUTATING POLE ARMATURES REPAIRED

1225 Motors—7 Types—14½ Years Average Age

Causes	Year 1916		Year 1917		Year 1918	
	Repairs per Motor	Per cent per Year	Repairs per Motor	Per cent per Year	Repairs per Motor	Per cent per Year
Mechanical	4.53	77	4.60	81	6.38	78
Electrical	1.32	23	1.07	19	1.74	22
Total	5.85	100	5.67	100	8.12	100

The above figures are plotted in the center chart.

COMMUTATING POLE MOTOR ARMATURES REPAIRED

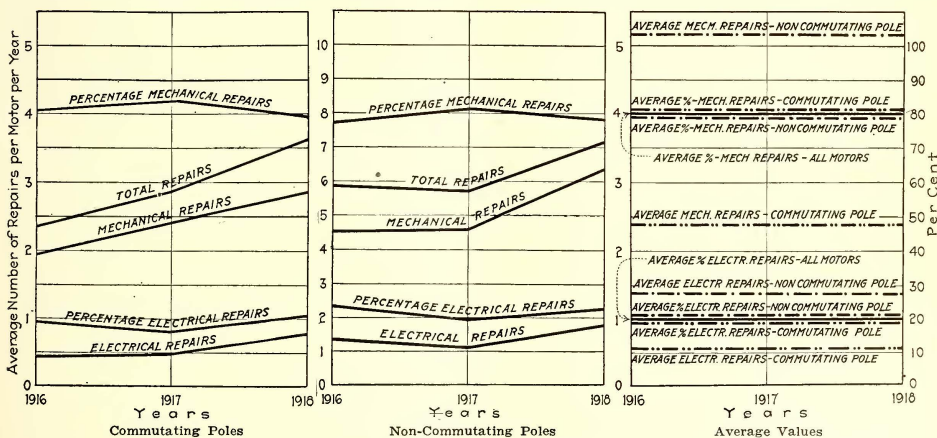
546 Motors—4 Types—4½ Years Average Age

Causes	Year 1916		Year 1917		Year 1918	
	Repairs per Motor	Per cent per Year	Repairs per Motor	Per cent per Year	Repairs per Motor	Per cent per Year
Mechanical	1.93	81	2.40	84	2.84	79
Electrical	.44	19	.47	16	.77	21
Total	2.37	100	2.87	100	3.61	100

The above figures are plotted in the left hand chart.

The data referred to have been arranged in graphical form in the accompanying charts. In these the scales for numbers are at the left in each case. The percentage scale at the extreme right applies to all three of the charts.

It is to be noted from these charts that there is quite an appreciable difference between the average number



DIAGRAMS SHOWING NUMBERS AND PERCENTAGES OF MOTOR ARMATURE REPAIRS

ing questions of maintenance, there is almost a universal expression of opinion that at least 75 per cent of all railway motor troubles are due to mechanical failures. In this connection, there are available actual maintenance data on repaired armatures submitted by a large city company operating all sizes of cars, in city and interurban service, which further confirm the above general statement. These figures represent armature repairs only and are segregated so as to show this comparison on old non-commutating pole motors and on the modern commutating pole motors. Included under the heading of "Electrical Troubles" are such repairs as grounded and short-circuited commutators, also ground-

ed repairs per motor per year, both mechanical and electrical, of the commutating pole and non-commutating pole motors, which is no doubt largely due to the difference in the average ages of these respective types of motors. On the other hand, the percentages of mechanical and electrical repairs for both classes of motors are approximately the same. This would indicate that irrespective of design, size, age, operating conditions, etc., 75 to 80 per cent can be considered as a representative average figure for the mechanical troubles on railway motor armatures, and as armature troubles predominate these figures can be considered as applicable to the complete motor.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Relief Measures Suggested

Connecticut Commissioner Urges Trial of Other Means Before Public Ownership or State Aid

Richard T. Higgins, chairman of the Connecticut Public Utilities Commission, has issued a statement, after discussion with his associates, in regard to means of bettering the present electric railway situation. The immediate occasion for the statement was the recent beginning of the investigation of railway conditions in Connecticut.

STATE OWNERSHIP AS LAST RESORT

While admitting without question that electric railways are in a critical condition and need some measure of assistance, Mr. Higgins would avoid, if possible, public ownership, although even that might be preferable to some methods of relief. For example, he does not believe that electric railways should be aided by special taxation or out of the public treasury.

If such assistance should ultimately be found necessary, Mr. Higgins would go still further and recommend State ownership and control, rather than require either the State or the municipalities to guarantee a specified return for privately owned railways with any form of semi-public control. In his opinion, this would be a bad and altogether too paternalistic precedent.

A LIBERAL POLICY NECESSARY

If government ownership or State aid to the extent of directly financing operation is to be avoided, a liberal policy in regard to other means of aiding railways must be adopted. In view of the fact that present abnormal conditions will improve, the remedies adopted need not cure all present ills. Upon this basis, therefore, Mr. Higgins makes the following concrete suggestions:

1. Relieve the companies permanently of the present statutory burden of laying and maintaining street pavements.
 2. Relieve them permanently from the present statutory burden in the construction of highway bridges.
 3. Relieve the companies from the burden of taxation by reducing the percentage of tax on gross income, and suspend payment for a period of two years, ultimately requiring payment thereof with a low rate of interest whenever the revenues the companies will permit, and before any dividends are paid.
 4. Regulate properly jitneys or automobiles transporting passengers for hire in and along public highways, so as to eliminate unjust and unnecessary competition.
 5. Amend the company's charters to permit them to maintain and operate motor vehicles for the transportation of freight and passengers along the routes and highways over which they already have charter rights to operate electric railways, and along such other routes and highways as the Public Utilities Commission shall find to be of public convenience and necessity.
- The automobile or motor vehicle is an important factor and, with the constantly improved State highways, will in the future be a still more important factor in all

kinds of short-haul or intrastate transportation. In the natural development of this kind of public service the chartered electric railway companies should have the opportunity of developing their transportation systems along such lines as the public may demand.

6. Loan to the electric railways new capital for necessary extensions and betterments, but not without the approval of the State board of control and of the Public Utilities Commission as to amount, security and general terms and conditions thereof.

If such relief is granted and at the end of two years is found to be insufficient, Mr. Higgins believes formerly successful electric railways are doomed and must be abandoned or taken over by the State and operated by the public at public expense. In his opinion, however, if there is a public demand and necessity for electric railway transportation, as he believes there is, and all other similar forms of public transportation on the highways are publicly regulated and controlled so as to avoid unreasonable or destructive competition, then electric railways, relieved of undue burdens, should be self-supporting as any business industry.

\$1,100 to the St. Louis Conscience Fund

Restitution of \$1,100 stolen from the United Railways, St. Louis, Mo., in one year's time by a former conductor is the unique experience of Richard McCulloch, president of the company.

The first payment from the former conductor came recently in the form of a check for \$100 accompanied by a letter postmarked at a town in Iowa. In this letter the writer expressed his penitence over having taken the company's money. It was written in the same vein of other letters Mr. McCulloch has received at intervals from conscience-stricken pilferers, but in two important respects it was different being signed with the full name and address of the sender. The amount, too, was larger than the average contribution to the conscience fund.

In acknowledging receipt of the letter and the \$100 President McCulloch complimented the former conductor upon his manliness in confessing his misdeeds and making amends.

About two weeks later President McCulloch received another letter from the conductor in Iowa inclosing an indorsed negotiable note for \$1,000.

A search of the records showed that the signer of the letter was a conductor on the suburban line for about a year in 1904-1905 and according to his own confession took money which apparently he invested in Oklahoma land. There were no black marks against the man's record while with the company and he was not under suspicion.

Government on Relief Work

Recent Conference of Mayors and Governors Seems About to Bear Fruit

Roger W. Babson of the information and educational service of the Department of Labor, and Eugene Meyer, Jr., managing director of the War Finance Corporation, are working on a government relief program for the electric railways, according to Washington reports. One of the measures which, it is hoped, will be brought about is the immediate cancellation of unnecessary taxation of the companies.

FIVE-CENT FARE DOOMED

Mr. Babson declared on March 19 that he regarded the 5-cent fare as doomed. Cost of operation, he stated, has reached the point where companies no longer are able to keep going on the old rate of fare.

The recent conference of Mayors and Governors held in Washington apparently has spurred the government to a realization that the electric railway problem has become a matter of material importance and concern. It will be recalled that the conference adopted a resolution asking the government to investigate the traction situation and recommend relief where needed.

An appeal has been made also by the American Electric Railway Association that the government appoint a commission to investigate railway conditions and authorize measures for stabilizing the industry.

The United States Census Bureau has been getting up some electric railway figures, one of the compilations showing that seventy-two companies which had a combined net income of \$4,000,000 in 1912 experienced a deficit of \$544,000 in 1917, before war conditions had begun to affect the companies most seriously.

RELIEF COMMISSION PLANNED

The plan of relief for the electric railways, already tentatively worked out by the Treasury Department and the Department of Labor, provides, it is stated, for a commission of five members or one representative each for the Treasury Department, Department of Labor, Department of Commerce, the banks of the country and the electric railways. Powers of the proposed commission will be similar to those of the National War Labor Board. The belief was indicated recently in government circles that the electric railway situation has become so serious that the creation of a federal body to deal with the problems of the companies practically is a certainty.

Mr. Babson is of the opinion that so far as the local railways in the District of Columbia are concerned the local Public Utilities Commission has sufficient authority to stabilize the local lines by installing a service-at-cost plan or the so-called Currier method of sliding fares and sliding dividends. Mr.

Babson will discuss in a series of articles in the Washington *Star* the practical application of such methods. He has pointed out that relief for the companies in the form of cancellation of unnecessary taxes could not be accomplished by the commission, but rather by congressional action.

"The Good of the Service"

The Kansas City Railways Provides New Representation and Co-operation for Employees

The Kansas City (Mo.) Railways has announced a plan, effective April 1, for bringing into one big family the new organization built up as a result of the recent strike. Following the motto, "For the Good of the Service," the company proposes to deal directly only with representatives elected by all the employees rather than with committees of any organization to which but a portion of the men belong. It is believed that with the co-operation of the employees, the present financial difficulties can be obliterated. If this can be done, it is the desire of the company that the employees shall share in the profits through increased wages and other rewards.

Every employee is urged to make suggestions. All those adopted will be suitably rewarded, and the name of the employee making the suggestion will be placed on the list of those in line for promotion. Suggestions are to be deposited in a box placed for this purpose in every department. The reward will be determined by practical working value of the suggestions.

COMMITTEES FOR EACH DIVISION

Committees are to be formed at each division and in every department. In the transportation and mechanical departments there shall be at each division a committee composed of two transportation employees, one mechanical department employee, the foreman of the mechanical department and the division supervisor. This committee shall meet the first Monday of each month. Recommendations are to go to the superintendent of transportation or superintendent of the mechanical department. The members of this committee, other than the mechanical department foreman and the division supervisor, may meet when necessary during the month in addition to the above to discuss upon service suggestions. This committee shall dispose of these cases either by its own action or by requesting a hearing by the supervisor.

The members of the various carhouse committees are to form the general transportation committee, which shall include the superintendent of the mechanical department and the superintendent of transportation. This committee shall hold regular meetings four times a year, recommendations arising therefrom being made to the general manager.

Similar committees shall be formed in the power, shop, electrical and track departments. Each committee shall con-

sist of the head of the department and three employees. Meetings shall be held under the same rules as those above specified for division committees.

All members of committees other than officials shall be paid their regular rate or at least \$5 per month for their time on these committees. To be eligible for committee membership an employee must have been in the service of the company for at least three years.

It is stipulated that there shall be no interference or dictation in the work of these committees from any official of the company. The committees are to be elected each year by secret ballot, any eligible man being allowed to nominate himself.

HANDLING APPEALS

Any employee either individually or through his carhouse committee, or the committee on its own initiative, shall, in the case of a desire to appeal from the decision of an officer, address a request direct to the superintendent of transportation, the superintendent of the mechanical department or the general manager. Those in the transportation department, after a hearing by the superintendent of transportation or superintendent of division mechanical department, may request a review by the general manager. A final appeal may be made to the president.

Each officer named is to announce a day not less than once a month at which time he shall receive any employee or committee of employees on any matter affecting the interests of the employees or "The Good of the Service."

Betterment plans now in effect, which are available to all employees and will be continued, are as follows:

1. A building, savings and loan association whereby employees may deposit savings of twenty cents a month at least 6 per cent interest in addition to accrued earnings.

2. Free legal aid bureau, by which any employee of the company may secure legal advice without charge.

3. A pension fund whereby employees who have been in the service of the company twenty years may secure a monthly sum based on average earnings and length of service for life.

4. The company also maintains in hospitals in the city a number of rooms which are available for the use of employees up to their capacity.

There now exists among the employees an organization known as the Kansas City Railways' Employees' Brotherhood. The company is in full accord with the spirit and purposes of this organization, which provides sick and accident insurance benefits at a low cost. The company, in order to assist its employees secure these insurance benefits, will contribute toward the cost of insurance 50 cents per month per member in accordance with the by-laws of this organization. This association is open to the employees of the company, but is not compulsory.

Reasons for City's Purchase

Detroit Street Railway Commission States Why Purchase Plan Was Preferable to Competition

In a statement issued by the Street Railway Commission of Detroit, Mich., the board points out that "piecemeal" construction of a railway system by the city to compete with the Detroit United Railway would be a lengthy and costly procedure and asserts that the company would combat by every means the building up of a municipal system to compete with its lines. The statement follows substantially in full:

In its deliberations, the Board of Street Railway Commissioners gave earnest consideration to the so-called "piecemeal" plan of constructing a railway, after the manner of St. Paul.

The board is conscious of the fact that many sincere advocates of municipal ownership favor this method of acquiring a street railway system, but a thorough study convinced the board that the "piecemeal" plan would be a difficult and lengthy way of improving conditions.

In the words of Mayor Couzens, the board believes, that "time is the essence of the problem."

To begin with, the Detroit United Railway is to-day in possession of the most desirable routes for street railway lines. While it is true that the city might order the company from streets where its franchises have expired, such a course would mean a cessation of service for several months, inasmuch as the railway would have three months' time to remove its tracks and restore the streets.

Should the city resort to the alternative and construct lines on parallel streets, an economic waste would result in the end, even if the Detroit United Railway were forced into bankruptcy, for unquestionably the city would wish to run its cars over the main artery of the city.

It is certain that the Detroit United Railway would oppose the construction of the city system, and every inch of ground would be at least long in delay, which is not desirable.

Even if the city were successful in constructing units of a system, the absence of transfer privileges with the lines of the privately owned company would prove a serious inconvenience.

In the opinion of the board, therefore, a purchase by agreement was preferable to lengthy warfare for the following reasons:

1. Provided the people ratify the purchase agreement, the city comes into immediate possession of the present system and can plan without delay for the building of extensions and the addition of cars to improve the service.

2. Lawless economic waste, through construction of parallel and competing lines, are avoided, and no interruption of service is involved.

3. Experience has shown us that the longer the city delays entering into an agreement with the company, the more it will have to pay for the property. Four years ago it could have been purchased for approximately \$25,000,000, and the likelihood is that a purchase of the system is now deferred, the city will be the loser rather than the gainer.

4. The city must plan for a comprehensive rapid-transit system, lengthy warfare with the Detroit United Railway will postpone progress in this direction.

5. The city is permitted to operate the railway beginning July 1, 1919, in the interest of the people of Detroit, and not in the interest of stockholders.

6. The procedure which has hindered the development of Detroit for more than a score of years will be settled quickly and for all time.

In this connection it is well to recall that the question of the purchase of the property of the railway within the city by the city for \$31,500,000 as agreed mutually between the representatives of the city and the officials of the company will be presented to the voters at the election on April 7 for their approval.

Washington Men Favored

Many Points Not Previously Agreed to between Railway and Men Decided in Favor of Letter

With a few minor and unimportant exceptions, the National War Labor Board, in a decision made public in connection with the dispute between the Washington Railway & Electric Company, Washington, D. C., and its motormen and conductors, awards to the men all they contended for.

MANY POINTS SETTLED PREVIOUSLY

Fourteen disputed points had been agreed to by the contending parties before the matter was submitted to Joint Chairmen Taft and Manly for final adjudication. These points, at the request of the men, were incorporated in the award. The award provides substantially as follows:

The company is to meet and treat with duly accredited committees representing the men on all questions and grievances which may arise.

There is to be no discrimination by the company against men on account of union affiliations or membership in any labor organization.

Properly accredited representatives of the men who have duties to perform in connection with the office to which they are properly elected are to be given leave of absence by the company to attend to such duties.

If a man is suspended or discharged without sufficient cause he is to be restored to his former position without loss of pay.

All schedules are to be made with a view to furnishing the best possible working conditions, and all night runs, whenever practicable, are to be given the men.

No regular assigned run is to pay less than eight hours a day.

The company is to pay straight time for all swings of one hour or less than one hour.

Where men report for duty and begin their run they are to receive pay for full time, whether the run is completed or not.

Men holding runs that do not appear on holiday or Sunday schedules are not to be required to report on such days except under unusual conditions.

The wages for motormen and conductors are fixed at 43 cents an hour for the first three months, 46 cents for the next nine months and 48 cents thereafter.

The men will be permitted to post notices in each car and in other ways protect themselves against possible imposition.

Motormen and conductors will receive pay for the time necessary for them to go to the general office and make reports.

The requests not granted by the board relate to additional pay for operating hand-brake cars, time and a half for intervening time, twenty minutes for meal relief, ten minutes for turning in car receipts and free passes. In this connection the board said:

These requests are not granted and no change is recorded in the present practice in regard to these specific matters.

AWARD EFFECTIVE IMMEDIATELY

The award is to take effect immediately and will continue until the end of the war, "as announced by executive proclamation." Either party, however, may reopen the case before the board at periods of six months' interval beginning Oct. 1.

The board was silent on the request of W. McK. Clayton that it pass on the question of whether the people of Washington should be made party to the dispute. Mr. Clayton filed a brief in which he declared that as the Wash-

ington Railway & Electric Company is a public utility corporation and as the people must pay any additional expenses assumed by the company through an advance in wages or a reduction in working hours, they ought to be heard in any contention between the parties.

Missouri Commissioners Reappointed

The Senate of Missouri has confirmed the reappointment of William G. Busby, chairman of the Public Utilities Commission of Missouri, and Edwin J. Bean, as members of the commission. Both were reappointed for a term of six years. Announcement has also been made that R. P. Spencer, St. Louis, actuary of the State Insurance Department, will succeed A. Z. Patterson as chief counsel for the commission.

Utility Bills Before Legislature

No less than twenty bills affecting public utilities have been introduced in the Legislature of Illinois. Several of these bills are for the complete repeal of the public utilities act, but so far these do not seem to have met with favor. Another bill amends the public utilities act by defining taxicab drivers and operators as a public utility whether or not transportation is over a definite route, or between fixed terminals, while still another defines motor-bus and motor transportation lines operating between two or more cities as a public utility, and subject to the provisions of the public utility act.

A bill known as the home rule municipal league measure provides that any city or municipality may elect by ordinance, when referred to the people at a regular or special election and receiving a majority of the votes cast, to withdraw from the jurisdiction of the commission, and regulate the public utilities within its boundaries. The act further provides that cities may go back under the commission by the same procedure.

A bill which greatly curtails the powers of the commission provides that nothing in the public utilities' act shall give the commission the power or authority to revise, alter or modify in any way contracts entered into in good faith between municipalities and public utilities, or the conditions of any franchise, license or permit to engage in business in any such municipality as a public utility.

There is also a bill for the protection of streets, roads and highways of the State by prescribing the maximum loads, rate of speed and width of tires of commercial motor vehicles used thereon. From the standpoint of the electric railways this measure does not seem to go far enough, and it is felt that a bill should be passed which would require motor transportation companies operating over the highways of the State to pay compensation for the use of the roads, either on a mileage or per-ton basis.

Honolulu Wants a New Deal

Honolulu has a franchise problem, for which the Honolulu Rapid Transit & Land Company, through its president, L. T. Peck, is seeking a solution. The present franchise was granted in 1898 for thirty years by the government of Hawaii to local people who took over from foreign interests the then existing indifferent tramways and merged, modernized and extended them, carrying out improvements far beyond the requirement specified in the new grant. Provision was made in the franchise grant to the new company for a capital stock sinking fund, definite contributions to which from earnings were to take precedence to the right of the government to any part of the company's income. Deposits to this fund, however, have long been diverted to extensions. The time has come now when this can no longer be done if the interests of the stockholders are to be properly protected and the company has announced that henceforth it proposes "to fulfill to our stockholders the duty of protecting them by making all possible deposits to such fund."

This policy if put into effect will work materially to the disadvantage of the city by throttling the work of expansion carried out by the company in the past and this is being pointed out by Mr. Peck to the local authorities. Honolulu needs further additions to its transit system, but the company cannot carry its liberal policy of the past any further unless it is put into a position to do so. This is generally realized in some quarters and the Governor has already recommended to the 1919 Legislature the enactment of an appropriate bill to settle the franchise matter so that a franchise act acceptable to the city and the company can be sent on to Washington for confirmation. Mr. Peck has summarized the franchise conditions necessary to insure a continuation of the policy of expansion which has been in effect in the past. In this connection he said in a recent public statement:

The extended franchise should be flexible enough in its terms as to rates and government charges, under commission control, that the revenues will always be sufficient to provide the very best of service and a fair return on the capital already invested and on that yet to be sought for immediate and future expansions.

War-Time Privilege Withdrawn

The Council of Danville, Ill., has canceled an ordinance made for the period of the war which allowed the Illinois Traction System to haul coal through the streets at all times during the day and night. The original ordinance provided that coal be hauled only between the hours of midnight and 6 a. m. The demand for coal became so urgent during the winter of 1917-1918 and the difficulties of transportation so great that the Councils of Danville, Champaign, Urbana and other cities in which the Illinois Traction Company operates allowed cars of coal to be hauled at any time.

Seattle Is on Trial, Says Mayor Hanson

It is announced that the remittitur in the State Supreme Court hearing to test the legality of the deal for the purchase of the railway property of the Puget Sound Traction, Light & Power Company by the city of Seattle, will be filed on April 6. It is announced that the company will be ready to turn over the property any time after that date. It is understood the date of actual transfer depends only on the time required in signing the 15,000 utility bonds issued in payment for the lines. Mayor Ole Hanson has been forced to take a vacation and Acting Mayor W. D. Lane will fall heir to the job of signing 13,400 of the bonds.

In his message to the City Council before leaving the city, Mayor Hanson urged co-operation in all departments of the city government, and particularly with the handling of the railway problem. He said in part:

If you play petty politics and refuse to establish fares that in all experience have and not for service, naught but disaster can overtake the municipal railway venture. For the other hand, we save the people of Seattle service and charge a fair rate, and use our best business judgment, our municipal-own system will prove a beacon light to other cities throughout the country.

No Bluffing Here

Too often electric railway companies crying aloud for succor are considered to be "bluffing" and instead of the fabled bread are handed a stone in their trouble. To this fact Norton, Mass., is just awaking. The story of the Norton, Taunton & Attleboro Street Railway, Norton, Mass., is best told perhaps by the following dispatch from that city to the *Pawtucket Times*:

Many people believed that the threat to discontinue the road was a bluff and was something that would never occur, but certain facts brought out during the past few days leave the plain truth that the road must be sold within a very short time to satisfy the orders of the Comptroller in Washington, and the matter is entirely out of the hands of the bondholders, the agents of the road or even the town and city officers, through whose committee the line passes. A bank in Lowell that held 70 per cent of the bonds of the road failed about four years ago and at that time paid only 40 per cent to the depositors. As the bank was under national supervision the Comptroller has ordered the road sold to the other 30 per cent may now be paid the depositors. A junk dealer has been over the line and offered \$120,000, but the line is being withheld as long as possible to allow the municipalities or private citizens to make as large a bid so that the line will be left for the use of the public. In 1917 the road was assessed for \$20,000. Coming from a federal officer the order to sell must be taken seriously and the voters will have a chance to cast one of the most important votes of their lives at the special meeting which will be called shortly.

Chicago Wage Question Reviewed

The wage situation on the Chicago (Ill.) Surface Lines has been summed up by the *Chicago Tribune* as follows:

It is understood to be the view of attorney General Surface Lines that with the ending of the war the increased wage scale will, in equity, automatically terminate. It is not expected that the War Labor Board will recommend a reduction

to the former level, but it will become a question for the companies in the surface lines to take under consideration.

The companies in June, 1917, entered into a contract with the employees running for three years, or until June, 1920. In this contract increases in wages were provided for amounting to a total of about \$1,000,000 a year. This contract has until June of next year to run, and it is held by the companies that with the end of the war there will be a reversion to conditions under the original contract.

There is not at this time any suggestion as to what the companies will do. They merely assert that the occasion for the increase of \$3,700,000 will have passed with the signing of the peace treaty and that they will be under no legal obligation to continue the existing scale of wages.

News Notes

Wants Labor Ruling Modified.—The Louisville (Ky.) Railway has asked for a modification in the ruling of the War Labor Board, fixing a minimum wage of 40 cents an hour for common labor.

Sioux City Men Want More.—Trainmen of the Sioux City (Iowa) Service Company have served notice on the company that when the present wage scale agreement expires on May 1 they will demand a flat increase of 15 cents an hour. They are receiving 30 and 35 cents under the present agreement.

Louisville Camp a Permanent Site.—The investment in equipment installed to connect Camp Taylor with Louisville, Ky., will probably be converted from a temporary to a permanent asset to the Louisville Railway as it has been announced from Washington that the camp will be one of fifteen permanent federal military posts.

City May Acquire Outside Lines.—The Senate of the State of Washington has passed Representative Guie's bill authorizing the extension and operation of municipally-owned electric railways to a point not to exceed 8 miles outside of its corporate limits. The bill will enable the city of Seattle to acquire the Seattle & Rainier Valley Railway.

Wants Appropriation for Rapid Transit Work.—The Public Service Commission for the First District of New York has asked the Board of Estimate of New York City to appropriate \$577,060 for rapid transit expenses during the second quarter of the year. This amount will provide for the expansion of the number of employees for the purpose of rushing plans for the remaining work, so that contracts may be let at the earliest moment. Only by making some such provision, the commission has pointed out, can the remaining portions of the dual system be rushed to completion.

Professor Richey Accepts.—Prof. Albert S. Richey has accepted his designation as the city's representative on the board of arbitration which will try to effect an agreement between the International Railway, Buffalo, N. Y., and

the city whereby the local lines of the International will be placed under municipal control. Mr. Richey and James E. Allison, Jr., St. Louis, the company's representative, have held several informal conferences and efforts are now being made to agree upon a third member of the board. The designation of the third member is expected to be made within the next ten days.

Company Is Opposed to Franchise Modification.—A refusal to consent to amendments to the Taylor grant was made by President John J. Stanley of the Cleveland Railway at the first of a series of daily meetings to consider the railway proposition. Coupled with this refusal was the assertion by Mr. Stanley that he would prefer municipal ownership and operation of the company's property to an amended franchise ordinance. The session ended abruptly a half hour after it convened, but another meeting will be held when amendments proposed by Mayor Davis will be laid before executives of the company.

War Record of Byllesby Properties.—The third edition of the National Service Record of H. M. Byllesby & Company and affiliated companies shows an increase of 256 men in the service since July 1, 1918, making a total of 951 so engaged, or 19 per cent of the organization's male employees. Only twenty casualties are recorded, nine deaths, ten wounded men and one man missing in action. On Jan. 1, 1919, 270 men had been engaged overseas and 112 had returned to civil life. More than \$2,500,000 was subscribed by the organization and its employees to the four Liberty Loans, more than \$66,000 was invested in war savings certificates and thrift stamps, and they gave more than half a million dollars to various charities.

Programs of Meetings

New York Electric Railway Association

The thirty-seventh annual meeting of the New York Electric Railway Association will be held at the Fort William Henry Hotel, Lake George, on June 7.

Southwestern Electrical & Gas Association

At a meeting of the executive committee of the Southwestern Electrical & Gas Association held on March 17 it was decided to hold a three-day convention on May 12, 13 and 14. The morning of the first day will be devoted to committee meetings, and the mornings of the other two days to separate operating sessions of the gas, electric light and power, and the street and interurban railways. In the afternoons of all three days will be general sessions. A general convention committee was appointed with A. Hardgrave as chairman. A banquet will be held on one of the evenings of the convention and will be in charge of a local committee from Galveston and Houston.

Financial and Corporate

P. R. T. Expenses Rise

Increase of \$3,252,000 in Operating Expenses but Gain of Only \$1,977,000 in Gross Earnings for 1918

The first annual report of the Philadelphia (Pa.) Rapid Transit Company since the change of its fiscal year to the calendar period shows what is called an abnormal increase in gross earnings of \$1,977,501 or 6.65 per cent for 1918. This gain was due to war-time activities. The passenger earnings rose \$1,947,606 or 6.80 per cent.

of approximately 12½ miles, and to put the road into operation between these points at the earliest possible moment.

The new company will issue \$200,000 of common stock and \$200,000 of twenty-year 6 per cent gold bonds, with interest payable semi-annually, the first interest payment to be made on Jan. 1, 1920. The bonds are to be sold to the subscriber on a basis of \$100 par value of bonds and \$25 par value of stock for each \$100 in cash.

One hundred and fifty thousand dollars of the stock of the company is to

Skimming Off Financial Slag

All Rhode Island Companies Likely to Go Into the Melting Pot and Come Out a Complete Amalgam

A bill asking for a charter for a new corporation to take over the whole or any part of the electric railway system of Rhode Island has been presented in the Rhode Island Legislature. The measure was drawn by Attorney-General Rice with the full consent and approval of all the interests concerned in the present complicated affairs of the Rhode Island Company. The presentation of the bill was made in order that authority might be obtained from the Legislature before its adjournment, as another session will not be held until 1921.

CONFERENCE ON REORGANIZATION

Frank H. Swan, Theodore Francis Green and Zenas W. Bliss, receivers of the Rhode Island Company, conferred on March 24 with the representatives of the various interests and the proposed reorganization of the company was thoroughly discussed. Attorney-General Herbert W. Rice represented the State of Rhode Island; Mayor Joseph H. Gainer represented the city of Providence, the other representatives being Walter F. Angell of the law firm of Edwards & Angell, representing the protective committee of stockholders of the United Traction & Electric Company; Michael F. Dooley, representing the protective committee of the bondholders of the Rhode Island Suburban Railway; Richard B. Comstock, representing the bondholders of the United Traction & Electric Company; Philip Spalding, of Estabrook & Company, Boston, chairman of the protective committee of the United Traction bondholders; and Nathaniel W. Smith, representing the New York, New Haven & Hartford Railroad, which owns the capital stock of the Rhode Island Company.

It was the consensus of opinion at the conference that a complete reorganization of the company with the establishment of one company owning all the trackage and privileges of the present numerous lessor companies, as indicated recently in the *ELECTRIC RAILWAY JOURNAL*, was the only solution to the problem.

MAYOR WANTS CORPORATE STRUCTURE SIMPLIFIED

Mayor Gainer of Providence advocated the amalgamation of all the various units of which the company is at present composed into one company and the simplification of its organization so that the public could appreciate its position and obligations. He urged an immediate reduction of the capitalization as essential to the restoration of public confidence and he declared that the people would pay any fare necessary to maintain service if they felt that the fares were equitable and the necessary result of the service furnished.

COMPARATIVE INCOME STATEMENT OF PHILADELPHIA RAPID TRANSIT COMPANY FOR YEARS ENDED DEC. 31, 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Gross passenger earnings	\$30,568,788	96.42	\$28,621,182	96.25
Receipts from other sources	1,135,639	3.58	1,105,744	3.75
Total earnings	\$31,704,427	100.00	\$29,726,926	100.00
Maintenance and renewals	\$4,755,664	15.00	\$4,459,039	15.00
Operation of power plants	2,719,097	8.58	2,061,904	6.94
Operation of cars	8,951,880	28.24	7,494,130	25.21
General	2,071,744	6.53	1,529,196	5.14
Taxes	1,871,186	5.90	1,573,269	5.29
Total expenses	\$20,369,571	64.25	\$17,117,538	57.58
Net earnings from operation	\$11,334,856	35.75	\$12,609,388	42.42
Interest	\$2,314,649	7.30	\$2,260,310	7.61
Rentals	7,365,391	23.23	7,365,393	24.78
Sinking fund—city contract	120,000	0.38	120,000	0.40
Total fixed charges	\$9,800,040	30.91	\$9,745,703	32.79
Surplus	\$1,534,816	4.84	\$2,863,685	9.63

The operating expenses, however, were excessively high in 1918, owing to the enormously increased cost of both labor and material, and represented an increase of \$3,252,032 or 19 per cent. The fixed charges showed a net increase of \$54,336, caused mainly by payment of interest on passenger cars secured by lease from the government. The surplus for the year was but \$1,534,816, as compared to \$2,863,684 for 1917.

Dividends were declared from the surplus earnings as follows: Payable July 31, 1918, 2½ per cent, \$749,645, and payable Jan. 1, 1919, 2½ per cent, \$749,645. The full comparative income statement for the last two calendar years is given in the accompanying table.

A considerable part of the annual report is devoted to a striking résumé of results obtained during the past eight years of Stotesbury-Mitten management. A summary of information on this point was published in the *ELECTRIC RAILWAY JOURNAL* of March 8, page 484.

Plan to Reclaim Richmond & Chesapeake Bay Railway

It is proposed to organize the Richmond-Ashland Railway, Richmond, Va., for the purpose of purchasing the right-of-way, rails, etc., from the Richmond & Chesapeake Bay Railway from Ashland to Laburnum station, a distance

be issued to J. L. Vaughan, president of the Petersburg & Hopewell Electric Railway, and his associates, who agree to advance such additional funds as may be necessary for the maintenance and operation of the road during a period of five years. These stockholders, in their individual capacity, guarantee to operate the road, and further guarantee to provide payment of interest on the bond issue for a period of two years should the earnings of the road not be sufficient.

The funds secured from the sale of the bonds are to be used for corporate purposes and requirements only, and the subscribers to the bonds and stocks are to have representation upon the board of directors.

In order that the proposed plan shall become operative subscriptions equal to \$150,000 cash must be received before any subscriptions are binding. As soon as subscriptions to the sum of \$150,000 cash have been received, 50 per cent of such subscriptions are to become due and payable immediately to the American Trust Company, Richmond, as trustee. Upon the organization of the company the remaining 50 per cent will be payable to the trustee. In the event the organization of the company is not perfected, and the property is not purchased within ninety days, the trustee is to return all subscriptions to the subscribers.

He said, moreover, that the city was prepared to lend its assistance in every way possible and was also willing to make sacrifices and concessions, but he demanded that the other interests affected indicate a similar spirit. The company is at present required to pay the city in franchise taxes and new paving charges approximately \$160,000 annually but this income the city would surrender if by so doing the reorganization of the company could be expedited and benefited.

Mayor Gainer's exposition of the city's attitude stirred the conference to concrete action and at the request of the receivers the representatives of the various interests at the conference were requested to constitute a general committee to perfect plans for a complete reorganization of the company and pre-

sent it to the receivers at the earliest date possible.

Although the Superior Court, through Presiding Justice Tanner, must pass on any plan of reorganization before it can become operative, it was deemed advisable to secure the necessary authority from the Legislature to reorganize, and accordingly Attorney-General Rice was requested to draw up a bill and present it in anticipation of approval of the reorganization by the court.

Mayor Gainer's statements relative to the concessions the city would make were not made on his own initiative, as he had conferred before the conference with the members of the City Council committee on Rhode Island Company affairs and had been vested with full authority to speak for the city.

Another Receiver in New York

Holding Company for Rapid Transit and Surface Lines Unable to Meet April 1 Interest Payment

James R. Sheffield was appointed receiver for the Interborough Consolidated Corporation, New York, N. Y., on the afternoon of March 21, by Judge Julius M. Mayer, in the United States District Court at New York. The appointment was made following the filing of an involuntary petition in bankruptcy by Alexander & Green, attorneys, holders of collateral 4 per cent bonds of the corporation.

CONTROLS RAPID TRANSIT AND SURFACE LINES

The Interborough Consolidated Corporation is a holding company. It controls approximately 97 per cent of the stock of the Interborough Rapid Transit Company; 85 per cent of the stock of the New York Railways which recently went into a temporary receivership, and 45 per cent of the stock of the New York Transportation Company, which operates the Fifth Avenue omnibuses.

The Interborough Consolidated Corporation has never received a dividend from its holdings of New York Railways stock. Up to the close of 1916 the New York Railways succeeded in keeping up interest payments on its adjustment mortgage income bonds, but it contributed no revenue to the holding company, which derived its entire income from its ownership of 339,128 shares of Interborough Rapid Transit Company stock. Dividends at the annual rate of 20 per cent were paid on the Interborough Rapid Transit stock, enabling the Interborough Consolidated Corporation to meet the interest on the \$67,825,000 Interborough-Metropolitan 4 1/2 per cent bonds and pay dividends of 6 per cent on Interborough Consolidated preferred. In July, 1918, the Interborough Rapid Transit dividend was cut to 10 per cent. This necessitated the passing of Interborough Consolidated preferred dividend. In February the dividend on Interborough Rapid Transit stock was also passed, cutting off the source of revenue

from which Interborough Consolidated met the interest in the Interborough-Metropolitan bonds. A semi-annual interest instalment of \$1,526,062 is due on these bonds on April 1.

It was on evidence that the interest payment just mentioned would not be met that the petitioning creditors based their right to act. The Interborough Consolidated Corporation was alleged to be liable for interest owed on these bonds as the result of the consolidation of the Interborough-Metropolitan Company and Finance & Holding Corporation. Evidence of the bankruptcy of the Interborough Consolidated Corporation was presented in the form of a transcript of the minutes of the meeting of the board of directors.

The general grounds for the petition are given as follows:

Your petitioner is informed that the condition of the alleged bankrupt's affairs and business is such as to render it absolutely necessary that a receiver be appointed at once to take the custody and possession of the said securities, bonds and certificates of stock which are now in the possession or under the control of the alleged bankrupt pending the issue of the bankruptcy proceeding, for the reason that the semi-annual instalment of interest on the collateral trust 4 1/2 per cent gold bonds of the Interborough-Metropolitan Company, of which \$62,776,000, principal amount, are outstanding, as your petitioner is informed and verily believes, will be unable to pay the same, with the result that the said bonds, securities and certificates of stock now in the custody of or under the control of said alleged bankrupt may be subjected to or in danger of efforts to levy on the same by the holders of said bonds or some of them attempting to enforce the payment of said instalment of interest to the prejudice of a fair and equitable distribution of said assets pro rata among the creditors entitled to receive the same.

The following securities in the possession of the bankrupt or within its control are listed:

150,610 shares of the capital stock of the New York Railways of the aggregate par value of \$15,000,000.

432 shares capital stock of the Forty-second Street & Grand Street Ferry Railroad, par value \$53,200.

Six first mortgage bonds of the Bleeker Street & Fulton Ferry Railroad Company, par value \$6,000.

One 5 per cent bond of the Broadway Surface Railroad, par value \$1,000.

Six per cent mortgage bonds of the Jerome Park Railway, par value \$100,000.

First and refunding mortgage bonds of the Twenty-eighth & Twenty-ninth Street Crosstown Railroad, par value \$1,375,000.

55 shares of the capital stock of the Third Avenue Railroad, par value \$5,500.

The alleged bankrupt has pledged as collateral the following securities, all of which are not now in its possession or under its control:

339,128 shares capital stock of the Interborough Rapid Transit Company, aggregate par value \$33,912,000.

109,128 shares capital stock of the New York Transportation Company, aggregate value \$1,036,740.

United States 4 1/2 per cent second Liberty bonds, par value \$600,000.

The petitioners assert that the bankrupt owns bills receivable and claims for accrued interest and dividends of unknown value and has cash on hand amounting to \$49,000.

Job E. Hedges, who is receiver of the New York Railways, which as previously stated is controlled by the Interborough Consolidated Corporation, has issued the following statement:

The questions involved in the receivership of the New York Railways are serious and of great importance not only to those interested as bondholders and claimants, but to the general public. I have no preconceived notion whatever in the matter, and approach the duties of the receivership with a fallow and receptive mind. My first duty is to ascertain the facts, and this will be done to the best of my ability. I shall attempt to form no opinion until I have all the facts in mind, and then they will be placed before the court.

The income of the New York Railways for the fiscal year ended June 30, 1918, fell more than \$150,000 short of meeting the interest requirements on the first real estate and refunding mortgage bonds. In the six months ended Dec. 31, 1918, the corporate deficit reached \$2,125,039 and all special and reserve funds were exhausted.

The New York Railways has outstanding \$17,495,060 capital stock. Mortgage indebtedness of the New York Railways is as follows:

First real estate and refunding mortgage.....	\$18,061,289
Adjustment mortgage.....	30,609,487
Convertible scrip.....	2,250

The outstanding mortgages on property of companies owned and operated by the New York Railways are as follows:

Lexington Avenue & Pavonia Ferry Ry.....	\$5,000,000
Columbus Avenue & Ninth Avenue R.R.....	3,000,000
Broadway Railway.....	1,500,000
South Ferry R.R.....	350,000
Central Crosstown Ry.....	250,000

Mortgages against lines leased by the New York Railways are:

Broadway & Seventh Avenue R.R., first consolidation mortgage.....	\$5,150,000
Christopher & Tenth Street R.R.....	210,000
Twenty-third Street Ry., improvement and refunding mortgage.....	1,500,000
Bleeker Street & Fulton Ferry R.R.....	700,000
Thirty-fourth Street Crosstown Ry.....	1,000,000

The New York Railways operates more than 150 miles of trackage in the borough of Manhattan. It was incorporated at the close of 1911 as successor to the Metropolitan Street Railway, which was sold under foreclosure.

Loss of 12 Per Cent in Net Income

Statistics of Electric Railways for 1918 Show Disastrous Effect of Higher Costs—East Better Off in December

Operating returns of electric railways for 1918, as reported to the information bureau of the American Electric Railway Association, show large increases in those items which managers like to see decrease. In the accounts where an increase would mean a healthy growth in prosperity and the prevalence of normal conditions, however, there is a discouraging decrease occurring uniformly throughout the country.

NET FELL 12 PER CENT

The accompanying tables show the returns for 1918 as compared with 1917, and the returns for December, 1918, as compared with the corresponding month of 1917. Table I, giving

the figures for the year, shows that for the country as a whole the revenues increased 6.45 per cent. Expenses during the same period, however, increased 15.74 per cent, producing a decrease in net earnings of 12.26 per cent. For companies reporting taxes the figures are nearly the same, the decrease in the net being 10.40 per cent. An increase in the taxes produced a decrease in operating income of 13.42 per cent.

That the progress of unfavorable conditions has not yet been arrested is indicated by the returns for December, 1918, as compared with the same month of 1917. Table II makes this comparison. Operating expenses for the country as a whole increased 22.58 per cent, while the net earnings fell off 3.90

per cent. Companies reporting taxes showed an increase in revenues of 7.57 per cent, an increase in expenses of 21.92 per cent and a decrease in net earnings of 33.46 per cent. Taxes decreased 32.67 per cent, and the net income suffered a decline of 33.96 per cent.

The operating ratio for 1918 for companies operating 5107 miles of line was 72.65 per cent as compared with a ratio of 66.82 per cent for the same companies in 1917. Companies operating 3799 miles of line report taxes, and the operating ratio of these companies in 1918 was 73.06 per cent, an increase of 5.05 per cent over 1917 for the same companies.

SIGNS OF GAIN IN EAST

The Eastern district showed the only signs of improvement, especially in the returns for December, 1918. The more favorable showing is accounted for by

TABLE I—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR CALENDAR YEARS 1917 and 1918

Account	United States				Eastern District				Southern District				Western District			
	Amount, January-December, 1918		Per Mile of Line		Amount, January-December, 1918		Per Mile of Line		Amount, January-December, 1918		Per Mile of Line		Amount, January-December, 1918		Per Mile of Line	
	1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917	
Operating revenues.....	\$111,688,563	\$21,870,545	6.45	\$4,554,582	\$19,222,175	7.00	\$1,407,529	\$15,343,146	\$8,473,216	\$3,553,695	21.92	\$45,726,462	\$29,977,288	48.6	5.23	
Operating expenses.....	81,192,841	15,889,172	15.74	39,973,194	14,084,125	15.87	7,665,957	10,311,572	5,032,366	121.24	12,172,767	7,983,927	113.92	14.48		
Net earnings.....	30,495,717	5,981,617	122.26	14,581,388	5,138,580	117.11	3,741,572	5,032,366	121.24	12,172,767	7,983,927	113.92	14.48			
Operating ratio, per cent.....	1918, 72.65; 1917, 66.82				1918, 73.27; 1917, 67.70				1918, 67.20; 1917, 59.94				1918, 73.38; 1917, 67.45			
Average number miles of line.....	1918, 5,107; 1917, 5,107				1918, 2,838; 1917, 2,838				1918, 743; 1917, 743				1918, 1,525; 1917, 1,525			

COMPANIES REPORTING TAXES

Account	United States				Eastern District				Southern District				Western District			
	Amount, January-December, 1918		Per Mile of Line		Amount, January-December, 1918		Per Mile of Line		Amount, January-December, 1918		Per Mile of Line		Amount, January-December, 1918		Per Mile of Line	
	1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917	
Operating revenues.....	\$100,014,301	\$26,325,247	6.40	\$9,091,424	\$24,033,222	7.00	\$5,346,149	\$20,354,184	\$10,611,445	\$45,608,248	\$30,505,289	5.30				
Operating expenses.....	73,074,000	19,234,827	14.31	36,228,085	17,698,156	13.37	3,536,456	13,464,109	12,333,409	459,234	19,525,144	14.44				
Net earnings.....	26,940,301	7,091,420	120.40	12,951,839	6,335,649	17.50	1,809,693	6,890,744	12,944,198	789,819	9,445,182	61.62				
Taxes.....	6,761,245	1,780,176	0.83	3,169,712	1,553,196	12.69	414,367	1,578,149	7.34	3,172,566	2,125,204	37.6				
Operating income.....	20,179,056	5,311,614	113.42	9,762,117	4,782,523	18.97	1,395,326	5,312,601	111.07	9,021,223	6,034,739	118.43				
Operating ratio, per cent.....	1918, 73.06; 1917, 68.01				1918, 73.64; 1917, 69.50				1918, 66.15; 1917, 59.33				1918, 73.25; 1917, 67.39			
Average number miles of line.....	1918, 3,799; 1917, 3,800				1918, 2,041; 1917, 2,042				1918, 263; 1917, 263				1918, 1,495; 1917, 1,495			

† Decrease.

TABLE II—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR DECEMBER, 1917 AND 1918

Account	United States				Eastern District				Southern District				Western District			
	Amount, December, 1918		Per Mile of Line		Amount, December, 1918		Per Mile of Line		Amount, December, 1918		Per Mile of Line		Amount, December, 1918		Per Mile of Line	
	1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917	
Operating revenues.....	8,903,746	1,825,169	7.67	4,805,173	1,693,153	10.38	1,229,300	1,653,147	10.61	2,669,543	2,215,216	2.22				
Operating expenses.....	7,362,468	1,509,121	22.58	3,797,060	1,338,123	34.04	881,531	1,186,886	33.86	2,683,877	2,071,419	45.95				
Net earnings.....	1,541,278	316,464	132.90	1,008,113	355,303	17.16	347,769	467,584	120.02	185,666	144,748	180.76				
Operating ratio, per cent.....	1918, 82.68; 1917, 72.63				1918, 79.03; 1917, 80.30				1918, 71.75; 1917, 60.27				1918, 93.50; 1917, 65.48			
Average number miles of line.....	1918, 4,878; 1917, 4,878				1918, 2,839; 1917, 2,839				1918, 743; 1917, 743				1918, 1,296; 1917, 1,296			

COMPANIES REPORTING TAXES

Account	United States				Eastern District				Southern District				Western District			
	Amount, December, 1918		Per Mile of Line		Amount, December, 1918		Per Mile of Line		Amount, December, 1918		Per Mile of Line		Amount, December, 1918		Per Mile of Line	
	1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917	
Operating revenues.....	7,707,574	2,159,200	7.57	4,330,134	2,121,922	10.35	517,803	1,971,688	16.77	2,859,637	2,260,211	2.22				
Operating expenses.....	6,472,219	1,813,487	21.92	3,437,317	1,684,156	61.89	363,409	1,384,992	39.52	2,671,493	2,111,445	46.09				
Net earnings.....	1,235,355	346,202	133.46	892,817	437,766	26.30	154,394	587,696	116.66	188,144	149,766	100.66				
Taxes.....	486,798	136,202	132.67	295,443	145,179	178.50	26,527	101,122	177.81	164,828	130,256	191.22				
Operating income.....	748,557	210,318	133.96	597,374	292,587	167.74	127,867	486,574	176.33	23,316	19,510	168.76				
Operating ratio, per cent.....	1918, 83.97; 1917, 74.09				1918, 79.40; 1917, 82.00				1918, 70.42; 1917, 58.77				1918, 93.41; 1917, 65.36			
Average number miles of line.....	1918, 3,569; 1917, 3,570				1918, 2,041; 1917, 2,042				1918, 263; 1917, 263				1918, 1,265; 1917, 1,265			

† Decrease.

the improved operating conditions resulting from better weather during December, 1918.

Compared with 1917, the figures show an increase in operating revenues for 1918 of 7.00 per cent and an increase in expenses of 15.87 per cent. The net earnings fell off 11.41 per cent, while the operating ratio increased from 67.70 per cent to 73.27 per cent. For companies reporting taxes the net earnings decreased 7.50 per cent. Taxes also declined 2.69 per cent, and the operating income dropped 8.97 per cent.

The improvement in the November returns for the Eastern district, noted in the ELECTRIC RAILWAY JOURNAL of March 1, showed up more strongly in the December returns. Revenues increased 10.08 per cent, while expenses increased only 8.34 per cent. As a result there was a gain in net earnings of 17.16 per cent. The operating ratio in this district also showed an improvement, declining from 80.30 per cent in December, 1917, to 79.03 per cent in December, 1918.

For companies reporting taxes the returns were still more favorable. Revenues increased 10.35 per cent while expenses were increasing 6.85 per cent, producing an increase in net earnings of 26.30 per cent. Taxes on the other hand fell off 18.99 per cent, and the result was the extraordinary increase in operating income of 74.85 per cent. This improvement was also reflected in the operating ratio, which dropped from 82.00 per cent in December, 1917, to 79.40 per cent in December, 1918.

CONDITIONS DISCOURAGING IN WEST

Compared with the figures for the East, those for the Western district present a startling contrast. The revenues increased only 5.23 per cent, the smallest increase in the country, while operating expenses increased 14.48 per cent, producing a falling off in net earnings of 13.92 per cent. The operating ratio rose from 67.45 per cent in 1917 to 73.38 per cent in 1918. For companies reporting taxes the net earnings fell off 13.61 per cent. Taxes increased 3.76 per cent, while the operating income dropped 18.43 per cent. The operating ratio for these companies increased from 67.39 per cent to 73.25 per cent.

The returns for December would seem to indicate that the worst has not yet come in this district, although the limit is fast approaching. The operating ratio climbed from 65.48 per cent in December, 1917, to 93.50 per cent in December, 1918. It is probable, however, that this extremely bad showing was caused by the influenza epidemic, which lingered longer in the West than in any other section of the country. This explanation gains strength from the fact that the operating revenues in this district increased only 2.22 per cent, while the average increase for the whole country was 7.67 per cent. Operating expenses increased 45.95 per cent, and the net earnings decreased 80.75 per cent. Owing to a decrease in taxes, the companies reporting taxes make a more

favorable showing. With the same increase in revenues, expenses increased 46.09 per cent, and net earnings decreased 80.55 per cent. Taxes declined 49.22 per cent, and operating income fell off 62.75 per cent.

EXPENSES MOUNT RAPIDLY IN SOUTH

The outstanding feature in the Southern district is the increase in operating expenses. For 1918 this increase was the largest in the country, being 2.69 per cent for all companies reporting and 23.33 per cent for companies reporting taxes. The net earnings decreased 11.14 per cent for all companies, while for companies reporting taxes the decrease was 11.67 per cent. The taxes of these latter companies increased 7.34 per cent, and their operating income declined 11.67 per cent. The operating ratio in this district for all companies reporting was 67.20 per cent for 1918 as compared with 59.94 per cent for 1917.

The figures for December seem to indicate that conditions are still growing

worse. Although the Southern District had the greatest increase in revenues, 12.45 per cent for all companies and 16.77 per cent for companies reporting taxes, the operating expenses were second only to the West in the amount of their increase, being 33.86 per cent for all companies reporting and 39.52 per cent for companies reporting taxes. The net earnings for the former fell off 20.03 per cent, while for the latter the decline was 15.66 per cent. Taxes decreased 17.21 per cent, and the operating income of these companies decreased 15.33 per cent. The operating ratio for the district rose from 60.27 in December, 1917, to 71.75 per cent in December, 1918.

The returns shown in detail in the tables on page 664 have been classified as follows: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Experience of Twelve Lines

Statistics for Large Surface and Rapid Transit Lines Show Effect of War-Time Conditions

Monthly reports on the earnings and expenses of electric railways throughout the country, compiled by the information bureau of the American Electric Railway Association and published from time to time in the ELECTRIC RAILWAY JOURNAL, have shown the gradual approach of many properties toward bankruptcy. To show still further the effect of war-time conditions on such companies, some figures are presented herewith summarizing the results on twelve large properties—six city surface lines, three rapid transit lines and three combined surface and rapid transit lines.

These twelve utilities in 1918 operated 4555 miles of single track, or almost one-tenth of the total electric railway mileage in the United States. They hauled 4,240,674,000 revenue passengers and, with transfer and free passengers included, a grand total of about 6,000,000,000 passengers. The following statistics do not give the full story of an entire year under the most trying circumstances, because the figures from five of the properties are for the twelve months ended June 30, 1918. It must be remembered that the new wage scales, which became a serious burden on operating expenses, were effective for only part of the calendar year. Five of the properties still have a fare of 5 cents, two have 6 cents, one has 8 cents, two have zone systems and one charges 1 cent for each transfer plus a 5-cent fare.

The gross earnings of the surface companies showed an increase of 3.5 per cent over the previous year, while the lines which include rapid transit facilities gained 3.8 per cent. In the operating expenses (including taxes) there was an increase of 11.6 per cent

for the surface properties and 17 per cent for the rapid transit. The operating ratio for the former averaged 77.34 per cent, ranging from 65.79 to 85.05, while for the latter it averaged 66.78 per cent, ranging from 48.39 to 89.79 per cent. To show the difference where only subway or elevated figures are concerned, the operating ratio for three such companies was 60.74 per cent in 1918 as compared to 51.34 per cent in 1917.

SERVICE GAGED TO TRAFFIC

It was to be expected that the companies would gage their service to meet the traffic which was offered. The revenue car-miles showed a decrease of 1.7 per cent for surface lines and an increase of 0.04 per cent for rapid transit. The revenue passengers showed a decrease of 1.8 per cent for surface and an increase of 1.4 per cent for rapid transit companies. Revenue car-hours were practically in the same proportion, which meant that there was no appreciable change in the speed during the year. A more favorable showing in miles per hour is to be expected in the next annual reports, owing to more or less extended adoption of skip-stop practice late in the fiscal year.

The average fare for all the revenue passengers carried was exactly 5 cents, while in the previous year it was 4.8 cents. A still better showing may be looked for next year when the increased rates have been in force longer.

Owing to the fact that some of the companies do not keep account of transfer and free passengers, a true statement of total passengers per mile of single track cannot be presented. The available figures, however, show

that there was a decrease of 2 per cent for surface lines and 1.1 per cent for rapid transit companies. The number for the former properties ranged from 739,052 to 2,251,999, while for the latter they amounted to from 1,112,870 to 1,293,439.

An index of the use of rolling stock is to be found in the item of annual miles operated per car. This, of course, is affected by the average speed. The average for surface lines was 35,299 miles and for rapid transit companies 42,045 miles, both showing an increase in the performance of cars over the previous year. In this connection it should be stated that there was a decrease of about 2 per cent in the maximum number of cars operated daily by these companies.

Some statistics of these twelve large properties are given in the following table:

STATISTICS PER CAR-MILE AND PER CAR-HOUR FOR TWELVE ELECTRIC RAILWAYS

	Six Surface Roads	Six Rapid Transit Roads
Transportation revenue per car-mile (cents).....	32.2	29.2
Expenses and taxes per car-mile (cents).....	21.4	20.0
Transportation revenue per car-hour (cents).....	\$2.76	\$3.55
Expense and taxes per car-hour (cents).....	\$2.17	\$2.42

Boston Loss \$285,124

Cost Per Passenger Rises to 9.30 Cents in February with Receipts at 8.15 Cents—Labor Costs 4.19 Cents

The financial report for the month of February, just made public by the trustees of the Boston (Mass.) Elevated Railway, shows that the cost was 9.304 cents for each passenger carried. Of this total the cost of labor was 4.191 cents. The receipts per revenue passenger, who numbered 24,879,938, were 8.158 cents.

The net loss for February was \$285,124 as compared to a loss of \$219,629 in January and a loss of \$149,903 in December. The average loss for the three months during which the 8-cent fare has been in effect is \$218,219 a month. This compares with an average loss of \$604,148 a month for the four months of the 7-cent fare and with a loss of \$707,958 in July under the 5-cent fare.

The total receipts from all sources for February, 1919, were \$2,029,734. Of this amount \$1,978,313 came from the 8-cent fare. The receipts from this fare, as compared with the 5-cent fare in February, 1918, show an increase of 44.85 per cent or \$613,113.

The total cost of service for February, 1919, was \$2,314,858. Of this amount \$1,042,695 was expended for wages—an increase over February, 1918, of \$369,943. The total cost of service for February shows an average per passenger of 9.304 per cent as compared with 8.970 per cent in January and 8.914 per cent for the six months ended with December. Details of the

cost for February, 1919, are given herewith:

	Cost per Passenger (cents)
Operating expenses:	
Labor.....	\$1,042,695 4.191
Contracts, material and other items.....	232,990 .937
Damages and insurance.....	76,759 .309
Depreciation.....	167,000 .670
Coal.....	148,494 .597
Total operating expenses.....	\$1,667,938 6.704
Taxes on cost of service.....	77,093 .310
Interest on unpaid taxes.....	2,694 .011
Miscellaneous.....	1,492 .006
Rent for use of property:	
Subway and tunnels to city.....	123,662 .497
Leased roads, rentals.....	215,785 .867
Interest on bonds.....	109,198 .439
Dividends under acts of 1918.....	116,997 .470
Total cost of service.....	\$2,314,859 9.304

The income statement for February, 1919, is given below:

RECEIPTS AND COST OF SERVICE OF BOSTON ELEVATED RAILWAY FOR FEBRUARY, 1919

Receipts:	
From fares.....	\$1,978,313
From special cars, mail pouch service, express and service cars.....	7,510
From advertising in cars, on transfers, privileges at stations, etc.....	24,637
From other railways for use of tracks and facilities.....	3,227
From rent of buildings and other property.....	5,381
From sale of power and other revenue	7,433
Total receipts from direct operation.....	\$2,026,501
Interest on deposits, income from securities, etc.....	3,233
Total receipts.....	\$2,029,734
Cost of service:	
Maintaining track, line equipment and buildings.....	\$153,423
Maintaining cars, shop equipment, etc	206,682
Power (including 24,990 tons of coal at \$3.92, or \$148,494).....	222,635
Depreciation.....	167,000
Transportation expenses (including wages of car employees, car-house expenses, etc.).....	747,129
Salaries of administrative officers.....	6,875
Law expenses, injuries and damages, and insurance.....	94,175
Other general expenses.....	70,018
Total operating expenses (of which \$1,042,695 represents wages).....	\$1,667,937
Taxes, proportion.....	77,093
Rent for leased roads (exclusive of subways).....	215,785
Proportion of rent for subways and tunnels to be paid to city (exclusive of Cambridge Subway owned by company).....	123,662
Interest on Boston Elevated bonds and notes.....	109,198
Miscellaneous items.....	1,492
Proportion of dividends under acts of 1918.....	116,997
Interest on unpaid taxes.....	2,694
Total cost of service.....	\$2,314,858
Net loss.....	\$285,124

New Jersey Tax Measure

The New Jersey House has voted to change the 1918 law by which the tax on public utility properties was assessed on the gross receipts at the average rate of taxation in lieu of all personal tax apportioned on the same basis of franchise tax, to a system of making all receipts taxable, on private rights-of-way as well as on highways, in lieu of exemption of personal property, and on bridges and viaducts, formerly taxed as real estate. The new act will increase the returns from 12 to 15 per cent.

Financial News Notes

Receiver for Tucson Company.—The Tucson (Ariz.) Rapid Transit Company has been placed in the hands of Edwin F. Jones, a Tucson attorney, as receiver on the application of the Tucson Gas, Electric Light & Power Company, a creditor holding notes against the company for \$62,062.

File Your Rhode Island Claim.—The receivers of the Rhode Island Company, Providence, R. I., acting under orders of the Superior Court of Rhode Island, have announced that the period for filing all claims against the company will expire on May 1. The receivers, Frank H. Swan, Theodore Francis Green and Zenas W. Bliss, have been instructed by the court to present as soon as convenient after May 1 a complete list of all claims against the company.

May Discontinue One Louisville Line.—The Louisville (Ky.) Railway will probably discontinue its Main Street line regardless of pending argument over fare increase. Main Street business organizations are making an effort to secure steam lines and switches through Main Street. This is a progressive measure that would be a general aid to the city, and probably reduce operating expenses to a point where income would be increased, without material reduction in service.

Tacoma Municipal Line Running Behind.—City Comptroller John Roberts of Tacoma, Wash., in a recent report to the Council, gives figures to show that the tidefalls municipal railway is not earning operating expenses, and that no earnings are available to pay the interest on outstanding bonds or to provide for depreciation. The total income for February from the operation of the railway was \$7,580. After paying interest and caring for depreciation charges, there was a deficit of \$3,591.

Approves \$30,000 Stock Issue.—The Board of Public Utility Commissioners of New Jersey has dismissed the application of the Public Service Railroad, Newark, N. J., for approval of the issuance of \$60,000 of its capital stock at par, but has approved of the issuance of \$30,000 of stock. The company is a subsidiary of the Public Service Corporation. It operates the fast line between Newark and Perth Amboy and Trenton. The companies merged into it included the Trenton Terminal Railroad and the Elizabeth, New Brunswick & Trenton Railroad.

San Francisco Reorganization Progress.—The San Francisco Chronicle said recently: "The committee which has in hand the reorganization of the United Railroads is still at work, and, according to Jesse W. Lillenthal, president of the company, is making real progress.

Mr. Lilienthal said that he hoped there would soon be an announcement to make, which he felt sure would be highly gratifying to all interested in seeing the problems of the company in a fair way of settlement. There had, he said, been a disposition among those concerned to get together, and work that had been accomplished by the committee was such that a comparatively short time would bring results."

Another Rhode Island Deficit.—A deficit of \$90,000 for the month of January is shown in the monthly statement of the Rhode Island Company, Providence, R. I., filed with the Public Utilities Commission. This is an increase of \$30,000 over the deficit for the corresponding month of 1918. The total gross income is given as \$558,711 and total expenses \$654,435, causing a deficit of \$95,724. Operating revenues for the month amounted to \$558,078, an increase of \$78,737 over the corresponding period of the year before. Operating expenses, however, increased \$79,627 in the same period and totalled \$478,911, leaving a net operating revenue of \$79,166 or less than \$1,000 below the 1918 figure.

Galveston-Houston Electric Sells Gold Notes.—Lee Higginson & Company, Boston, New York and Philadelphia, recently offered for subscription at 98½ and interest yielding 7.55 per cent \$1,500,000 of Galveston-Houston Electric Company three-year 7 per cent secured gold notes dated March 1, 1919, and due March 1, 1922. The proceeds of the notes are to be used to provide for the retirement of the company's entire floating debt incurred for additions and improvements and for all necessary requirements during 1919. The notes are the direct obligation of the Galveston-Houston Electric Company and are secured by the deposit of \$1,800,000 of general mortgage 7 per

cent bonds of the three operating companies.

Bay State Sale Set for April 21.—At the County Court House for Essex County in the city of Salem, Mass., Channing H. Cox, special master, on April 21 will sell "all property of every character, nature, and description, and wheresoever situated, of the Bay State Street Railway and of its receiver, and all interests of every character, nature, and description of the Bay State Street Railway and of its receiver, in property, other than cash, cash assets, claims, credits, accounts and items receivable." The sale will be conducted under the final order made on March 22 by the District Court of the United States for the District of Massachusetts. The terms of the proposed reorganization of the company have been reviewed previously in the ELECTRIC RAILWAY JOURNAL.

Interurban Places Short-Term Notes.—Robert Garrett & Sons, Baltimore, Md., are offering at 97½ and interest, to yield 7 per cent, \$450,000 of three-year 6 per cent bond-secured gold notes of the Charleston (W. Va.) Interurban Railroad. The notes are dated March 15, 1919, and are due on March 15, 1922. They are in denominations of \$1,000 and \$500. The trustee of the issue is the Safe Deposit & Trust Company, Baltimore. Interest is payable on March 15 and Sept. 15. The notes are secured by the deposit of \$500,000 of first mortgage 5 per cent bonds of the Kanawha Valley Traction Company, due on Jan. 1, 1946, part of a total authorized issue of \$2,000,000, of which \$1,700,000 are outstanding. For each \$750 of notes, \$1,000 of bonds is pledged as security.

Not to Recover B. R. T. Bonds.—A memorandum was filed on March 24 by Judge Julius M. Mayer, in the United States District Court, regarding the

hearing on March 22, on the application of ex-Judge Lindley M. Garrison, receiver of the Brooklyn (N.Y.) Rapid Transit Company, for instructions as to bringing suits to recover possession of \$29,000,000 of bonds pledged as collateral. The question at issue was as to whether this course should be taken where no arrangement has been made to prevent having the bonds thrown on the market regardless of any upset price. Judge Mayer holds that the transactions in question were bona fide and in accordance with business usages and should be regarded as valid, particularly because the other course would at the present time be likely to disturb public confidence. No such actions will accordingly be brought by the receiver.

Changes in American Cities Company.—According to the New Orleans Item the affairs of the American Cities Company are now largely in the hands of local New Orleans interests. That paper said recently: "At the meeting of the shareholders of the American Cities Company, the bondholders committee, headed by J. K. Newman, New Orleans, was placed in control of its affairs. It is understood that possibly until after plans of reorganization of the New Orleans Railway & Light Company have taken shape, the management and control of the American Cities Company will be in the hands of directors representing the bondholders, with J. K. Newman active head of the company. The new board of directors is composed of F. T. Homer, New York; J. K. Newman, Arsene Perrilliat, E. H. Bright, H. M. Walsley, D. H. Saunders, F. B. Hayne, C. P. Ellis, L. H. Dinkins and F. B. Williams, New Orleans; Percy Warner, Nashville; J. S. Pevear, Birmingham; D. H. Cantrell, Little Rock; E. D. Parker, Houston; T. H. Tutwiler, Memphis; C. H. Harvey, Knoxville; Robert Jamison, Birmingham; J. H. Caldwell, Philadelphia.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$82,595	\$57,690	\$24,905	\$20,306	\$4,599
1m., Jan., '18	77,776	50,169	27,607	19,659	7,948
12m., Jan., '19	927,891	606,257	323,634	239,741	83,893
12m., Jan., '18	889,212	509,510	379,902	229,376	150,526

BATON ROUGE (LA) ELECTRIC COMPANY

1m., Jan., '19	\$31,272	\$17,157	\$14,115	\$3,988	\$10,127
1m., Jan., '18	21,529	11,117	10,412	3,695	6,717
12m., Jan., '19	277,551	152,693	124,858	46,721	78,137
12m., Jan., '18	235,944	120,553	112,495	42,866	69,629

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

1m., Jan., '19	\$52,190	\$36,958	\$15,232	\$6,727	\$8,505
1m., Jan., '18	41,428	\$33,257	\$8,171	6,335	1,836
12m., Jan., '19	523,767	\$396,111	127,656	78,698	48,958
12m., Jan., '18	466,928	\$308,294	158,634	78,635	79,999

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., Jan., '19	\$146,323	\$115,019	\$31,304	\$21,938	\$9,366
1m., Jan., '18	133,002	\$110,805	22,197	30,698	18,501
12m., Jan., '19	1,853,600	\$1,442,175	411,425	295,175	116,250
12m., Jan., '18	1,384,980	\$1,174,262	210,718	360,510	149,792

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

1m., Jan., '19	\$215,722	\$157,530	\$58,192	\$56,689	\$1,503
1m., Jan., '18	231,606	\$213,338	18,268	70,882	\$12,614
12m., Jan., '19	3,211,015	\$2,245,307	965,708	844,929	120,778
12m., Jan., '18	3,072,014	\$2,105,030	971,784	825,116	146,669

* Includes taxes. † Deficit.

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$36,418	\$29,797	\$6,621	\$6,013	\$608
1m., Jan., '18	29,688	26,509	3,179	6,570	(2,951)
12m., Jan., '19	428,283	\$339,337	88,946	81,657	7,289
12m., Jan., '18	3,699,552	\$2,549,728	1,149,824	1,149,824	126,740

EL PASO (TEX.) ELECTRIC COMPANY

1m., Jan., '19	\$127,965	\$90,427	\$37,538	\$7,013	\$30,525
1m., Jan., '18	114,300	\$74,781	39,519	6,513	33,006
12m., Jan., '19	1,271,235	\$885,956	385,279	81,582	303,696
12m., Jan., '18	1,281,542	\$811,408	470,134	68,276	401,858

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

1m., Jan., '19	\$242,487	\$181,518	\$60,969	\$40,525	\$20,444
1m., Jan., '18	194,182	\$132,913	61,269	39,282	21,987
12m., Jan., '19	2,739,636	\$1,898,855	840,781	473,878	366,903
12m., Jan., '18	2,150,228	\$1,404,368	745,860	455,252	261,408

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

1m., Jan., '19	\$78,070	\$75,237	\$2,833	\$19,995	\$187,162
1m., Jan., '18	47,120	73,004	(25,884)	15,911	141,795
12m., Jan., '19	925,734	\$793,339	132,395	231,694	199,299
12m., Jan., '18	883,790	\$702,500	181,290	187,292	16,002

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m., Jan., '19	\$272,317	\$191,031	\$81,286	\$39,941	\$41,345
1m., Jan., '18	204,521	\$131,562	72,959	41,037	31,922
12m., Jan., '19	2,934,009	\$1,956,335	977,674	480,560	497,118
12m., Jan., '18	2,452,973	\$1,387,706	1,065,267	489,869	375,394

Traffic and Transportation

Appeals to Its Employees

Connecticut Company Asks Its Employees to Make Suggestions for Improvements

Under date of March 15 the Connecticut Company, New Haven, Conn., issued the first of a series of monthly bulletins which it intends to send to all officers and employees of the company. The first bulletin contains four pages. It is concluded with an appeal to the employees for suggestions. The last two pages are left blank except for the lines "I believe the service of the Connecticut Company on the _____ division would be improved if attention were given the following matters." The circular is signed by President L. S. Stors. The text is as follows:

There never was a time when the Connecticut Company stood in greater need of the utmost efficiency from its executives and employees than the present time. We need the effort of every man and woman to win the good-will of the public. Public good will pays us our wages.

Without public good-will street cars cannot operate, and if the street cars do not operate we are deprived of our present means of livelihood.

COURTESY AND EFFICIENCY

Attention to business and common sense breed efficiency. Efficiency brings good-will, and the most valuable component of efficiency is courtesy.

We who drive the cars of the Connecticut Company, whether we be conductors, motormen, track employees, superintendents, managers, clerks or general officers, must bear in mind that our personal success and the success of the Connecticut Company depend on our individual attitude toward the people who ride on our cars.

Every person who pays us a fare, or hands us a ticket or a transfer, is paying us for service, and is entitled to efficient, courteous service.

There will be persons unreasonable and discourteous toward us, who may be insolent and who will try our patience, but nevertheless our duty is to keep our tempers, to listen to complaints, to correct deficiencies in service and to do everything we can to make friends for ourselves and our company.

Never indulge in a noisy argument with a passenger.

Courteous treatment of the public is an important element of good service. Discourtesy, gruffness, insolence on the part of employees will not be tolerated by the public nor by the officers of our company.

Men handling the money of the Connecticut Company are under a heavy obligation to their fellow employees and to the public, as well as under the highest moral obligation to themselves.

FAIRNESS TO ALL

Superintendents, managers and officers are under the obligation to deal with those in their departments with absolute fairness, honor and tact, and to act on constructive criticism and helpful suggestion from the public.

We are all in one big family. We must work together—we must work with our brains as well as our bodies to conserve every resource, every cent of income in order that our company may establish itself soundly, and build up a great spirit of helpfulness on the part of the public—the public good-will so vital to our success.

From time to time you will receive communications from your company. You will be told how things are going with us, how we are succeeding, how we are falling down. Give our prompts your best thought;

give the public your best service; work your brain as well as your body.

Working together we'll win public favor and personal success.

P. S.—We invite you to use the next sheet to send us suggestions that probably have occurred to you for the betterment of our service. Feel free to write exactly what is in your mind—we want helpful criticism and earnest suggestions.

There is an addressed envelope here with which you can seal your suggestions, and leave with the foreman or other person to whom you report, or, if you prefer, you are free to mail it direct.

Conference on Spokane Fares

Two conferences were held on March 14 by city officials of Spokane, Wash., and the officials of the Washington Water Power Company and the Spokane & Inland Empire Railroad in an effort to reach an agreement on the demand of the companies for an increase in fares. At the close of the conference the City Commissioners announced that they had declined to agree to the plan for an increase. In fact, Commissioners Fleming and Tisley said that they thought further conferences useless and that the companies should now place their propositions in writing before the City Council.

In substance the modified proposals of the railways are:

To raise the fare from 5 cents to 6 cents. Estimated increase in revenues, \$160,000, for both systems.

Period for which the 6-cent fare is to operate on trial, approximately one year. Added revenues to be applied to wage increases for the men, betterment of service and the elimination of present deficits in operating expenses. The wage increases for the Washington Water Power Company employees alone are estimated at \$50,000.

The railway officials explained that a 1-cent increase in fare, if traffic remained constant, would produce \$200,000, or 20 per cent on the present basis of receipts. However, traffic is not expected to remain at its former volume, and on this account the increase in fare is expected to yield not more than \$160,000. The railway officials would not agree to return to the 5-cent fare after the one year of trial. The City Commissioners declined to be committed to any policy where it is proposed permanently to abandon the 5-cent fare.

In the event that no agreement is reached, it is possible that the Public Service Commission may be asked to put into operation the fare increase to which the City Commissioners would not agree.

After three conferences with city officials and representatives of the railway companies Chairman E. F. Blaine of the State Public Service Commission announced that the interested parties had been unable to agree and that the application of the companies for an increase of fare to 7 cents and 1 cent additional for transfers in accordance with their original request for relief had been set for hearing for March 31 in Spokane.

Six-Cent Fare Compromise

Public Utilities Commission Will Decide as to Necessity of Charging Higher Fare in Vancouver

Until such time as the Public Utilities Commission decides that 6 cents is too much that fare will continue to be charged on the Vancouver lines of the British Columbia Electric Railway. Should the commission, however, find that the fare ought to be 5 cents, the extra cents collected during the period from April 9 next to the date on which the judgment becomes effective, will not go to the company's treasury but to the Vancouver General Hospital. Such in effect is the compromise reached at Victoria by the representatives of the City Council in respect of a clause in the public utilities bill.

On the occasion of the strike last July the city granted the British Columbia Electric Railway the right to levy a 6-cent fare for nine months, the understanding being that by the end of that period either the Public Utilities Commission would decide what the fare should be or the city and the company would work out a new franchise agreement good for five years. So far even the public utilities bill has not been submitted to the Legislature, while efforts to reach an agreement on the franchise were abandoned some time ago.

The Council was proposing to pass a new by-law restoring the 5-cent fare next month—the former by-law being operative after April 9 unless repealed—when it was found that the draft of the public utilities bill contained a clause which fixed fares at the rates now in operation until such time as the commission should change them. As the commission might consume many months in its inquiry before returning a finding the City Council protested against the city being saddled with the 6-cent fare all that time when, if they judge the situation correctly, the commission would find in the end that only 5 cents was justified.

Mayor Gale said that Attorney-General Farris had refused to delete the clause but proposed to modify it by providing that the amount of fares received in excess of 5 cents should be paid into a trust fund and held in escrow, to be recovered by the companies concerned should the higher fares be sustained, and to be paid into the funds of designated public institutions should it not. In the case of Vancouver the general hospital was named as the contingent beneficiary.

Fare Conference in Louisville

Several conferences have been held recently between Mayor George Smith of Louisville, Ky., and President Minary of the Louisville Railway, relative to a proposed increase in fares. No formal request has been made to the city by the company as yet, and neither the city nor the railway has made any statement.

Iowa Company Sustained Court Upholds Des Moines Service Cut for Approval of Which Supervisor Was Dismissed

Judge Martin J. Wade of the Federal Court has decided unreservedly in favor of the Des Moines (Ia.) City Railway in its claim that a cut in service is necessary in order to meet the conditions forced by a failure to receive a rate increase. In announcing his decision Judge Wade said:

The receivers claim that the annual deficit of the company is \$216,000. It is clearly the duty of the court to stop this loss.

The people of Des Moines will get every dollar's worth of service they are entitled to. Nothing could be worse than dragging these matters along. The one thing in controversy here is a matter of bookkeeping. Service must be diminished in order that the deficit be stopped. Roy Smock was railway supervisor for the city on Feb. 24 when he signed the new service schedules. The court will not attempt to take any of the power conferred upon him away from him. There is nothing before the court to indicate that the company did not act in good faith. If there is any question of this sort it is between Byers (city attorney) and Smock. If it could be shown that the proposed cuts were in excess of necessity I would not allow them. The new schedule will go into effect temporarily. This is not a final matter. There may be modifications from time to time and the court will be open to a showing at any time. The city and the company should co-operate with each other and it is the city's duty to be interested in the company. Therefore I grant the order.

Judge Wade further declined to take up the city's demands that the pavements near railway tracks be repaired.

Late in February after securing the approval of Mr. Smock, the railway supervisor for the city, the Des Moines City Railway announced a material cut in service. The City Council thereupon discharged Mr. Smock and secured an injunction from the Polk County District Court holding up the service cut. Judge Wade was then brought into the case and told the District Court to "keep its hands off." Then the railway petitioned the Federal Court for the relief desired in the service cut and the decision to which reference has just been made is the result. The service curtailment will go into effect at once.

Service Resumed

After a period of considerable electioneering activity, a new Mayor and several other members of Council were elected for Burlington, Ont., on Feb. 3, says the *Canadian Railway & Marine World*, with the result that on Feb. 5 the Hamilton Radial Electric Railway resumed service between Hamilton and Oakville, 21.46 miles. The agreement with the Burlington Council as to fares to be charged supersedes for a year the provisions in the original franchise, and provides as follows:

Workman's ticket for twelve trips, good for one week, Burlington to Hamilton terminal and return, \$1.50, and to Sherman Avenue, \$1.20.

Hamilton commutation tickets, to and from Hamilton, good for twenty-six trips within six weeks, \$4.50 each, or a rate of 35 cents for return trip.

Transient tickets, one way 25 cents, return 45 cents.

School tickets to be sold at the same price as formerly.

Ratification of this agreement is to be made by the company, the Burlington Council and the Board of Railway Commissioners, and the proceedings in connection therewith are in progress.

A full schedule put in effect on Feb. 20 provides for an hourly car service from 6.10 a.m. to 11.10 p.m. every week day, and from 9.10 a.m. to 10.10 p.m. on Sundays; while there is a service from Burlington to Hamilton at 6 a.m. and 7 a.m., the regular hourly service starting from Oakville at 7.30 a.m. and continuing to 10.30 p.m., except on Sundays, when the last car to Hamilton leaves at 9.30 p.m. There is a car leaving Oakville for Burlington at 11.30 p.m. (daily) and another at 12.30 a.m. (daily except Sunday), and on Sundays only a car from Oakville to Burlington is run at 10.30 p.m.

Boston Zone Trial Postponed

The trustees of the Boston (Mass.) Elevated Railway have decided to defer the trial of the zone system for the following reasons:

1. Because they believe that the 8-cent fare, collected as far as possible by the metal tokens, should be given a further trial.

2. Because there is now pending before the Legislature a bill which proposes to amend the laws so that the trustees cannot adopt the zone system. This bill reads as follows:

§ 2 of Chap. 159 of the special acts of 1918, providing for the management of the Boston Elevated Railway by trustees shall not be construed to confer upon trustees the right to establish a zone system of fares, and no zone system or other system which provides for the collection of more than one fare for a continuous passage shall be put in operation upon the said railway.

3. There is also pending before the Legislature the bill proposed by Senator Walsh, which provides for a return to the 5-cent flat fare; the amount of the deficit to be raised in the general tax levy in the districts served by the company, and in connection with which bill the Supreme Court is asked to determine the constitutionality of the act under which the trustees are operating.

4. The operating charges necessary to give the zone system a trial would involve a large expenditure of money, and it is obviously improper for the trustees to spend this money while such legislation is pending.

5. If the zone system is to be tried, the test should be made under the most favorable circumstances, and the trustees are advised by Prof. A. S. Richey that a zone system can be given a fairer trial during the summer months.

It was originally proposed to start the zone system on April 1.

New Jersey Fare Ordered Reduced

The Board of Public Utility Commissioners of New Jersey on March 26 ordered the Public Service Railway, Newark, N. J., to reduce its fares from 7 cents to 6 cents on April 1. The company is permitted to charge 1 cent for transfers.

The decision was reached at a special session held in Newark to pass upon the request of the company for a zone plan of fares. Mayor Gillen of Newark attacked the company bitterly. He was called upon by the commission, following his tirade, to furnish the regulating body with facts and not opinions.

The hearing on the zoning system was postponed until March 27 to give counsel of the various municipalities time to study the plan. T. N. McCarter, president of the railway, said that with the 6-cent fare the net loss of the company for the first six months of this year would be \$145,041. He also declared the recent strike had cost the company approximately \$200,000.

The decision just rendered by the commission is in accordance with the ruling which it made on Sept. 27, 1918. At that time the commission in order that the company might meet the higher wages then recently ordered by the War Labor Board, authorized the railway to charge 7 cents instead of 5 cents from Oct. 15 to March 31, inclusive, and 6 cents from April until such time as the "war emergency" ceased to exist. In connection with the new rates, the company was permitted to continue to collect 1 cent for all initial transfers. The 1-cent transfer charge was originally put into effect as provided in an order issued by the commission last July. In the meantime it was proposed that an inquiry should be conducted into the question of a zone system of fares as perhaps affording a more equitable plan of meeting the financial needs of the company.

Interurban Telephone Talks

Fred C. Mayer, traffic manager of the Arkansas Valley Interurban Railway, Wichita, Kan., relates the following in explanation of "Why Interurban Railway Employees Go Crazy?":

Telephone rings—

Lady—"Interurban?"

Agent—"Yes, Mam!"

Lady—"When's the last limited to Hutchinson?"

Agent—"Four klok!"

Lady—"When's that car git back?"

Agent—"No limited cars back tonight!"

Lady—"Yes, but when's the last limited car leave here?"

Agent—"I said four klok!"

Lady—"Yes, but when's the last limited git back?"

Agent—"I said no more limited tonight!"

Lady—"Say, when's the four klok limited come back?"

Agent—"Five thirty in the mornin'!"

Lady—"Oh!"

Telephone rings again:

Voice—"When's the first car to Hutchinson?"

Agent—"Five thirty in the mornin'!"

Voice—"When's the nex?"

Agent—"Six forty!"

Voice—"An' the nex?"

Agent—"Every hour, twenty minits!"

Voice—"When ju say?"

Agent—"Eight akklok!"

Voice—"Every hour after?"

Agent—"NO, every hour twenty minits!"

Voice—"Why dinnu say so!"

Agent—"Oh, Hell!"

Houston Sustained in Its Fare Fight

The city of Houston, Tex., won the second point in its fight with the Houston Electric Company, which operates the railway in Houston, when the Court of Civil Appeals at Galveston sustained the decision of Judge Dannenbaum of the Sixty-first District Court. Judge Dannenbaum sitting at Houston had sustained the general demurrer of the city of Houston to the company's mandamus proceeding to compel the city to enforce the repealed ordinance passed last fall providing for a 6-cent fare in Houston, with half fares for students and children under twelve years of age.

C. R. Wharton, counsel for the Houston Electric Company, stated that the fact that Judge Pleasants dissented gave the company the privilege of applying to the Supreme Court for a writ of error. He said that would be done.

In sustaining the general demurrer of the city, Judge Dannenbaum took the ground that he could not go beyond the ordinance of Nov. 6, which repealed the ordinance of Sept. 30, granting the 6-cent fare, unless it was shown that the 5-cent fare was unreasonable and confiscatory. This, the company has not done up to the present time.

The 6-cent fare ordinance was passed upon by the City Council after application had been made by the company for a 7-cent fare. A few days before the ordinance went into effect, a petition bearing a sufficient number of signatures was presented to the City Council, asking for the matter of rates to be submitted to a referendum vote. This was granted and on Nov. 5 a majority voted against the 6-cent fare. The Council then held a meeting and repealed the 6-cent fare ordinance, restoring the 5-cent rate.

Transportation News Notes

Fare Tariff Suspended.—The proposed increase in rates for railway service in Freeport, Ill., by the Illinois Northern Utilities Company has been suspended by the Public Utilities Commission of Illinois until July 13.

Eight Cents for Carlisle.—An order permitting the Cumberland Railway Carlisle, Pa., to charge an 8-cent fare was issued on March 14 by the Public Service Commission. The 8-cent fare was announced after a 7-cent fare had been in effect for a time.

jitney Measure in Washington Unchanged.—The measure introduced in the recent Legislature at Olympia, Wash., providing for the regulation of jitney and motor cars for hire in large communities by placing them under con-

trol of the Public Service Commission, was indefinitely postponed. The jitney law will thus remain as it is.

Oshkosh Would Rescind Paving Charge.—The city authorities of Oshkosh, Wis., have agreed to relieve the Eastern Wisconsin Electric Company of the obligation to pay for the first cost of paving, and the renewal thereof, upon the ordering by the company of fifteen new cars for the city system. Negotiations are now pending looking toward the financing of the purchase of the cars.

Fare Increase Again Suspended.—The Public Service Commission for the Second District of New York on March 20 suspended to and including May 22, proposed increased fares on the Rochester & Syracuse Railroad which are under investigation by the commission. The new fare rates were filed on Oct. 25 and they have been under suspension. The increased fares were due to establishing two 5-cent fare charges in Rochester, instead of one, and increasing all other fares on the line by 5 cents.

New Jitney Measure in Kansas City.—The City Council of Kansas City, Mo., has passed a jitney ordinance which regulates the fare to be charged—10 cents for the first twenty blocks and 5 cents for each additional twenty blocks. Yearly license is set at \$12.50. No jitney will be allowed to solicit business or remain stationary on any of the distinctly business streets. The police will designate such corners in this district at which they may stop to take on and discharge passengers. An operator must be experienced before a license will be granted him. The jitney owners were in accord with the spirit of the measure.

Report of Arnold Company on Louisville.—The Louisville (Ky.) Railway expects to receive a report from the Arnold Company, Chicago, Ill., who recently made a survey of the railway at Louisville. It is intimated that the report will recommend one-man cars for some small lines and elimination of unnecessary or paralleled lines. A reduction of expenses such as the adoption of these measures would bring about, along with a possible increase to a 6-cent fare, would probably enable the company to about break even on the increases in wages ordered by the War Labor Board.

Auto and Railway in Fight for Traffic.—A keen competition has developed between the automobile stages and the lines of the Portland Railway, Light & Power Company, operating between Portland and Vancouver, Wash., in an effort to obtain patronage. The auto fare has been reduced from 35 cents and 50 cents to 25 cents. The railway fare is 15 cents, but about fifteen minutes longer time is required to make the trip by railway than by auto. During the mobilization of soldiers at Vancouver Barracks, sixty-two auto stages operated between the two cities. This number has gradually been reduced to forty.

Yonkers Agrees to Increase.—The Board of Aldermen of Yonkers, N. Y., by a vote of six to four decided on March 22 to allow the Yonkers Railroad, operating practically all the surface lines in the city, to charge an extra 5-cent fare everywhere beyond the city limits. The new rate is to become operative ten days after the signing of the formal agreement by the railroad company. The lines affected are those running to the Van Cortlandt Park terminal of the New York subway, to the Third Avenue Elevated terminal at 198th Street and to Mount Vernon, Hastings-on-the-Hudson, Tuckahoe and Jerome Avenue surface lines in the Bronx.

Recent Pennsylvania Increases.—The Williamsport (Pa.) Passenger Railway has filed notice with the Public Service Commission of Pennsylvania abolishing all tickets and placing the lines on a 5-cent basis, as well as changing the transfer plan. Notice of increase in commodity rates was filed by the Chambersburg, Green Castle & Waynesboro Street Railway; advance to 6-cent fares by the Shamokin & Edgewood Electric Railway; advance from 6 to 7 cents by the Ephrata & Lebanon Traction Company, which also raised fares in its two terminal towns to 7 cents from 5 and discontinued the sale of strip tickets in those places.

Fare Increase Refused.—In an order promulgated on March 17 the Railroad Commission of South Carolina refused the request of the Charleston-Isle of Palms Traction Company for increased rates and turned its file over to the attorney general to bring action against the corporation to compel it to put in the 3-cent rate per mile, with a minimum charge of 5 cents, ordered by the commission Oct. 2, 1918. On March 12 James Sottile, president of the company, appeared before the commission and stated that the 3-cent rate was not enough to permit the corporation to pay operating expenses and that if the company was forced to adhere to such a rate the road would have to discontinue operations.

Penn Yan Line Reduces Fare.—The Penn Yan & Lake Shore Railway, Penn Yan, N. Y., on March 19 filed with the Public Service Commission for the Second District of New York a new schedule of rates proposed as effective on April 1 by special permission of the commission. The one-way fare between any two points within the same fare zone except within an incorporated village or city, will be reduced from 7 cents to 6 cents and twenty strip tickets will be sold for \$1, a reduction, and monthly school commutation ticket books, good for travel between points in two or more zones, reduced from 3.5 to 3 cents per coupon. Baggage and parcel rates and charges for transporting trunks and bicycles will be reduced.

Fare Tokens in St. Louis.—Metal tokens will replace paper car tickets on the lines of the United Railways, St. Louis, Mo., on April 1. A million of the disks will be on hand when the sale begins. The rate of fare is not stamped

on the tokens and therefore they will be good if the fare is changed. They were ordered last year but their delivery was delayed because it was necessary first to change the mechanism on all the fare boxes. The readjusted fare boxes have three cyclometers, one registering small coins, another registering the small metal token, and a third to register a larger metal ticket if the use of one is adopted, as, for instance, to count the children's tickets. The fare disks will be sold by the conductors.

Fare Increase Considered Unreasonable.—The Public Service Commission for the Second District of New York on March 20 directed the Warren & Jamestown Street Railway to amend its passenger tariff by providing for round-trip tickets between Jamestown and Hillside at 12 cents each and commutation books, forty single-trip tickets, good between Stillwater, Boniwood, Sumner Street and Hillside and Jamestown will be at \$2.80 per book. These tickets are to be good for sixty days only for New York State interstate travel. The commission's order was upon a complaint that fares between Jamestown and the near-by points had been increased from 5 to 10 cents and that the increase which had been made was unreasonable.

Seven Cents for Port Jervis.—Chairman Hill of the Public Service Commission for the Second District of New York on March 21 announced that he would recommend to the commission authority to increase the fare on the Port Jervis Traction Company in Port Jervis and the town of Deer Park from 5 cents to 7 cents, to remain in effect until Jan. 1, 1920. There was no opposition to the company's petition at the hearing and it was stated by J. D. Knox, general attorney for the company, that the Port Jervis and Deer Park authorities had consented to the increased fare. Mr. Knox said the road was run down and there had been an agreement that the revenues over running expenses and taxes should be applied to new equipment and otherwise bettering the service in Port Jervis.

Wants Six Cents in Evansville.—The Public Utilities Company, Evansville, Ind., has notified the Mayor of that city through a letter from B. C. Cobb, New York, N. Y., president of the company, that unless the railway is permitted to increase fares from 5 cents to 6 cents it will be necessary to place one-man cars in operation in Evansville. In his letter to the Mayor, Mr. Cobb states that between 400 and 500 cities in the United States now have 6-cent fares and some 7 and 8 cent fares. It also stated that the Evansville Company was operated last year without profit. Mayor Bosse has submitted the matter to the City Council and stated that it would be taken under consideration, as the Public Utilities Company, Evansville, had never asked anything of the Public Service Commission of Indiana without first securing the indorsement of the city administration.

Six Cents in Sheboygan.—The Railroad Commission of Wisconsin on March

11 rendered a decision on the application of the Eastern Wisconsin Electric Company to increase the railway fare at Sheboygan to 6 cents. The application of the company requested authority to increase the present 5-cent fare to 6 cents for all passengers more than five years of age. The decision of the commission authorizes an increase to 6 cents for all passengers more than seven years of age, with six tickets for 35 cents, and a fare of 3 cents for children from five to seven years of age, inclusive, with twelve tickets for 35 cents. The increases went into effect on March 23. The company ran a series of talks in the newspapers explaining the necessity for the 6-cent fare and giving to the public much general information regarding the railway situation throughout the country.

One-Man Cars Reduce Accidents.—Fewer accidents on one-man cars than on the regular cars is the experience of the Dallas (Tex.) Railway, according to Richard Meriwether, vice-president and general manager, who made public statistics covering the eight months period during which one-man cars have been in operation in Dallas. Three accidents for every 2000 miles is the average established by the one-man cars operated on the San Jacinto-Akard Street line, during the period from July 1, 1918, to March 1, 1919. During this eight-month period the twelve one-man cars on this line traveled 268,064 miles and reported 176 accidents, an average of 1½ accidents per 1000 miles. During the same period other types of cars operated in Dallas covered 4,544,123 miles and reported 2357 accidents, an average of 1.92 per 1000 miles. It was also found that the one-man cars maintain a much faster schedule than other type of cars in Dallas.

Receiver Opposed to State Court Interference.—Exception to the jurisdiction of the State courts to control him in any manner has been interposed by J. D. O'Keefe, federal receiver of the New Orleans Railway & Light Company, New Orleans, La., by means of a motion filed through counsel in the State Supreme Court. The motion was offered in the suit of Wilbert Black and others to enjoin the company and the city of New Orleans from collecting a 6-cent fare. Receiver O'Keefe took the position that he is appointed by and as an officer by the United States District Court and is subject to the authority of only that tribunal. The attorneys for Black and the other plaintiffs were ordered by the Supreme Court to show cause recently why Mr. O'Keefe's contentions should not be upheld. The motion filed by the receiver was the result of an order issued by the Supreme Court on Jan. 18, directing him to appear within twenty-five days as a party defendant in the injunction proceedings. That order had been issued on the supplemental petition of Wilbert Black and his co-plaintiffs, praying the Supreme Court to make the federal receiver a party defendant to their suit.

New Publications

1919 Income Tax Procedure

By Robert H. Montgomery. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 980 pages. Leather, \$5.

This book, written by a man of unassailable authority on the subject, is a compendium of invaluable instructions and comments in regard to income tax procedure. The author not only quotes the sections of the revenue law and rulings of the Treasury Department in regard thereto, but also analyzes the points involved and indicates simply and clearly the proper course of procedure. It is not too much to say that for those corporations and individuals conversant with Mr. Montgomery's book the difficulties of making correct income tax returns are reduced to a minimum. A supplement is to be issued to take care of late regulations, this being necessitated by the slowness of Congress in passing the law.

Training for the Electric Railway Business

Written under the supervision of T. E. Mitten, chairman of the executive committee of the Philadelphia (Pa.) Rapid Transit Company, by C. E. Fairchild, Jr., executive assistant of the company. Philadelphia and London, J. B. Lippincott Company, 155 pages. Price, \$1.50.

This is one of a series of books issued by the publishers, descriptive of the needs, channels of advancement, and advantages and disadvantages of different pursuits, and it will give a young man who is about to choose an industry a good idea of the demands and requirements made by the electric railway industry.

It sketches the duties and necessary qualifications of the electric railway executive, transportation man, engineer, accountant, and workers in other branches of the industry. Mental poise, loyalty, cheerfulness, candor, tact, study, experience, gumption, and ability for hard work are all needed. Mr. Fairchild thinks, in this business, with the ability of meeting men in all walks of life, of differentiating between true and false economy and the possession of that idealism which enables a man to invent and develop new and better devices, improved processes and better ways of doing things. The book is an excellent treatise for the young man and also for the industry because it should attract the right kind of recruits.

Although written primarily for the young man looking forward, the book is an excellent treatise for those already engaged in the industry. Many a railway officer will get better and clearer ideas of what he should do and how he should do it by reading Mr. Fairchild's description of the duties of his position.

Personal Mention

Mr. Dozier Elected

Manager of Nahant & Lynn Street Railway Made President of New England Street Railway Club

Joseph E. Dozier, who was elected president of the New England Street Railway Club at the annual meeting on March 27, is well known in electric railway circles in the East, although he entered the traction field only fourteen years ago. He was born in Barnesville, Ga., in 1867, and was reared in Macon, Ga., graduating from Planters' Academy in 1886. In his boyhood he was employed as night operator by the Southern Bell Telephone & Telegraph Company for five years. This experience led to his appointment as an exchange manager soon after leaving school. He remained with the Southern Bell Company until 1894, when he was called



J. E. DOZIER

to Boston by the New England Telephone & Telegraph Company. He served as manager of various exchanges until 1905 when he resigned to become associated with the Nahant & Lynn Street Railway, which he constructed and has operated ever since. Mr. Dozier has been much interested in public affairs in the Lynn district and has an unusually wide circle of friends outside as well as in the electric railway field who have been won by his genial personality and straightforward business methods.

Journal Appoints Cleveland Representative

This paper has appointed David Cameron to take charge of its advertising business in Ohio, eastern Indiana and eastern Michigan. His headquarters will be in the Leader-News Building, Cleveland.

Mr. Cameron has been connected with the New York office of this paper for the last five years except for about a

year and a half during the war when he served as a lieutenant in the aviation division of the Army. He is a native of Pennsylvania and was graduated from the arts department of Dickinson College in 1914. The office in Cleveland was opened because of the growing importance of the district as an industrial and railway center.

Thomas Roycraft, who has been general manager of the Grand Forks (N. D.) Street Railway, for the last seven years, has resigned to return to private life. W. L. Hawkes, superintendent of the company, is now intrusted with the duties of general manager.

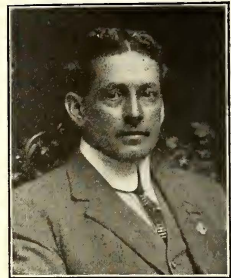
James R. Sheffield, who has been appointed receiver of the Interborough Consolidated Corporation, New York, N. Y., which controls the Interborough Rapid Transit Company and the New York Railways, is a lawyer and was a former Assemblyman of New York. He served two years as head of the fire department and was for a time president of the Republican Club.

F. B. Clements has been appointed secretary and auditor of the Mobile Light & Railroad Company, Mobile, Ala., succeeding M. W. Glover whose appointment as auditor of the West Penn Railways, Pittsburgh, Pa., is mentioned elsewhere in this issue. Mr. Clements, was connected with the Panama Railroad on the Isthmus of Panama for several years.

W. H. Cameron has resigned as general manager of the National Safety Council to become manager of industrial relations for the Eastman Kodak Company, Rochester, N. Y. In accepting the resignation the executive committee passed a resolution containing the statement that "the success of the National Safety Council is largely due to the splendid service Mr. Cameron has given, and his personal contribution to the safety movement has been of inestimable value to the cause."

C. W. Price has been elected general manager of the National Safety Council, succeeding W. H. Cameron. Mr. Price spent twelve years with the International Harvester Company, during the last four of which he was in charge of safety work for all of the plants. For five years he was assistant to the Wisconsin Industrial Commission, working upon standards of safety and sanitation, and conducting educational safety campaigns in the large industrial centers. In 1917 he acted as director of the safety survey made by the United States Employment Compensation Commission of all arsenals and navy yards. For two and a half years he has been field secretary of the National Safety Council.

M. W. Glover has resigned as secretary and auditor of the Mobile Light & Railroad Company, Mobile, Ala., to accept the position of auditor of the West Penn Railways, succeeding in that position John Young, resigned. Mr. Glover entered upon his new duties on March 15, and his headquarters will be at Pittsburgh, Pa. The new auditor of the West Penn Railways has had an extended experience in railroad accounting. He began railroad work at Charleston, S. C., in the local freight office of the South Carolina Railroad, then in the hands of a receiver. He was transferred later to the auditor's office and there handled freight and passenger as well as other accounts. The property was purchased by the South Carolina & Georgia Railroad, of which Mr. Glover was appointed traveling auditor. Later the road was absorbed by the Southern Railway, and he remained as traveling auditor with that company, being advanced to the position of chief traveling auditor of the Southern Railway. He gave up this work in June, 1903, to take up that of chief clerk to the auditor of the Atlanta & West Point Railroad and the Western Rail-



M. W. GLOVER

way of Alabama. Mr. Glover became connected with electric railway accounting in July, 1906, when he accepted the position of auditor of the lines now comprising the Ohio Electric Railway, Cincinnati, Ohio. In January, 1910, he was appointed secretary and auditor of the Mobile Light & Railroad Company, Mobile, Ala. Mr. Glover has always taken an active interest in association affairs. He was prominent in the formation of the Central Electric Accounting Conference and was its president from 1907 to 1909. In 1912 he was elected first vice-president and in 1913 was elected president of the American Electric Railway Accountants' Association, presiding at the annual conventions of the association in 1913 and 1914.

A. B. Coryell has accepted the position of power superintendent of the Port Huron Gas & Electric Company, Port Huron, Mich. Mr. Coryell was formerly in business for himself in Buffalo, N. Y. He has been engaged in the electric railway and light work for

more than twenty-five years. During this time he has had charge of the construction and management of properties in different parts of the country, mainly in the Southern states. He was however, for four years superintendent and purchasing agent of the Moncton Tramways, Electricity & Gas Company, Moncton, N. B.

Mrs. C. L. Stevens, for years chief clerk to T. G. Brabston, transportation manager for the Birmingham Railway, Light & Power Company, Birmingham, Ala., has been appointed assistant traffic manager, and will be in virtual charge of all freight operations of the company. Mrs. Stevens for ten years was chief clerk to Mr. Brabston. He was made transportation manager on Jan. 1, 1919, and since that time his duties have been piling up. Mrs. Stevens was appointed to relieve him of a portion of his work.

C. E. Calder, Dallas, Tex., has been elected vice-president of the four properties owned by J. F. Strickland—the Texas Electric Railway, the Dallas Railway, the Dallas Power & Light Company and the Texas Power & Light Company. For some years Mr. Calder was secretary-treasurer of the Eastern Pennsylvania Railways and the Eastern Pennsylvania Light, Heat & Power Company, Pottsville, Pa. Mr. Strickland first employed Mr. Calder as secretary and assistant treasurer of the Texas Power & Light Company. When Mr. Strickland took over the Dallas street railway properties, Mr. Calder was placed in charge of the financial matters in connection with the transfer. This work he has performed to the satisfaction of all, and now he is made vice-president of all the Strickland properties.

Job E. Hedges, who has been appointed receiver of the New York (N. Y.) Railways, was born at Elizabeth, N. J., on May 10, 1862. He was graduated from Princeton with the degree of A. B. in 1884 and received an A. M. from the same institution in 1887 and an LL. B. from Columbia Law School in 1886. He had the degrees of LL. D. conferred upon him by St. Lawrence and the University of Pittsburgh in 1914. He was admitted to the bar in 1886 and has since practiced law in New York. He was secretary to Mayor Strong in 1895-97, city magistrate in 1897-98, and Deputy Attorney-General of New York in 1902. He was a commissioner for the United States on the International Fisheries Commission. He was one time Republican candidate for Governor of New York State, but was defeated.

J. Willison Smith has been appointed manager of the Division of Passenger Transportation and Housing, United States Shipping Board, Emergency Fleet Corporation, to succeed A. Merritt Taylor, resigned. Mr. Smith entered the employ of the Land Title & Trust Company, Philadelphia, Pa., in April, 1895, as a clerk. He worked his way through the various departments of the company and finally in July, 1917, in recognition of his ability and

his faithful service to the company he was elected a director and one of the vice-presidents. When Charles M. Schwab took charge of the Emergency Fleet Corporation Mr. Smith obtained an indefinite leave of absence from the Land Title & Trust Company and was made assistant director of housing and transportation of the fleet corporation.

Frank T. Hamilton, who has assumed the position of president of the Omaha & Council Bluffs Street Railway, Omaha, Neb., is a native of Omaha. His father, the late C. W. Hamilton, was one of the substantial pioneer businessmen of the city. The elder Hamilton was identified with the early banking house of Caldwell, Hamilton & Company, and he was the first president of the United States Bank of Omaha. The new president of Omaha's extensive traction system was reared in an atmosphere of business. He has grown with growing Omaha, and has observed Nebraska's metropolis develop from a Western town to its present population of more than 200,000. He entered the Merchants' National Bank, Omaha, thirty-two years ago as a clerk and he is now



F. T. HAMILTON

first vice-president of that institution. His election as a director of the Omaha & Council Bluffs Street Railway occurred fourteen years ago. He was elected vice-president of the company twelve years ago. His recent election to the presidency of the company came as a logical succession to G. W. Wattle, who guided the company through a period of extension and reorganization. Mr. Hamilton is also serving as president of the Omaha Gas Company, a position which he has held for fourteen years, succeeding his uncle, the late Frank Murphy. President Hamilton's intimate knowledge of the growth, business history, and general conditions of Omaha peculiarly fit him for the presidency of this large public service utility. He has an extensive acquaintance among business men of the West and it is the general opinion that his administration of the affairs of the electric railway will be approved by the public as well as by his board of directors.

Obituary

George W. Wilson, secretary, treasurer and a director of the International Railway, Buffalo, N. Y., died on March 18. Mr. Wilson was born in Buffalo fifty-one years ago. He had been associated with the International Railway for six years. Death was due to heart trouble. Mr. Wilson had been sick for almost eight weeks. He is survived by his widow, Mrs. Helen Wilson, and a daughter, Mrs. Clifford W. McIntyre.

Walter F. W. Dow, roadmaster of the Southern division surface lines of the Brooklyn (N. Y.) Rapid Transit System, died on March 14, as the result of pleuro-pneumonia. Mr. Dow was forty-nine years old. He had been connected with the company for more than thirty years, having commenced his training for track work under his father, the late Nelson Dow, one-time roadmaster of the old Brooklyn City Railroad. He had thus been identified with surface transit improvement since the early horse-car days, and much of the modern track in Brooklyn was installed under his supervision. Mr. Dow was of a genial, retiring disposition and accomplished his work in an unobtrusive but effective manner. He is survived by his widow and two daughters.

Thrift Put Into Practice

The Kansas City (Mo.) Railways in addition to conducting a building and loan association for its employees; insuring their lives and retiring them on a pension large enough to support them, is also conducting a savings bank for its employees.

Other savings banks pay depositors only 3 per cent and usually compound it every six months. The railway's bank pays 6 per cent and compounds monthly. Money mounts up rapidly in this manner. One man who began with an account of \$1 a month two years ago now has \$200 in the bank drawing interest at double what he could get in any savings bank. Another man who began on Aug. 6, 1917, with \$50 a month now has \$1,502 to his credit.

The company realizes that its own prosperity depends largely upon the prosperity of its employees and it is striving in every manner possible to improve the financial condition of its laborers. If a man shows himself desirous of saving, of accumulating money, securing a home—it helps him. There is a good illustration of one man—a foreigner—who entered the company's employ eight years ago, with \$2 as the sum of his earthly possessions. He took advantage of every offer the company made him for bettering his condition. He now owns a home in the suburbs and has enough money deposited in the company's savings bank to pay him a substantial monthly interest.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

New Steel Prices Already Stimulate Market

Reductions Not as Great as Expected—
Rails Off \$10—All Railway Prices
Not Yet Available

Prior to the meeting on March 20 between the steel producers and the Industrial Board, at which new prices were agreed upon for iron and steel products, a great many producers had expressed an opinion that at this time either a large reduction in prices should be made, which would interest the long-range buyer, or no reduction at all. The result of this meeting shows that a middle course has been taken. The Industrial Board announced that the public should not expect to buy below the reduced prices throughout the present year.

The ruling boils down to about the following reductions: \$5 per net ton for wire products and grooved steel skelp and \$7 per net ton for everything else. Some manufacturers of steel and iron products affected feel that this is not sufficient reduction to stimulate very much demand for large stocks. It will, however, open the market for many propositions which have just been holding off for such a cut in price.

Since the prices went into effect, considered as the morning of March 21, it is evident that trading in the iron and steel market has been stimulated by the price readjustments. Orders reaching the mills bear earmarks of having been practically made up before the price announcement, and held over for the expected drop.

Inquiries have resulted in locating some of the new prices which hold for electric railway equipment. Several producers have stated that they are now working on their new figures and that they will be completed the first of April. This is rather true of that class of equipment where labor costs enter to a large extent.

Standard Bessemer rails per gross ton have dropped from \$55 to \$45 while open hearth rails have dropped from \$57 to \$47 per gross ton. Light rails have been set at 2.35 cents per pound. A report has been received that spikes, tie plates, and fish plates have not changed. Steel bars have come from 2.70 cents per pound to 2.35 cents, while iron bars have come from 2.90 cents a pound to 2.35 cents, placing both iron and steel bars on the same level. Iron for castings for electrical machinery has been reported off from 1 to 1½ cents per pound. Sheets from which tubular steel poles are made have been reduced about ½ cent per pound.

Wire rods per gross ton have dropped

from \$57 to \$52, plain wire per cwt. from \$3.25 to \$3.00 and nails from \$3.50 to \$3.25 per cwt. One prominent wire products concern has reduced its products approximately \$5 per ton, while another concern has not yet stated how much its products have been reduced, as they are from high priced stock.

Reductions in tubing are uniformly \$7 per ton. Rigid iron conduit has come down 5 points and flexible metallic conductor \$10 per 1000 ft. The basing discount on steel boiler tubes, 3½ to 13 inch, is 3¼ per cent for less than car load lots.

Pole line hardware is easier by 5 per cent. Basic pig iron per gross ton, which previously had dropped from \$33 to \$30, has come down to \$25.75. Black sheets, No. 28 gage, have decreased from \$4.70 to \$4.35 per cwt., while galvanized sheets of the same gage have decreased from \$6.05 to \$5.70 per cwt.

Westinghouse Air Brake Report

Unfilled Orders on Hand on Jan. 1 of
This Year Amounted to \$17,000,000

The annual report of the Westinghouse Air Brake Company and its subsidiaries, including twelve months of operations of the Union Switch & Signal Company, owing to a change in the fiscal period covers seventeen months of operation. Net profits aggregated \$7,461,900.41.

Allowing for anticipated cancellation, the value of unfilled orders of the four constituent companies on Jan. 1, 1919, was approximately \$17,000,000.

Engineering Advertisers' Association Formed

Advertising and sales managers representing manufacturers in various engineering lines in and around Chicago met in that city on March 11 and organized the Engineering Advertisers Association. The officers elected were: President, H. L. Delander, Crane Company; vice-president, H. Colin Campbell, Portland Cement Association; secretary, G. H. Eddy, Green Engineering Company; treasurer, Edward J. Pratt, Kellogg Switchboard & Supply Co. The board of directors includes: G. S. Hamilton, American Steam Conveyor Corporation; J. J. Arnsfield, Fairbanks, Morse & Company; A. P. Hauck, Allis-Chalmers Manufacturing Company; H. W. Clarke, Chicago Pneumatic Tool Company; P. A. Powers, Benjamin Electric Manufacturing Company, and J. C. Kinsley, A. M. Davis Regulator Company.

Paints Still Holding on High Levels

Easy-Flowing Paints and Special Mixtures Requiring Few Coats, However, Help to Keep Down Cost

While the cost of paints, varnishes and enamels is still holding a rather high level, due to the cost of the pigments, white lead, zinc, linseed oil, turpentine, varnish gums and other materials, there are several items entering into the cost of the finished job that tend to keep down the total cost. These are being adopted more and more as their results are noted.

Linseed oil, the vehicle in all paints, is rather high in price due to the smaller production of flaxseed. This one material plays a considerable part in the cost of paints, but it is in the correct proportioning of this oil to the character of the work to be done that determines the final result. Some traction companies in the past have made up their own formulas for the paints they thought would serve their purpose best and have found that they did not work to the best advantage. Now the practice of co-operating more closely with the paint manufacturer is becoming more general.

About 80 per cent of the cost of a painting job is labor, so that higher material costs add little to the total cost. This labor item is very noticeable in the flowing qualities of the paint, in the correct proportioning and grade of oil used. Too little oil permits the color to be brushed off after a short time.

The use of enamels is becoming more prominent, giving a very satisfactory finish.

Special paints are now employed which give a completed job from priming coat to protecting varnish in three coats, where heretofore up to fifteen coats have been employed to give this same finish. Baking processes are also used to give the hard finish desired in some cases. One rapid transit company, through the method of painting employed, by permitting cars to get back on the tracks again quickly saves 2 per cent in the rolling stock which was necessary when former methods of painting were used.

It is interesting to note the price paid for cars in England. The *Electric Railway and Tramway Journal* states that the Sheffield (England) Corporation Tramway has ordered fifty double-decked top-covered vestibule tramcar bodies and trucks for the sum of £102,500 (approximately \$512,500 or \$10,250 each) with 5 per cent for contingency.

Copper Wire at Low Level

Current Conditions Warrant Belief that Copper Will Go Higher and That Wire Will Follow

Copper prices are stiffening a little under somewhat heavier buying. While it is probably true that selling interests are simply feeling out the market there seem to be good reasons for believing that the low point of 14½ cents which was reached a short time ago will hold as a low mark for some time. Copper production costs are high and as a consequence producers will advance the market as long as buyers will stand for it. Current copper prices are but a cent or so higher than normal quotations. It would not be surprising therefore to find copper around 18 cents by the summer months.

Copper wire followed the metal down very closely. When copper was 26 cents rubber covered wire base was 34 cents, when copper was 14½ cents, rubber covered base was 20 cents. Now that copper is up three-quarters of a cent it would not be surprising to see a higher wire base the first part of the week.

It seems reasonable, in other words, to believe that copper wire and cable has reached its low price level and that from now on higher prices might be expected, provided always, of course, that copper advances.

Government to Dispose of Rails

According to advices received by the ELECTRIC RAILWAY JOURNAL from the office of the chief of engineers of the War Department, Washington, D. C., the government plans to sell at prevailing prices the surplus stock of 80-lb. and 25-lb. rails ordered for the American Expeditionary Force overseas, but not required due to the signing of the armistice.

There are about 50,000 tons of 80-lb. rail and about 7000 tons of 25-lb. rail. Also there are large quantities of crossings, slip switches and turnouts. The bulk of this material is at ports readily accessible for loading. All sales are being conducted through the office of the Director-General of Military Railways, Washington, D. C.

Board Formed to Assist Industry

President Wilson has authorized an Industrial Board of the Department of Commerce to call industry together group by group, and let them decide on prices to be offered to the nation as the governmentally approved judgment of assembled industry on a price scale low enough to be stable, homogeneous throughout the whole fabric, and founded so solidly on a comprehensive review of conditions as to encourage general buying, including that of the railroads and other governmental agencies, and the general resumption of normal activities.

The offices of the board will be in the Council of National Defense Building, 18 and D Streets, Washington, with

George N. Peek as chairman. No control is authorized by this board, the object being solely to secure co-operation.

New Member of U. G. I.

The New Organization Will Assume Charge of Residual Sales, Engineering and Construction

The officials of the United Gas Improvement Company believe that the future holds promise of increased demand for gas and electricity and for additional plant equipment. With this in mind they have formed a new company, which they have called the U. G. I. Contracting Company. Paul Thompson, one of the U. G. I. vice-presidents, is president of the new contracting company. In a recent interview he said:

"This new organization will not only engage in engineering and construction problems, but it will include an up-to-date selling organization to take entire charge of the sale of by-products. We shall also engage in the construction and sale of water-gas apparatus, vertical retorts, waste heat boilers, and auxiliaries of various kinds. We expect also to design and erect power plants, and will have a special road division competent to construct and maintain roads and highways under contract. We shall also make paints, and it is probable that later on we shall seek contracts for industrial painting."

The other officers of the U. G. I. Contracting Company are J. P. A. Criafield, and D. J. Collins, vice-president. The offices of the company will be for the present in the U. G. I. Building, Philadelphia.

Rolling Stock

Jackson Railway & Light Company, Jackson, Tenn., has purchased three Birney cars from the American Car Company.

St. Thomas (Ont.) Street Railway plans to renovate seven old cars into one-man pay-as-you-enter cars at a cost of \$7,000, and to use \$3,000 for new equipment. St. Thomas ratepayers are to be asked to vote on a by-law for the issue of debentures for \$50,000.

Chattanooga Railway & Lighting Company, Chattanooga, Tenn., lost its power house supplying the Incline Railway on Lookout Mountain by fire on March 23, together with considerable machinery, sheds and several cars. One of these cars, speeding to the bottom, burned considerable part of the trestle work.

Gadsden, Bellevue & Lookout Mountain Railway, Gadsden, Ala., expects to purchase as soon as possible two ten-bench open cars with double-end control and one closed car, not more than 29 ft. over all. Prices are desired on second-hand cars, with Southern prices preferred on account of freight rates. THE ELECTRIC RAILWAY JOURNAL of Jan. 4 gave reference to this rolling stock.

Decatur Railway & Light Company, Decatur, Ill., announces that it will at once place orders for eight modern pay-as-you-enter cars of the most improved type. The cars will seat thirty-two passengers, will have but one door for both entrance and exit and will be light in weight and construction, replacing the heavy cars which are now in use by the company. H. E. Chubbuck, vice-president executive of the Illinois Traction System, has announced that in all fifty of these cars will be purchased, the order for eight cars for the Decatur Railway & Light Company being only a part of the total purchase. Prior notice of new rolling stock was given in these columns on Feb. 15.

Track and Roadway

Pacific Electric Railway, Los Angeles, Cal.—Work has been begun by the Pacific Electric Railway improving its line through Sawtelle. New rails are being laid and the roadbed rebalasted and paved the entire distance through Sawtelle. The cost is estimated at \$90,000.

Public Service Railway, Newark, N. J.—The engineering department of the Public Service Railway has completed plans, which have been approved by the government, for the extension of the French Street line to the federal housing site on the Franklin Park Road. The entire project will be financed by the federal government and it is estimated that it will cost approximately \$75,000. When the extension is completed it will be the property of the United States government, but under a mutual agreement between the Public Service Railway and the officials of the United States Housing Bureau, the Public Service Railway will be given a franchise to operate its cars on the extension.

Fayetteville, N. C.—It is reported that Herbert L. Jones, Richmond, Va., will construct an electric line along the principal streets of Fayetteville to the Cape Fear River and also to Camp Bragg.

Sapulpa, Okla.—A movement has been begun by citizens of Sapulpa to secure the construction of a line from Drumright to Shamrock, Okla., about 6 miles. The Board of Trade may be able to give further information.

Fort William (Ont.) Electric Railway.—It is reported that the public utilities committee of Fort William is considering an extension of the Fort William Electric Railway to Mission Park, at an estimated cost of \$68,235.

Grand River Railway, Galt, Ont.—The Grand River Railway reports that it has under construction a 2-mile diversion of its Hespeler branch between Preston and Hespeler, for the purpose of getting on higher ground away from the river, and the consequent damage as a result of spring freshets, as well as to provide a straight line with a view to increasing the service.

Philadelphia, Pa.—Sealed proposals will be received until April 15, 1919, by William S. Twining, Director of Department of City Transit for the construction of the first four sections of the Frankford, Bustleton and Byberry Surface Passenger Railway from Frankford to Bustleton, about 6 miles. The contract will include the grading and the furnishing and laying of the track and the construction of a 504-ft. steel viaduct. Plans and specifications may be obtained upon deposit of \$10, which will be refunded upon the return of the plans.

Montreal (Que.) Tramways.—The Montreal Tramways will extend its lines into the towns of Ville St. Michel and of Ville Montreal-Nord.

Power Houses, Shops and Buildings

Gadsden, Bellevue & Lookout Mountain Railway, Gadsden, Ala.—This company reports that it will build a new carhouse, 40 ft. x 100 ft., in June.

Eureka Traction Company, Eureka Springs, Ark.—A report from the Eureka Traction Company states that it expects to place contracts during the next three weeks for the construction of a new carhouse. The company also plans to enlarge its amusement park.

Helena Gas & Electric Company, Helena, Ark.—Plans are being considered by the Helena Gas & Electric Company for the construction of a new gas plant to provide for increased capacity.

Pensacola (Fla.) Electric Company.—It is reported that the Pensacola Electric Company will purchase additional equipment and make improvements to its plant.

Bangor Railway & Electric Company, Bangor, Me.—The Bangor Railway & Electric Company plans to install three water wheels of 250 hp. capacity each in its Veazie plant during the coming year.

Hagerstown & Frederick Railway, Hagerstown, Md.—Plans are being prepared by the Hagerstown & Frederick Railway for the construction of a substation, carhouse and freight station, 40 ft. x 60 ft., one story, to cost \$10,000.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—About \$1,000,000 will be spent by the St. Joseph Railway, Light, Heat & Power Company for improvements to its plant. All obsolete machinery will be replaced with new and modern apparatus and the capacity of the plant will be so enlarged as to remove all possibility of a recurrence of a breakdown such as occurred last winter. Additional pumps will be placed in service so that the company will not be forced to depend upon the city water plant for water.

Pacific Power & Light Company, Astoria, Ore.—It is reported that the Pacific Power & Light Company plans the early installation of an additional unit in its power station at Astoria.

Trade Notes

Robert L. Hubler has been appointed general sales manager of the Ohmer Fare Register Company, Dayton, Ohio.

C. E. Hague, formerly production engineer of the Mid-West Engine Company, Indianapolis, Ind., has been appointed sales manager of the American Steam Conveyor Corporation, Chicago.

W. A. Jones Foundry & Machine Company, Chicago, Ill., manufacturer of power transmission apparatus, special foundry and machine work, and also the Jones spur gear speed reducer, has opened an Eastern office at 30 Church Street New York City, under the direction of Lemuel C. Biglow, formerly with the Morse Chain Company of Ithaca, N. Y.

Duntley-Dayton Company, it is understood, has taken over the entire output of the Dayton Pneumatic Tool Company. The Duntley-Dayton Company, which is located in the Westminster Building, Chicago, is also putting out a complete line of portable electric drills and grinders. W. O. Duntley, former president of the Chicago Pneumatic Tool Company, is president of the new company, and his son, C. A. Duntley, is vice-president.

Powdered Coal Engineering & Equipment Company, Chicago, Ill., announces that Willis B. Clemmitt and George H. Ruppert have become associated with the company as advisory engineers. Mr. Clemmitt was formerly associated with the Central Iron & Steel Company at Harrisburg, Pa., and Mr. Ruppert before his entry into the chemical warfare branch of the service, had charge of sodium-ferro-cyanide department of the Smet-Solvay Company.

United States Electric Signal Company, West Newton, Mass., announces recent orders taken as follows: During the month of February, shipment was made to the Tampa (Fla.) Electric Company of six Collins type A motor-operated track switches, and on March 20 to the same company seventeen type K 2 block signals, three type K 3 run-over signals and forty-one type 5 A trolley switches for use in operating the signals. On March 29 shipment is expected of four more type K 2 signals and eight type 5 A trolley switches.

International Register Company, Chicago, Ill., has recently received from the Boston Elevated Railways an order for 275 motor-driven coin registers to take money and metal tokens. These registers will be installed on the new surface cars ordered by the Boston Elevated Railway. The machines to be used are similar to the coin registers previously supplied to the railway by the same manufacturer but have an additional totalizer for registering metal tokens.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., through its Canadian company, has received from the Hydro Electric Power Commission of Ontario an order for

two 45,000-kva. vertical water-wheel generators of 12,000 volts, three phase, 25 cycles, for the commission's Queens-town development. These are said to be the largest water-wheel generators ever constructed and indicate that the Hydro Commission Development thinks there is no time like the present for construction work.

Foreign Opportunity.—A manufacturer in Italy desires to purchase iron, steel, brass, copper, aluminum and lumber used in the construction of railway cars. Correspondence should be in Italian. Refer to No. 28776, Bureau of Foreign and Domestic Commerce, Washington, D. C., for further information.

British-Australian Machinery Company, Ltd., 50 Broad Street, New York City, desires contact with manufacturers wishing to enter and develop their trade in the Australian market. The company handles everything in connection with narrow-gauge and industrial railways.

New Advertising Literature

Indianapolis Switch & Frog Company, Springfield, Ohio: A folder on "Solid Manganese Track Work."

Holden & White, Inc., Chicago, Ill.: A folder entitled "The Use of Slack Adjusters as a War-Time Economy."

British-Australian Machinery Company, Ltd., 50 Broad Street, New York City: An illustrated booklet entitled "Trade With Australia."

Page Steel & Wire Company, New York City: Booklet entitled "Armco Iron Rods and Wire for Oxy-Acetylene and Electric Welding."

Quigley Furnace Specialties Company, Inc., New York City: Bulletin No. 11 on the "Transport System" of the Quigley powdered fuel system.

Automatic Reclosing Circuit Breaker Company, Columbus, Ohio: Bulletin No. 301 describing the company's new types of breakers ARL, DRL, and CRL.

Air Reduction Sales Company, New York: Folders showing the benefits derived from the use of air-cooled products, and methods for the purpose of building up worn rail parts and for repairing damaged locomotive cylinders.

American Roller Bearing Company, Pittsburgh, Pa.: Bulletin 1004 describing type-C roller bearings. This is a bearing designed for use under conditions of medium loads at medium speeds, such as for auxiliary devices like inspection cars, baggage trucks, work cars and similar equipment.

Ohio Brass Company, Mansfield, Ohio: Catalog No. 17—1919. This catalog contains 671 pages and is divided into the following sections: porcelain insulators, pole hardware and miscellaneous, trolley materials, catenary materials, bonds and tools, third-rail insulators, car equipment, tables and indexes. It is well illustrated and has an alphabetical, catalog number and code word index.