

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Safety Rules Produce Best Results When Few and Specific

THE very excellent efforts of the advocates of accident reduction may partly defeat their ends by too great wideness of scope. In the desire to promote general safety the propaganda may be spread out too thin. It is usually better to concentrate attention upon a few definite and considerable dangers which exist on a given property, dangers which are readily recognized by the men who have it in their power to reduce them. A good example of this is the recent poster on "wyeing" put out by the Ontario Safety League of Toronto. It says: "Mr. Motorman, when you throw on the reverse to 'Y' you cannot see plainly where your car is going. Make sure the conductor is on the job on the back platform. Mr. Conductor, when your car is backing at a 'Y' your place is on the back platform ready to give the motorman the bell. You are then the eyes of the car." This is concrete; it is simple; it has evidently been called for by some conspicuous hazards. The important thing about all safety suggestions or rules is to aim them first at the most prolific sources of accident. The emphasis can easily be shifted from time to time, and from place to place, as indeed it should be if for no other reason than that variety is the spice of safety interest as well as of life generally.

War Labor Board Deplores Public Reluctance to Aid Railways

A POINTED admonition to the public that it should not dally in doing its duty to the electric railway industry was recently given to a Denver citizens' committee by Charlton Ogburn, examiner in charge of the electric railway department of the National War Labor Board. While Mr. Ogburn's words, as abstracted elsewhere this week, simply indicate once more an attitude of concern on the part of the board for not only the economic welfare of employees but also the financial preservation of utilities, one can see in the very reiterations of this second point an impatience with public stupidity or unwillingness in hesitating to fulfill its obligations.

A large part of the public is suspicious because so many railways have broken their long silences by campaigns for "telling facts" only when their hide became pinched between a fixed fare and increased costs. On the other hand, public leaders should be intelligent enough to know, and to try to bring others to know, that no matter how backward a company's publicity policy has been in the past, the railway is still essential to public welfare and must not be allowed to go to ruin.

The responsibility of public leaders was well summarized by William H. Taft, co-chairman of the War Labor Board, when he sent to the recalcitrant City Council of Memphis a letter in part as follows:

It is not fair that the public should take advantage of a public utility company and hold it down to an ante-war contract in this regard [to escape paying the cost of transportation in war times]. . . . We should think that the equity of the company in this matter should appeal to the fair-minded people of Memphis and to their representatives in your honorable body.

The leaders in Memphis took no heed, and a receiver-ship resulted. But as Mr. Taft continued, courts cannot borrow money any better than the companies if they cannot give any better security. We insist, therefore, that a constructive rather than destructive means of meeting the situation is demanded. Cities such as Memphis and New York are only causing needless sufferings for themselves and their citizens by refusing to listen to the warnings of the War Labor Board.

The Labor Organization and Legal Responsibility

DISREGARD of contract obligations by organized labor, so frequently the cause of strikes on electric railways, has again directed attention to the question, "Why should not trade unions be compelled to incorporate?" John H. Walker, president of the Illinois Federation of Labor, answers this query in a recent issue of *Manufacturers' News* and some of the points which he makes are worthy of discussion.

In brief, Mr. Walker's argument is that there is no similarity between the methods by which the men who become officers and members in a corporation are selected and the methods by which men become members or officers of a labor union. The result, he says, is that members or officers of a corporation are able to protect themselves in making a choice of their associates, while the labor unions do not have the time, the facilities or money to discriminate in the selection of their members or officials. He maintains, however, that usually the trade union influences its members, as far as it can, to live up to contracts, and penalties are imposed where this is not done.

The trouble with Mr. Walker's statement is that some of the points which he makes have not been proved true by experience. It is too evident that the average labor union does not draw the line on the unfit when adding to its membership. Its object seems to be "quantity rather than quality," and the result is a heterogeneous mixture of individuals who sometimes refuse to "stay put" when the terms of an agreement are not to their liking. Mr. Walker says about this class of members: "The poor devil who is uninformed or not just normal in disposition is here and must make a living. Do you want the workers to assume all responsibility for him, or do you want him left alone to be used unjustly to his own injury and to the injury of the other workers?" How does the union president reconcile this statement with his excuse that proper discrimination is prevented by the lack of time, money and other facilities. The fact

appears to be that these organizations want all the members they can get so that they may gain their point by force of numbers.

We are making no argument here against the right of workmen to organize. We do maintain our belief, however, that labor organizations should be made legally responsible so that employers will be justified in dealing with them. No sane persons will say that employers have a monopoly on honor or that a broken contract is always due to the employees. On the other hand, we contend there can be no disputing the fact that organized labor should not put itself beyond the jurisdiction of the courts when the question of liability for disregard of solemn agreement is an issue. It is assumed that persons who sign a contract do so with eyes open and they should be ready to take the consequences. The past few years have shown the desirability of maintaining harmonious relations between capital and labor, and the future will hold a better prospect if all parties to an agreement are placed in a position where they can be punished for acts or evasions which have a tendency to disturb such relations.

A Strikingly Complete Report on a Vital Subject

THE abstracts which we have been printing of the Public Service Railway on its proposed zone system of fares were completed last week. One would have to go back a great many years, possibly as far back as the historic report made by the Boston railway officials on their visit to Richmond in 1888 when they decided that electric power was feasible for a large city property, to find an electric railway report which has attracted so much attention from other companies. The reason for this interest is not far to seek. In the first place, no topic is of greater importance now than that of a schedule of fares which will appeal to the public as reasonable and yet will yield the return necessary to keep a railway company in good financial condition. In the second place, the preliminary study made by the company to solve this problem, so far as its own property was concerned, was most extensive, taking the greater part of the time of several of its major officers for some seven months and requiring the employment of outside experts as well as of an extended staff of clerks, checkers and other employees reaching a maximum number of 171. Finally, the conclusions reached as to the proper fare to be charged, though based on a scientific analysis of the cost of car operation, is entirely new in electric railway practice, and accompanying it there has been developed a most ingenious method of collecting and accounting for the fares proposed.

It is true that the company does not speak of the system as being applicable to other properties. It was developed for the conditions existing in New Jersey, which in some respects are peculiar, as explained in the report. Nevertheless, the effort put upon the undertaking by the company must be of great value to other railways. By this we do not mean that the actual rates established for the stand-by charge and for the movement charge in New Jersey would apply to other railways or that in other circumstances it might not be advisable to shift some of the theoretical stand-by charge from the short-haul to the long-haul passenger or vice versa. This would have to be determined on each property separately. Indeed, in such a radical change in electric railway practice as is involved in an abandonment of the uniform nickel fare, many plans

undoubtedly will be proposed and probably will have to be tried before an ideal solution for each property will be reached. But it is safe to say that the more trained minds that can be put upon this problem and the more that the industry in general approaches it without prejudice and preconceived opinions the better. It was with this spirit that the Public Service Railway undertook the problem and it was because of this spirit that it was able to break away from old traditions. It is only in this way that the correct answer will be reached.

High Spots for Electric Railway Men in the A. R. E. A. Meeting

MANY of the reports presented at the recent meeting of the American Railway Engineering Association in Chicago have a close connection with electric railway affairs. Notable among them in this respect is the report of the committee on rail as it gives the results of important studies made during the past year on rail breakage, rail specifications, rail testing, rail joints and joint testing and frictionless rail. The section on rail joints, for instance, should be of especial interest to electric railway trackmen because the results of the committee's tests indicate that there is much virtue in the ordinary splice bar provided it is correctly designed and is subjected to proper heat treatment. It also appears that there is little if any difference in strength as between six-hole and four-hole bars of the same cross-section. While the latter point has been fairly well proved in electric railway service, it is a source of satisfaction to have the question settled authoritatively. The shorter bars naturally weigh less, cost less, have fewer bolts and require a shorter bond when the bond is outside of the splice bar. It is further stated in the report that the customary length of four-hole bars may safely be reduced from 23½ in. to 18½ in. without decreasing their efficiency. Another point made was to the effect that the ordinary bar, when redesigned, heat treated, and used with heat-treated bolts will develop greater strength than either of two otherwise stronger types of splice bars, untreated. A standard method of tests for rail joints which provides uniform laboratory testing procedure has been wanting and this lack is now supplied by the method proposed by the rail committee.

In connection with the proposed modifications in rail specifications, the hydraulic or quick bend method of testing is suggested as an alternative for the drop test because it gives more complete information, is quicker, and the breaks are nearly always normal tension breaks of the part in tension, which is very frequently not true in the drop test.

The important subject of transverse fissures in rails was under investigation in many quarters and considerable progress was made. Evidence seems to be accumulating which indicates that both mill practice and chemical composition have more to do with their formation than has generally been ascribed to these factors and that they are not fatigue fractures as has been supposed. Among other things, it has been found that high phosphorous streaks are present in certain types of transverse fissures, and such fissures have been found in rails which have never been in service.

The committee on economics of railway operation presented a report on reclamation and utilization of scrap material which is now a subject of the greatest importance. Until recently, railroads have been waste-

ful and indifferent with one of their largest assets—material. Meanwhile, the scrap dealers were reaping a harvest in selling reclaimed materials back to the railroads.

The electric roads are now saving thousands of dollars annually through the work of the reclamation service. The work started with straightening and re-threading bolts which are so largely used in the way and equipment departments. It has now been extended to other materials by means of electric, thermit and oxy-acetylene welding. This report should be read by electric railway managers and engineers.

The report of the committee on wooden bridges and trestles contains a classification of the uses of lumber which emphasizes the many ways in which railroads use lumber. The committee presented a tentative report covering proposed general specifications and classification and grading rules for timber and lumber which it hopes can be referred to as standard for material of this kind under all circumstances. The work is herculean but its accomplishment in the manner proposed would be of the greatest benefit to all users and manufacturers of railroad lumber and timber.

We have here briefly noted some of the more important matters which the American Railway Engineering Association has under investigation because so many of them cover subjects in which electric railway officials are greatly interested and a careful reading of the full reports will be found well worth while.

The Skip Stop Is Worth Saving

REPORTS for the full year of 1918 announced by various companies are too few in number as yet to give any adequate information on the effect of the skip-stop system as indicated by the relation of car-hours and car-miles operated. We have no doubt, however, that the properties which have made proper use of this system for an extended period will make an improved showing in the item of "miles per hour." For this reason it is to be regretted that the authorities here and there are ordering a restoration of the old system of frequent stops which can serve no good except to please interested property owners and accommodate a small percentage of the riders.

In this connection it is interesting to hear reports from some of the companies which were authorized to eliminate certain stops about the time that new rates of fare were put into effect. These companies report that the necessity of collecting fares of more than one unit slowed up the car movement to such an extent that their only salvation was in the saving of time due to the skip-stop system. Without the advantages of this system there must have been a noticeable deterioration of service due to the slower movement of cars and consequent congestion in crowded districts.

We cannot understand why the authorities in certain cities are acting so hastily to revert to the former method of operation when the reports from Detroit, Philadelphia, Toledo and other places where careful studies have been made, indicate that the elimination of unnecessary stops has distinct advantages for the public as well as for the utility. The testimony of Mr. Swartz of Toledo of the increased safety from the skip stop, published in this week's issue of the paper, is corroborative of similar testimony from Detroit and is notable evidence of one advantage gained by the public from the skip stop. It may be contended that the war is over, but this is no

excuse for going back to wasteful practices. It is to be hoped that the people have taken to heart some of the lessons of recent years. Ignorance is no longer bliss.

New England Points the Way to Public Support of Electric Lines

A KEENER sense of the responsibility of the State for continued electric railway service seems to be possessed by New England than by other sections of the country. This is particularly the case in Massachusetts and Connecticut, which, from an electric railway point of view, are by far the most important, possessing together about three times as many cars and miles of electric track as the four other states of New England combined.

It may be that several abandonments of electric railway properties in this section have brought close home to the public and the authorities the essential nature to the community of this kind of transportation. It may also be that a pioneer movement as regards the proper financial treatment of electric railways is beginning in New England just as that part of the country took a leading position thirty years ago as to the early electrical equipment of these same railways. Whatever the cause, the movement as well as the forms that it is taking are worthy of note.

In Massachusetts the tendency is marked toward direct aid from the State treasury to make up deficits where they occur from railway operation. The Boston Elevated contract was the pioneer in this line. In this case, the State trustees are expected, under the law, to adjust the fare to cover deficits, although the State stands back of the company, for each fiscal period of a year, to make good any loss from operation, including in operating charges both depreciation and obsolescence. During the last six months of 1918 the deficit for which the State thus became liable aggregated more than \$3,000,000. In the "50-50" bill of the Bay State system, however, the State would defray half of the expense beyond 5 cents of carrying passengers on the electric lines, the car rider to pay the other half. In both of these instances, the State would collect its payments to the companies from the communities benefited. The same general plan is recommended by the Public Service Commission of Massachusetts for other parts of the State.

In Connecticut, the State authorities also recognize the seriousness of the situation, though they are hoping to relieve it without direct State aid. Hence there arise the recommendations, abstracted in this issue, of the special investigating commission for a temporary deferment of taxes, a temporary positive relief from pavement and bridge charges, and other means of bringing down the cost of service. In New Hampshire, too, solicitude is being felt for the fate of the electric lines, and remedial legislation is being urged on the State by the Public Service Commission somewhat along the lines being followed in Massachusetts and Connecticut.

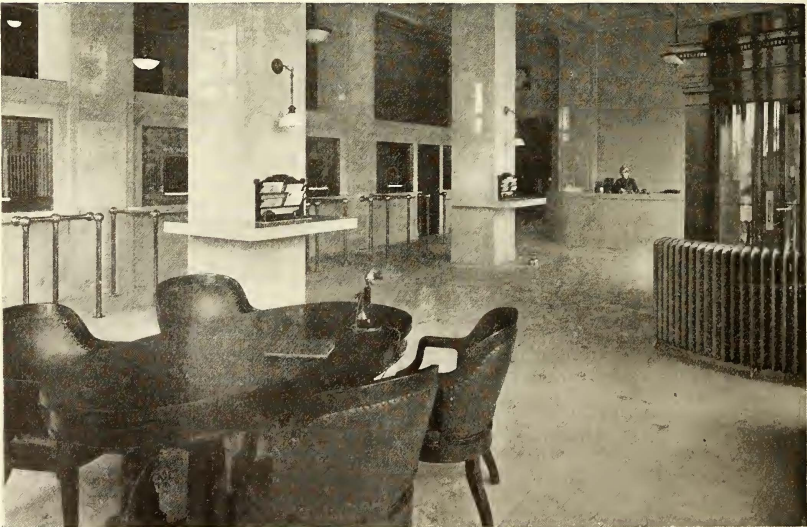
These are favorable signs of an awakened public conscience, or perhaps we should say a clear realization that electric roads constitute one of the fundamentals of public welfare. It is not every citizen that can purchase an automobile to take him about if the trolleys fail. In the interest of the entire community these essential means if transportation must be kept alive and capable of giving good service. This fact is one which other sections of the country besides New England should understand.



North Main Street Façade of the Office Building, Train Shed in Background

Akron's New Interurban Terminal

The Electric Light and Power Office, Designed According to Bank Standards

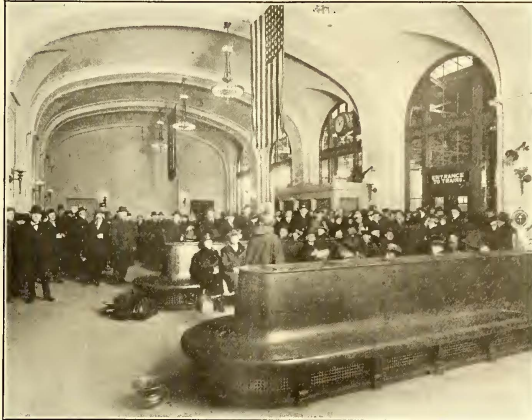


New Akron Terminal in Operation

The Interurban Terminal of the Northern Ohio Traction & Light Company Handles Between 10,000 and 15,000 Passengers a Day with an Average Five-Minute Train Schedule from 6 a.m. to 6 p.m.

THE recent completion of the train shed of the Northern Ohio Traction & Light Company's new terminal permits the company now to apply the latest methods in providing for the convenience and safety of patrons who furnish its large interurban business. A short description of the construction features of this building, together with several reproductions of construction drawings, appeared in the issue of this paper for March 9, 1918, page 465. The building proper was finished and the offices of the company opened on May 1, the train shed being completed about eight months later. A large business is now being handled.

The new terminal is located in the heart of the city on Main Street from which the proposed North Hill viaduct will extend across the Cuyahoga Valley so that ultimately trains arriving and leaving the terminal will travel only on Main Street. The main transfer point of the city lines is one block away. Before the new terminal was constructed interurban cars were loaded



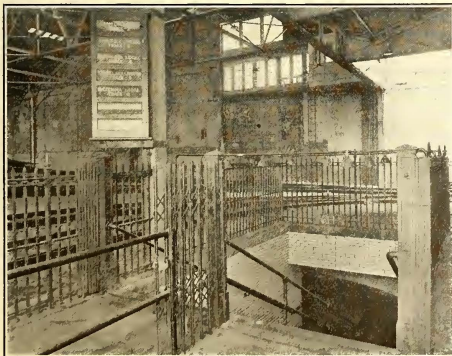
THE WAITING ROOM, WHERE PLEASING STATELINESS PREVAILS

on the street. This practically tied up a whole block on Main Street in the busiest section of the town, as part of the time the cars parked on both tracks and practically all of the time the south-bound track was occupied.

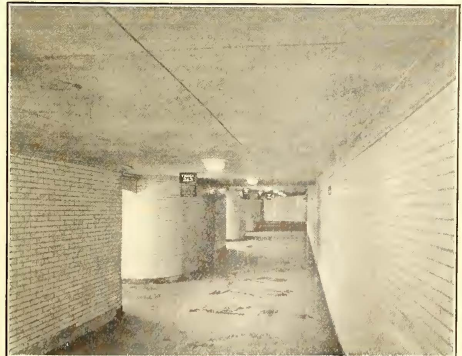
The general layout of the terminal building and train shed is shown in one of the drawings reproduced

on page 682, and another gives the ground floor plan in more detail. Through the front corridor one enters a spacious waiting room, the interior finish of which is Caen stone on walls and ceilings with Tennessee marble wainscoting and floor. The seats, of which there are two groups on each side of the aisle from the corridor to the ticket office, are of old English finish. The ticket office is of marble construction throughout. Entrance to trains is at the right of the ticket office while incoming passengers enter at the left.

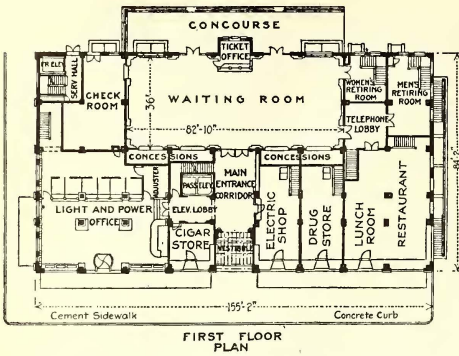
On the south side of the waiting room is a telephone lobby with five booths. From this there is direct entrance to a lunch room and a restaurant on the ground



ENTRANCE TO THE SUBWAY, SHOWING THE TRACK ANNOUNCEMENT BOARD



THE SUBWAY WITH ITS LUCID DIRECTIONS TO PASSENGERS



PLAN OF FIRST FLOOR OF TERMINAL BUILDING

floor and to a more artistically decorated restaurant in the basement. The telephone lobby also furnishes entrance to the men's retiring room, which will contain a barber shop on the ground floor and toilet facilities in the basement. The women's retiring room is also on the south side of the waiting room. At the north end of the waiting room is a check room, for both parcels and baggage, and a lost and found department. Here on the wall is a cork bulletin board, and no papers of any sort are allowed on the walls of the room elsewhere than on this board. The entire west side of the room is occupied by news, candy and cigar stands, and accessible over a marble ledge are the wares of a drug store occupying the store space adjacent to the lunch room. The lunch room, restaurants, drug store, cigar store and all inside concessions are leased to the Union News Company.

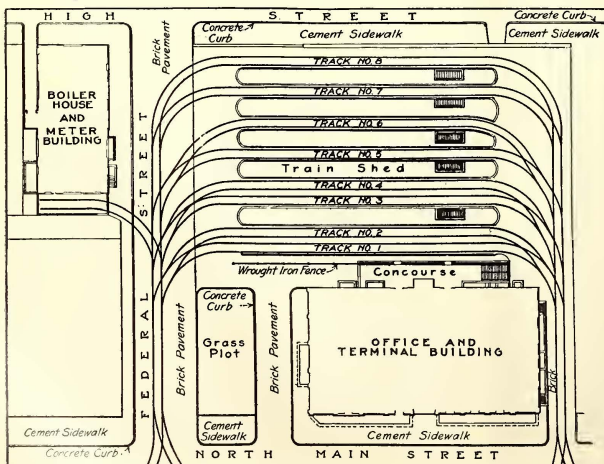
Before boarding trains passengers are required to purchase tickets which are canceled by the gateman at the "Entrance to Trains" door. This leads directly to a stairway which gives access to an underground passageway, from which passengers come up again to concrete platforms between the tracks in the train shed.

Special attention is called to the provisions made to prevent confusion of passengers. When the train is ready it is announced through annunciator horns located on the east wall of the waiting room and through similar horns located in the retiring rooms and restaurants. The announcing can be done either by the trainmaster in the signal tower, seen in the background in one of the illustrations, or by the gateman from a booth near the head of the tunnel stairs. Before a passenger enters the tunnel he sees the announcement board at the head of the stairs, and in the tunnel each track is clearly marked. In the train shed, overhead boards again signify the track upon which a desired train stands.

All trains enter the shed from the south end and as they approach the entrance the trainmaster in the signal tower throws the proper air-controlled switch at the same time setting to red a light at the north end of the track. One minute before leaving time the gateman locks the door and clears the red signal.

At the present time track No. 1 is used as a baggage track and baggage is unloaded direct from trucks onto a platform outside the check room. From here it is moved directly into the baggage cars, never being placed inside the building unless it is to remain over night. The Canton local uses track 2 and the Canton limited track 3. As the local leaves on the even hour and the limited on the half hour, passengers are never simultaneously boarding two trains from the same platform. This is true throughout the station. Track 4 is used by the Cleveland local, track 5 by the Cleveland limited and track 6 by the Akron-Kent-Ravenna local, each of these tracks being served by an individual platform. Track 7 is for special and private cars and track 8 is at present used for storage purposes.

It is estimated that between 10,000 and 15,000 persons are handled through the terminal every day, and 108 trains leave the terminal daily. The first cars out of the terminal north and south leave at 5 a.m. From this time on hourly local service is maintained in each direction and hourly limited service to Cleveland from 6.10 a.m. until 9.10 p.m., with the last car leaving at 12 o'clock midnight. Limited trains leave every two hours for the South from 7.30 a.m. until 5.30 p.m. with an additional limited at 11.30 p.m. A thirty-minute schedule is operated over the Kent-Ravenna branch from 4.50 a.m. until 8.20 p.m. and then hourly until 11.20 p.m. Six baggage trains a day are operated through the terminal, one a through train to Detroit daily except Sunday, and baggage is checked just as on a steam road. Between the hours of 6 a.m. and 6 p.m. a train arrives at and one leaves the terminal, on an average, every ten minutes.



GENERAL LAYOUT OF TERMINAL BUILDING AND TRAIN SHED

The terminal employees include one station master; two gatemen; two trainmasters; two car inspectors; two train-shed janitors; one building janitor; two checkroom clerks; two porters in the men's retiring room; two matrons, and four ticket agents. The waiting room is mopped, scrubbed and disinfected every night and main-

tained during the day like the lobby of a first-class hotel. All general offices of the company are at the new terminal and occupy the entire building with the exception of a few rooms on the fourth floor. The corridors throughout the building have Georgian and white Italian marble wainscoting and floors and the wood-



INTERIOR OF THE TRAIN SHED, SHOWING THE ENTRANCE AND THE SIGNAL TOWER IN THE CENTER BACKGROUND

work is old English. The outside of the building is terra cotta with granite finish. There is an electric globe in every cornice opening around the top, and a large electric sign will soon be erected on each side of the marquee.

American Welding Society Holds First Meeting

THE first meeting of the American Welding Society for forming a permanent organization was held in the United Engineering Societies Building, New York City, on March 28. Prof. C. A. Adams called the meeting to order and gave a brief address on the temporary association which had been formed which had led to this meeting. A form of constitution and by-laws proposed by the temporary committee on welding was adopted as a whole, after which the following officers were elected: President, C. A. Adams; vice-president for one year, J. M. Moorehead; vice-president for two years, G. L. Brunner; directors for one year, W. M. Beard, M. H. Roberts, M. M. Smith, L. D. Lovekin, Alexander Churchward, W. H. Patterson, W. J. Jones and C. A. McCune; directors for two years, R. R. Browning, A. S. Kinsey, Victor Mauck, E. L. Hirt, J. F. Lincoln, H. M. Hobart, D. C. Alexander and H. R. Swartley, Jr.; directors for three years, L. H. Davis, E. L. Mills, D. B. Rushmore, James Burke, D. H. Wilson, Jr., Hermann Lemp, C. J. Nyquist and Alexander Jenkins. Prof. Elihu Thomson was elected as the first honorary member.

A resolution was adopted holding the charter of the society open for ten days so that those filing applications before April 8 can enter as charter members.

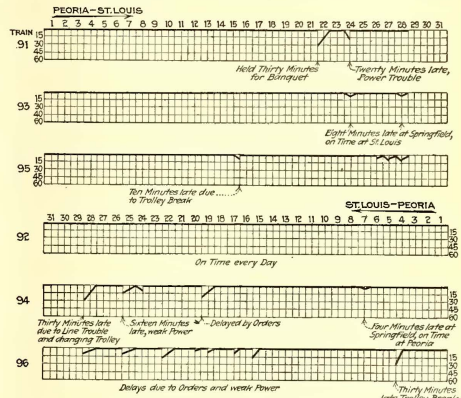
A meeting of the directors elected was held immediately after the society adjourned, at which H. C. Forbes was chosen as permanent secretary for the society and W. E. Symons as treasurer.

Graphic Record of Limited Train Operation

H. E. CHUBBUCK, vice-president executive of the Illinois Traction System has had made up and hung in his office a chart which shows graphically the daily running time of each of the six fast trains operating between Peoria and St. Louis. There are two parlor car trains and one sleeper each way per day. The chart, which covers a period of one month and is kept up each day, shows at a glance whether each train was on schedule or the number of minutes delay. If there is any considerable delay the reason is entered under the drop in the otherwise horizontal line.

The numbers at the top and center of the chart represent the days of the month. The upper three forms are for the trains running from Peoria to St. Louis and the lower three for those operating in the reverse direction. In the first three of these forms the first vertical line represents Peoria, the starting point, and is black. The second line, representing Springfield, is red, and the third, representing both St. Louis, the finishing point, and Peoria, again the starting point for the following day, is black, and so on. The horizontal lines are all red except the top one which is black. The train line is put on with heavy red crayon and shows very plainly. Each horizontal space represents a period of fifteen minutes.

Train No. 91 is a through sleeper leaving Peoria at 11.30 p.m. and arriving in St. Louis at 6.50 a. m. This



FEBRUARY CHART RECORD OF LIMITED TRAIN OPERATION ON THE ILLINOIS TRACTION SYSTEM

train was on time at its destination during February although it left Peoria one-half hour late on Feb. 22 in order to handle returning delegates from a banquet. Train No. 93 leaves Peoria at 8 a.m. and arrives at St. Louis at 2 p.m. This train had a perfect record for the month, as also did train No. 95 which leaves Peoria at 11 a.m. and arrives at St. Louis at 3 p.m.

Concerning trains operating from St. Louis to Peoria, train No. 92 is the sleeper leaving at 11.45 p.m. and arriving at 7 a.m. Train No. 94, which leaves at 9 a.m. and arrives at 3 p.m., was delayed in arriving only three times, due to line trouble and orders. Train No. 96, leaving St. Louis at 8.55 p.m., was late in arrival only five times, one delay being due to a trolley break and the others to power trouble and orders.

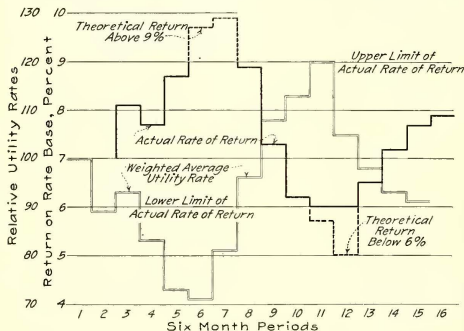
Sliding Scale of Return with Combined Services

Proposed New Brunswick Resettlement Provides for Railway, Electric and Gas Service at Cost With Reward for Efficiency

THE New Brunswick Power Company, St. John, N. B., Canada, is at present concerned in a very interesting proposal in connection with utility regulation. An investigating commission has proposed resettlement which provides a most striking combination of the service-at-cost principle with a sliding scale of return on investment, based on combined rates for railway, electric and gas service.

In 1918 the Lieutenant-Governor in Council was empowered by the Legislative Assembly of New Brunswick to appoint a commission to examine the condition of the company and make recommendations in connection therewith. The members appointed were Guy W. Currier, chairman; Henry Holgate and Prof. Albert S. Richey. This commission has now reported certain recommendations which it is believed will be of interest to electric railway operators.

It is recommended that the control of operation, maintenance, service and rates be vested in a board of seven



NEW BRUNSWICK FRANCHISE—EFFECT OF WEIGHTED AVERAGE UTILITY RATE ON RATE OF RETURN

For the purpose of illustration, more violent fluctuations in the utility rates have been assumed than are likely to occur in actual operation. In the fifth and sixth six-month periods the utility rates drop 27 per cent and 29 per cent respectively, indicating theoretical rates of return on the rate base of 9.7 per cent and 9.9 per cent in the fifth and sixth six-month periods. The actual rate of return during these periods remains at the maximum of 9 per cent.

Similarly, in the tenth and eleventh periods, the utility rates increase 12 per cent and 20 per cent respectively, indicating theoretical rates of return of only 5.7 per cent and 5 per cent in the eleventh and twelfth periods, while the actual rate of return remains, during that time, at the minimum of 6 per cent. So long as the theoretical rate of return remains between 6 per cent and 9 per cent, the actual rate of return coincides with the theoretical, as indicated.

should not be required to pay for any street or road repairs, except those made necessary by the maintenance, renewal or construction of its own way and structures, or for the removal of snow from any street or road or for any part of the cost of construction of new pavement or change in the pavement. The company should not be required to pay rental for the use of any street or bridge beyond the expense of maintenance of tracks. The reason given is that such tax payments would be reflected in the cost of service and thus result in higher rates.

The board of directors would fix from time to time such rates for railway, electricity and gas services as would meet but not exceed the cost of service, which should include operating expenses, taxes, maintenance, depreciation allowance, return on investment, and any other expenditures properly chargeable against income. An annual allowance of \$75,000 should be set aside out of earnings for depreciation (to be increased as the investment increased) until the fund amounted to at least \$200,000 and in no case less than 7 per cent of the rate base, after which time such an amount should be added annually as would keep the fund intact at this sum. The directors should charge to the annual cost of service, as a return on the rate base of Jan. 1, 1919, 7 per cent of such base, plus or minus additional percentages according to the fares and service charges in force.

RATE OF RETURN TO BE BETWEEN 6 AND 9 PER CENT

At the time of the semi-annual audit, the accountant should determine the average fare received per passenger, the average rate per kilowatt-hour and the average rate per thousand feet of gas, and calculate such average rates as percentages of similarly calculated average rates during the six-month period from Jan. 1 to June 30, 1919. By giving due weight to these three percentages, based on the proportionate amount of gross revenue received from the different services, he should then calculate the weighted average percentage by which the rates during the preceding six months had been increased or reduced compared to those in effect during the period from Jan. 1 to June 30, 1919.

The theoretical rate of return on the rate base for the following six-month period should then be 7 per cent plus one-tenth of 1 per cent for each 1 per cent by which such weighted average rate for service had been so reduced. Similarly, the theoretical rate of return should be 7 per cent minus one-tenth of 1 per cent for each 1 per cent by which such weighted average rate had been so increased. The actual rate of return, however, should be not less than 6 per cent or greater than 9 per cent, notwithstanding the fact that the theoretical rate of return might be greater than 9 or less than 6 per cent. The accompanying diagram shows the changes in return which would follow varying the weighted average rates assumed for the purpose of illustration.

The commissioners recommended that legislation providing for the above features be passed and that the acceptance of the new legislation shall be made to constitute an agreement on the part of the company to sell at any time to the Province or any of its political subdivisions all the property included in the rate fare for cash equal to the rate base as then determined plus 10 per cent and any premium required to retire bonds. The company should then be protected from competition on the part of private or municipal plants.

directors, four elected by the company and three appointed by the Lieutenant-Governor in Council for three-year terms at annual salaries of not more than \$1,000. Moreover, it is said that an experienced public accountant should be chosen annually by the public directors, with the approval of the company directors, to report semi-annually on financial operations.

The commissioners are of the opinion that no special taxes of any kind should be assessed against the company, which should be required to pay only such property, income and other taxes as are paid by other general corporations in the Province. The company

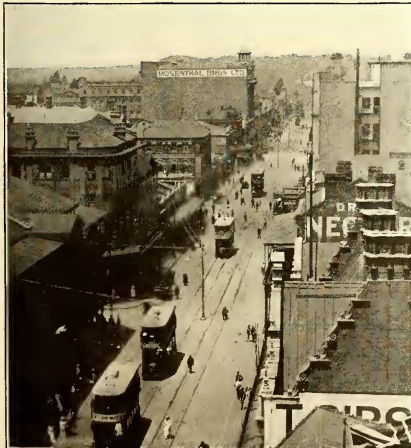
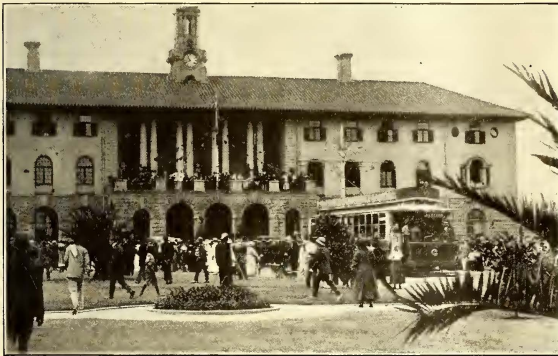
Electric Railways in South Africa

Development in South Africa During the War Has Been Hampered as Elsewhere by Lack of Ability to Secure Equipment—Municipal Operation on Most Lines

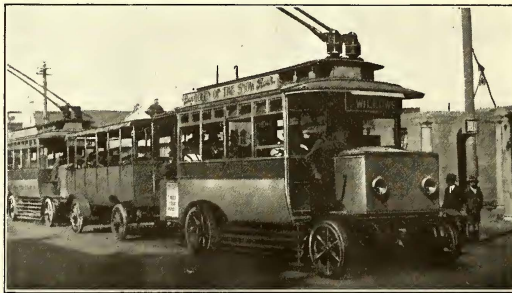
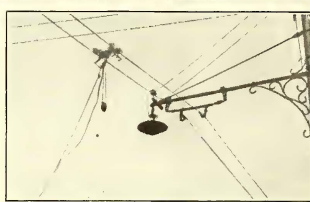
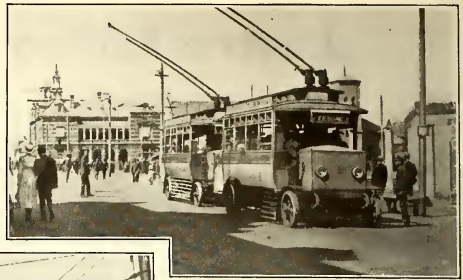
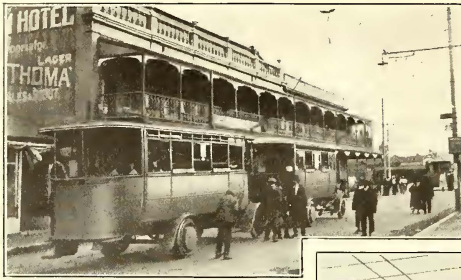
By M. EDWARD
Johannesburg, S. A.

THERE are a number of efficient and up-to-date electric railway systems in that part of British South Africa known as the Union of South Africa. Horse cars have completely disappeared, but nearly every town with more than 10,000 white inhabitants has an electric railway line of some kind. Nearly all of the South African lines are run partly or wholly by the municipalities or town councils. Cape Town and Port Elizabeth have private companies, but it is expected that the two electric railway companies in Cape Town will soon be municipalized.

Johannesburg, Cape Town, Durban, Pretoria, Port Elizabeth, East London and Pietermaritzburg have trolley systems. Germiston and Boksburg, practically suburbs of Johannesburg, and Bloemfontein, the chief city of Orange Free State, operate trackless trolley cars, but they cannot be said to be a great success. Benoni, a fast-rising city on the Gold Reef near Germiston and Boksburg, has Edison storage-battery motor-buses. Pretoria, the last town in South Africa to give up horse cars, has the best-laid track and the best cars in South Africa. All the Pretoria cars are single-deckers and



THE FIRST VIEW SHOWS A CAR AT PRETORIA—THE JOHANNESBURG SYSTEM, ILLUSTRATED IN THE OTHER VIEWS, USES DOUBLE-DECK CARS



THE OVERRUNNING COLLECTOR IS USED WITH THE TRACKLESS TROLLEY IN GERMISTON, THE OVERRUNNING COLLECTOR AT BLOEMFONTEIN

most of them are double-truck. But the system in Pretoria is small compared with that of Johannesburg. In Johannesburg all the cars are double-deckers of the English type. The Johannesburg Municipality owns 135 cars and 70 miles of track. The city is very short of cars, having been unable to get them from overseas during the war. An effort was made to purchase some from other municipalities but only Pretoria had any to supply, and these were too long for the curves on the Johannesburg system. The traffic in Johannesburg has increased more than 50 per cent during the last year and scarcity of cars has become such a serious question that the municipality rebuilt some sprinkler cars, no longer necessary because all the roads are tarred now, into passenger cars. The first of these cars was completed in the summer of 1918 and is a credit to the municipal shops.

Tenders are being asked for the building of other cars at the same shops, and twenty double-truck car bodies are on order from America. They will be shipped "knocked down" and will be put together in Johannesburg in a month or so. Nearly 500 men (white) are employed as drivers, conductors and mechanics.

Thirty million people ride in Johannesburg cars every year, and the receipts amount to about \$2,000,000. Fares are on the zone system. One reason for the large traffic in Johannesburg is because there is practically no steam competition. Suburban trains are run by the South African Government Railways but do not serve the thickly populated city areas. They are for the accommodation primarily of the goldmining towns along the 60-mile stretch of reef known as the Witwatersrand.

And this is where some sort of interurban car system is needed. About 250,000 white people and 400,000 natives, mostly mine workers, live along this 60-mile strip of gold mine in many prosperous little cities. At present the only means of getting in from the suburban

towns to Johannesburg is by suburban steam trains that run every half or three-quarter hour. This train service is about as efficient as a steam one could be, but owing to stops every mile no speed can be

maintained. The South African Railways management had a scheme for electrifying this railway, but the war knocked it on the head. In the meantime there is urgent need for some kind of rapid transit service between the various towns. Cape Town has the second largest system in South Africa, but greater competition is met there from the South African Rail-

ways which runs a remarkably good steam suburban system. Muizenburg, a suburb 16 miles away, is reached in twenty-four minutes by express and forty-five minutes by a train which makes sixteen stops during the run.

Cape Town uses single and double-deck cars, and one company, the Camps Bay Company, runs very powerful single-decker cars fitted with air and magnetic brakes on a line that climbs over part of the famous Table Mountain. With the exception of these cars, and a few at Port Elizabeth, there are no electric cars using air brakes in South Africa.

The views on this page show the trackless trolley cars in Germiston and Bloemfontein, to which reference has already been made. In Germiston the over-running trolley is used with flexible cable. In Bloemfontein the overrunning trolley is employed into double trolley poles. Trackless trolley cars are hard on the roads and are not nearly so comfortable for the passenger as cars running on rails. Besides, the ordinary citizen does not understand the reason for a system between the street car and the motor bus. Germiston started the idea, then Boksburg, an adjoining city, and Bloemfontein, the chief city of the Orange Free State, installed these cars.

Safety Car in Practice

Wisconsin Electrical Association at Milwaukee Meeting Discusses This and Other Live Topics—Raymond H. Smith Elected President

AS LAST WEEK'S issue of this paper went to press the Wisconsin Electrical Association convention was in session at Milwaukee. A partial account of the meeting was given in that issue. The account is completed this week, including abstracts of the presidential address of John St. John, Milwaukee Northern Railway, and the address of Hon. John S. Allen, Wisconsin Railway Commission, both delivered on March 26. On Wednesday evening a joint banquet of the electrical and gas associations was held in the Hotel Pfister, attended by more than 250 members and guests. A number of instructive exhibits were held in connection with the meeting.

At the Thursday session one of the first matters considered was a report by J. B. Sanborne of Milwaukee concerning the activities of the State Legislature with reference to public utilities. He said that a bill to make the Railroad Commission elective rather than appointive had been twice defeated. A bill which has been introduced to abolish the commission and the public utility law must be watched carefully, he said, for if this carries it will leave absolutely nothing to replace the commission form of regulation. A bill has passed the Wisconsin House and Senate to make the fiscal year of all utilities coincident with the calendar year and, to accomplish this, to permit a report covering a period of six months for those utilities whose fiscal year now ends in June.

The first paper read on Thursday was on "The Proper Loading of Distributing Transformers" by Frank A. Robbins, electrical engineer Superior Water, Light & Power Company, Superior, Wis. In it he recommended the use of self-registering thermometers to measure maximum safe temperature of transformers. This was followed by "A Review of Policies of Service Extensions as Laid Down by State Commissions," by A. J. Goedjen, statistician Wisconsin Public Service Company, Milwaukee.

Alfred Alsaker, chief engineer Delta-Star Electric Company, presented an illustrated paper on "High-Tension Outdoor Substations and Switching Equipment." This will be abstracted in a later issue.

The next paper, on "Safety Cars," by H. L. Andrews of the railway traction engineering department General Electric Company, which was abstracted last week, brought out more discussion than any other paper presented at the meeting. An extended abstract of this follows:

OBJECTIONS TO SAFETY CARS AND THE ANSWERS THERETO

Raymond H. Smith, vice-president Eastern Wisconsin Electric Company, Sheboygan, expressed himself as being so favorable to the safety car that he might be called a "safety-car hound." He made several interesting comments with reference to this car. One was that the trolley stand is ugly and brings criticism from the public. Some other arrangement will be necessary. There is also some criticism of the width and general comfortableness of seats. Mr. Smith

thought that it might be necessary under some conditions to strengthen the car structurally and thus to add more weight. He asked whether the motors were heavy enough to care for this condition. He said that the manufacturers should not insist too much upon acceptance by the railways of an adopted standard which may not be equally applicable in all parts of the country. In this connection he mentioned the possible necessity of double flooring and inside side sheathing in Northern climates.

In replying to Mr. Smith, W. G. Brooks, Westinghouse Electric & Manufacturing Company, said that the margin of safety in motoring with the safety car was as great as, if not greater than that with the ordinary heavier cars. Mr. Andrews followed with the statement that these same motors are used very successfully in four-motor equipment on standard heavy cars. J. B. Sanborne, Milwaukee, stated that the opposition to the safety car before the Legislature initially came as a result of the use of one man on standard two-men cars. It can be summed up under two general complaints: First, due to the fact that one man has to make change and issue transfers as well as run the car the service is slower; second, two men make for much safer operation not only as regards railroad crossings but also because the motorman on a safety car starts his car before he has completed making change, etc. To the first of these criticisms Mr. Brooks replied that a traffic check taken in Wisconsin had showed that with one man in place of two men on the same car and the same line the stops had averaged two seconds less in duration.

RAILROAD CROSSINGS OFFER NO OBSTACLE TO SAFETY CARS

As for railroad crossings, C. H. Beck, Westinghouse Traction Brake Company, said that no blanket rule by either city authorities or state commissions can cover all railroad crossings. If the same rule is applied to both a switch track in an open suburb and a two or three-track main-line crossing in town, the very purpose of the rule is defeated, for the conductor will think of each as of equal importance and apply the same degree of care (or carelessness) to each. Any railway would be willing to place a flagman at a hazardous crossing. Mr. Beck emphasized the point that any two-man car is under one-man operation while crossing railroad tracks, because the conductor is out on the street. If the safety of the car depends upon one man he will observe the crossing carefully before proceeding.

J. P. Pulliam, vice-president Wisconsin Railway Light & Power Company, Winona, Minn., said that as the "proof of the pudding is in the eating" the safety cars will prove themselves. The railways have stood still and let the automobiles take the business. Now, more and better service must be given and the Birney car offers the solution. John S. Allen, commissioner Wisconsin Railroad Commission, said that the objection

the commission repeatedly refers to the width of door opening. The trolley tower is not objectionable and, as far as speed of service is concerned, the Madison Railways are making trips in 8 per cent less time with one man than they did formerly with two. This is due to more rapid acceleration and stopping. In referring to the door opening Mr. Beck said this is one of the main safety features of the car. The narrow door opening insures that the boarding or alighting passenger is always under the observation of the operator. Besides something for him to hold on by is always available. The narrow opening also permits speedier loading and unloading rather than the opposite, because all confusion of passengers trying to go in both directions at once is avoided and rapid fare collection is facilitated.

SPECIAL RAILWAY DIVISION OF ASSOCIATION RECOMMENDED

Before adjournment, a committee, previously appointed to consider and make recommendation concerning increased railway activity at the conventions, recommended that the railway and central station meetings be separated and that the railway branch be known as the Railway Division of the Wisconsin Electrical Association. It was further suggested that this organization be subdivided into five committees, as follows: Committee of five members on attendance and program, to include presiding officer, two railway members and two commercial representatives; committee on shops and equipment; committee on transportation; committee on ways and structures, and committee on power and distribution. Each of the last-named four committees would include three members. These committees would arrange for more constructive co-operation in their respective departments to further the interests of the Railway Division.

Continuing the committee report said: "On account of the existing conditions in the electric railway field, we feel it necessary that immediate action be taken and such arrangements made to enable the newly created division of the association to hold annually a two-day mid-year meeting on some one of the member properties, such mid-year meeting to be devoted to a study of the property, with recommendations for improved efficiency, and a complete report to be incorporated in the minutes of the parent association. We strongly recommend that the necessary steps be taken to bring about this end, and feel that the operation of this new division will stimulate interest among the men engaged in the maintenance and operation of electric railways in this State, with marked improved efficiency of all member properties." This recommendation was referred to the executive committee for action.

ELECTION OF OFFICERS

Before the convention adjourned the following officers were elected: President, Raymond H. Smith, vice-president & general manager Eastern Wisconsin Electric Company, Sheboygan; first vice-president, W. C. Lounsbury, general superintendent Superior Water, Light & Power Company; second vice-president, A. K. Ellis, superintendent Wisconsin Traction, Light, Heat & Power Company, Appleton; third vice-president, L. R. Boisen, vice-president Ashland Light, Power & Street Railway Company, Ashland; secretary and treasurer J. P. Pulliam, vice-president and general manager Wisconsin Railway, Light & Power Company, Winona, Minn.

Service Is Supremely Important*

Wisconsin Experience Proves That It Is Possible, Practicable and Profitable to Please the Public

BY JOHN S. ALLEN
Member Wisconsin Railroad Commission

THE quality of the service rendered by all public utility is of supreme importance. All bargaining or trading of any kind is done by two parties: a seller and a buyer. The one characteristic in the seller, which is probably more nearly universal than any other, is that of his desire to please. In the instance of a public utility, there are two parties engaged in the business: the seller and the buyer. The seller is the utility, and buyer is the public. It is quite generally felt that public utilities as a rule do not keep before them as prominently as should be done the desire to please.

It is an axiom of business the world over that money cannot be made out of one's enemies. This is even more true in the case of a public utility than in that of the ordinary tradesman. A satisfied public is the first requisite of a successful public utility. A dissatisfied public is a liability to be seriously reckoned with. A good quality of service redounds to the credit of the utility in many ways. However insurmountable the task may appear, the public utility manager has but one major problem, and that is to please the public.

Some operators may answer that it is absolutely impossible to please the public. The files of the Wisconsin Railroad Commission show that it is possible, practicable and profitable. There are many instances in Wisconsin which show conclusively that the public can be very generally and satisfactorily pleased.

Good service can only be defined as a service of such quality that it pleases and gives satisfaction to the buyer. There comes to mind one utility in Wisconsin which conforms very closely to the mathematical concept of the standards of the commission, yet whose service, owing to one curt employee, does not please and give satisfaction to the buyer. On the other hand, numerous instances come to mind where deficiencies in the mathematical standards are more than made up by a painstaking and studious desire to please.

The quality of service is the prime factor in solving all of the problems of a utility in its relations, to the public, to its stockholders or to its employees. The quality of the service has a very important bearing on the volume of business. It has much to do with civic pride, and the resulting attitude of civic bodies very generally controls the attitude of the city attorney and of the city council. Moreover, a good quality of service has a very important bearing upon the size of the dividends and upon the value of the capital stock of a company. As far as the employees are concerned, an improvement in the quality of the service will make the work more congenial and greatly improve the tone of the organization.

The good-will of the public toward an electric railway is determined by two principal factors; namely, the historical attitude of the company toward the public—that is, the things that the company may have done in the past—and the attitude of the present organization toward the public. The attitude of the public toward the company is directly a reflection of the atti-

*Abstract of paper read before meeting of Wisconsin Electrical Association, Milwaukee, Wis., March 26 and 27, 1919.

tude of the company toward the public. Of this fact I am more and more convinced from day to day. The eternal vigilance of electric railway operators, wisely applied to the quality of the service rendered, will yield larger and more satisfactory returns than any other line of endeavor to which they may apply themselves.

What the Future Holds*

Cost of Living Must Decline Before Wages Drop— Operating Efficiency Must Be Preserved Despite Costs

BY JOHN ST. JOHN

Assistant General Manager Milwaukee Northern Railway,
Cedarburg, Wis.

WITH the signing of the armistice it was generally thought that the cost of labor and materials would decline, but the result has been otherwise. Materials and living necessities have in many cases increased in price. Labor is more plentiful, but the rate of wage remains the same. Before we should expect labor to accept lower wages the high cost of living will have to go down. While it is true that high wages during the war frequently resulted in more extravagant tastes, leaving no margin of savings, yet labor will not subscribe to a plan to reduce wages until a substantial reduction is made in the cost of the things to which it has become accustomed.

Many students of the future are of the opinion that it will take all the work every man and woman in the world is capable of performing for the next twenty years to bring the world back to normal; that the basis for work in the future shall be eight hours of work, eight hours of play and eight hours of sleep, and on this basis the individual can be better maintained both physically and mentally; that homes will have to be built which will be modernly equipped and will fully satisfy the demands of comfort and provide something of luxury; and that appetizing food, good clothes and forms of amusement will have to be provided before satisfaction can be expected from the working class.

We should all like to see these aspirations satisfied. To what extent, however, they may be satisfied depends upon the ability of the employer to maintain his earnings so as to enable him to meet the increased burdens. The prosperity of the employee is essentially involved in the prosperity of the employer. I think we shall all agree that it should be the policy of utilities in the future, as in the past, to maintain, as far as possible, wage scales for the steady and industrious employee which shall be well up to that of other employers of labor for like character of work. Furthermore, I think that the utilities will not be found lacking in their desire to co-operate, in all practical ways, in those things which conduce to the welfare of their employees.

COAL SITUATION NEEDS EXAMINING

For the last three months most operators have been expecting a reduction in the price of anthracite and bituminous coal. On Feb. 1, instead of a reduction there was an increase of about 20 cents per ton for coal mined in southern Illinois. We now are advised that, beginning with May 1 and continuing for five months, there will be a monthly increase of 15 cents per ton on the domestic sizes of anthracite coal. Then we hear the

talk of closing the mines to avert the danger of possible bankruptcy.

It is true that the government about a year ago urged coal operators to speed up production to supply war requirements and the operators agreed to maintain a high wage scale until such time as peace was concluded. Now with the war over and after an unusually mild winter, the bins of many of the domestic users and the stock piles of the industrial plants are such as to make the demand very small. High wages for mining and other work connected with mining continue to be effective and, with the small amount of coal produced, the cost is very high. Even when the coal is sold at the prevailing prices, which appear to be high, the coal operators advise that a loss is sustained and that in self-defense the mines may have to be closed.

We have no reason to doubt the statements made by the coal operators. We are, however, advised that there are large stocks of coal on the docks of the coal companies and of the government; that the releasing of the government coal would probably result in a reduction in price and that, if such reduction was very substantial, it would cause financial ruin to the coal companies. Since there appears to be a wide range of opinion concerning this subject, I would recommend that railway men analyze the situation very carefully before contracting for their requirements.

TAXES AND MAINTENANCE

About 14 cents out of every dollar of receipts go toward taxes, and as a good portion of the taxes is to help the government meet the expenses incurred in connection with the war, we cannot expect very much relief in federal taxes for some years to come. As to local and state taxes, I am not prepared at this time to state which method of taxation is the most equitable, but I believe that the basis for taxing one utility should be the same as that applied to another. I know that the utilities of Wisconsin desire to pay their just proportion of taxes, but such proportion is to be determined by the amount paid by the other taxpayers of the community in which they operate. If the valuation of the utilities is to be determined by the tax commission by capitalizing net earnings, then the rate of capitalization should be the same in all cases and should not be less than 8 per cent.

As regards maintenance, my recommendation is to keep plants in an efficient operating condition by proper maintenance regardless of prevailing costs. Do not put off until to-morrow that which should necessarily be taken care of to-day. The old adage of "penny-wise and pound-foolish" may sometimes be applied to the way we maintain our equipment. Of course, extraordinary maintenance may be deferred, but only so long as it does not impair operating efficiency or decrease the quality of service. The consumer is not much interested in the cost of labor and material or the efficiency gotten out of either or the technical or financial problems of the business. He wants adequate and reliable service which is standard in quality and of good regulation. Adequate service means that which is standard in quality and of good regulation. Reliable service is adequate service that may be had at any and all times—whenever it is desired. Reliable service is dependent upon adequate service, and both should be potent factors in determining reasonable rates.

*Abstract of president's address before meeting of Wisconsin Electrical Association, Milwaukee, Wis., March 26 and 27, 1919.

Skip-Stop Results in Toledo

Automobile Accidents Decrease in Spite of Increase in Machines Registered—Other Striking Evidence of Greater Safety of Skip Stops

By A. SWARTZ

Vice-President Toledo & Western Railroad and Assistant Manager of Railways, Toledo Railways & Light Company, Toledo, Ohio

POSSIBLY one of the greatest economies that has resulted from the introduction of skip stops on the lines of the Toledo Railways & Light Company is the reduction in accidents of all classes, in which the public at large were concerned.

On Aug. 13, 1917, the skip-stop system was installed on the Cherry Street line for a tryout. On Oct. 1, 1917, it was installed on the Summit-Broadway line. The result in both cases was an immediate reduction in accidents on these lines. The company thereupon decided to install the system on the three belt lines, which was done on Oct. 13, 1917, and was attended with the same results. On Jan. 1, 1918, four more lines were added to the list, making a total of nine out of sixteen lines operating with skip stops. The result can be seen by referring to the accompanying charts. On April 1, 1918, the remainder of the lines of the system were added to the list. The actual figures are given in the table, which shows that one of the principal items in the accident list, collision with automobiles, has undergone a very remarkable and continued decrease, in spite of the increasing number of machines and reckless drivers. The figures for registered automobiles, it should be added, do not include the daily average of forty army trucks and cars being driven through Toledo during the greater part of the year.

It will be seen from both the table and diagrams that there was a noticeable decrease in both total accidents and automobile accidents beginning with Jan. 1, 1918,

when nine out of the fifteen lines were operating under skip stops. This is all the more notable because with the installation of skip stops there came a rearranging of schedules, the result of which was a shortening of time allowed for each trip and a layover of from three to four minutes per trip. This, of course, necessitated operating at a higher average schedule speed, amounting to a 10 per cent increase in miles per hour.

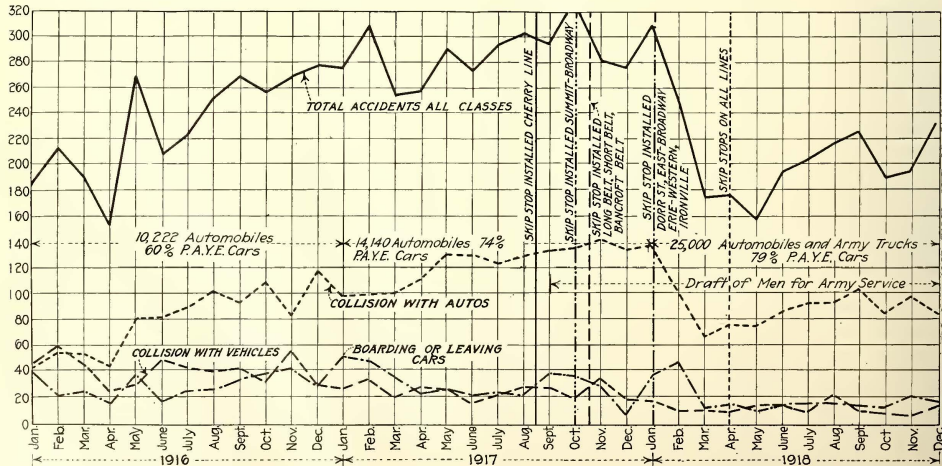
The decrease in accidents with non-motor vehicles is also considerable as will be noted by referring to the chart below. The total non-motor vehicle accidents for 1916 was 369. For 1917 it was 384, an increase of 4 per cent and for 1918 it was 245, a decrease of 36 per cent under 1917 and 34 per cent under 1916.

This decrease we do not ascribe so much to skip stops as to education, as non-motor vehicle accidents occur in nearly all cases in that part of the city where skip stops are not in vogue, namely the congested district.

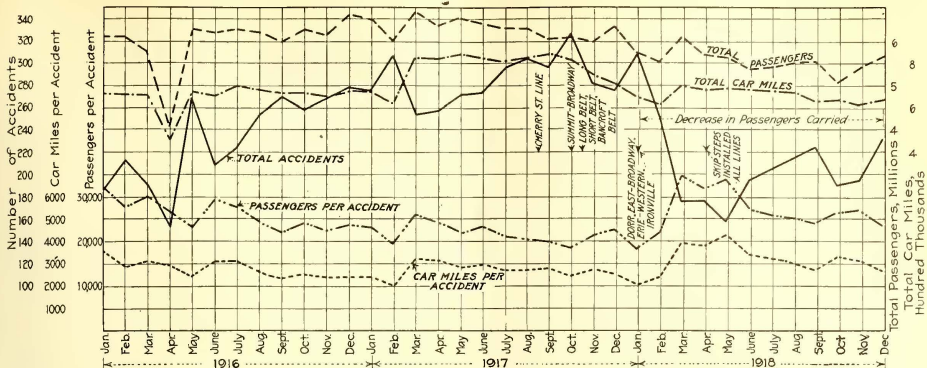
TABLE SHOWING REDUCTION OF ACCIDENTS BY SKIP STOP IN TOLEDO

	1916	1917	1918
Total number of accidents.....	2,779	3,442	2,540
Number of licensed automobiles.....	10,222	14,140	25,000
Total automobile accidents.....	976	1,487	1,126
Percentage automobile accidents to total.....	32	43	44
Increase in number of licensed automobiles over previous year, per cent.....		38	77
Increase in number of licensed automobiles over 1916, per cent.....			144
Increase in automobile accidents over previous year, per cent.....		52	*24
Increase in automobile accidents over 1916, per cent.....			15

* Decrease.



THIS CHART SHOWS TOTAL ACCIDENTS, AS WELL AS NUMBER OF AUTO-COLLISIONS, COLLISIONS WITH OTHER VEHICLES AND ACCIDENTS FROM BOARDING AND LEAVING CARS



THIS CHART SHOWS VERY CLEARLY THAT WITH THE USE OF THE SKIP STOP THERE HAS BEEN AN INCREASE IN SAFETY OF OPERATION IN TOLEDO

At the same time that skip stops were installed, a more rigid discipline system was started. All employees concerned in accidents are called in to the office and dealt with as the case demands.

A very marked rise in accidents will be noticed as beginning in June, 1918, when the effects were felt of the first draft, which necessitated the employment of younger and inexperienced men. However, no man under twenty-one years was accepted as a motorman. Still, the total accidents for the year were 26 per cent less than in 1917. For the seven months of June to December inclusive the accidents totaled 1466 as compared with 2054 during the corresponding months of 1917, a decrease of 23 per cent, thus showing that education and watchfulness of new men were effective in securing the desired results.

It may here be noted that accidents of all kinds, including those concerning the public and all employees, were reduced 26½ per cent in 1918 over 1917.

STATISTICS PER ACCIDENT QUOTED

Reference to the second chart discloses that "total passengers carried" and "car-miles operated" started to drop about May, 1917. At the same time, passengers and car-miles per accident instead of increasing also declined until the advent of the skip-stop system, when these lines show a steady rise. It also will be noticed that these last two lines show a further decline about June, 1918, at which time the effect of the first draft was felt in our ranks.

It is very gratifying to note that in no month of 1918 was the total number of accidents equal to even the lowest monthly record of 1917.

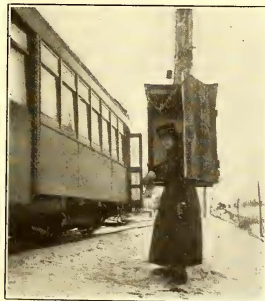
The extremely low point reached in April, 1916, was when the system was closed for thirteen days on account of a strike. This same low point was reached in May, 1918, with an increase of about 33 per cent in car-miles operated and of about 25 per cent in passengers carried. While the number of lawsuits cleared up in a year warrants only a general comparison with any other year it was very gratifying to note a saving of about 40 per cent in the claim department expenses for 1918 over 1917.

Boarding and leaving accidents during 1916 totaled 518, and during 1917 there were 320 or a reduction of 38 per cent. During 1918 there were 161, a decrease of 50 per cent under 1917 and 69 per cent under 1916.

This has been due largely to the installation of pay-enter equipment, as the percentage of our cars which were pay-enter during 1916 was 60. During 1917 about 74 per cent were pay-enter, and during 1918 about 79 per cent. However, the installation of the skip-stop system, together with our accident prevention campaign, has helped materially in the reduction of this class of accidents.

It should be borne in mind that this company is very insistent in requiring accident reports for everything that happens. In the case of car collisions, if the fender of one car simply rubs or strikes another car we report it as a collision so that we may apply the proper discipline in all cases.

Motorwomen Operate During Blizzard



TELEPHONE STATION AT END OF LINE

The biggest blizzard of the winter, which occurred on Feb. 28, was a test for the motorwomen on the Charles City (Ia.) Western Railroad car line. The girls stood the test excellently. They had a walk of 1 mile before 6 a. m., the starting time, to get to their cars, with unshoed walks and against a high wind. Their variation

from the regular time schedule was only fifteen minutes for the entire day. At one end of the line there is a deep cut that drifts badly but the snowplow was kept busy all day clearing the tracks. The girls said it was harder to run their cars during a previous heavy snow storm than during the blizzard. They said they really didn't mind the blizzard much.

Seats are soon to be installed for the girls so that they will not be obliged to stand the entire time as they do now. The cars are the safety type. At each end of the line are telephones from which the girls telephone their arriving time to the head office on every run made.

The Public Is Too Apathetic^{*}

**The Public Must Meet the Cost of Service to Avoid Receivers—
Would Mean Ultimately Poor Service—Courts Cannot Borrow
Any More Than Companies Unless Better Security Is Offered**

BY CHARLTON OGBURN

Examiner in Charge of Electric Railway Department
National War Labor Board

THE City of Denver is to be congratulated for adopting such an intelligent plan in meeting the traction situation. Its mayor has appointed a committee of representative citizens, which will receive whatever information it can get upon this subject and report its findings. In other cities I have found a good deal of apathy toward the crisis in electric railway conditions prevailing over the entire country. It would be splendid if every city in the United States could follow the lead of Denver in this regard.

WAGE INCREASES A MATTER OF JUSTICE

The War Labor Board has increased wages generally of electric railways throughout the country. That has been done as a matter of justice. P. H. Gadsden has estimated that the War Labor Board has increased the wages of the employes by \$100,000,000 per annum. Our own estimate is \$25,000,000. It by no means follows that this increase, in large part, might not have come about had the War Labor Board had nothing to do with it, for wages had to increase.

The guiding principle which led the War Labor Board and similar government bodies to fix certain wages was the standard of living. Before the war the standard of living for the American working man was low; it was certainly none too high. The members of the various boards felt that during the war the standard of living should not be still further lowered. Therefore, it became necessary to determine upon a wage scale which would at least keep the standard of living up to what it had been before the war.

The facts upon which the War Labor Board based the standard of living were gathered by a series of surveys and studies made all over the United States by various agencies. The board had its own cost-of-living department, which independently made studies and surveys of what the cost of living was in various cities of the United States. The net result ascertained was that the cost of living to-day is approximately 65 or 70 per cent more than it was in the fall of 1915—that is, a wage earner in the fall of 1915, who was making 30 cents an hour, ought to-day to be making at least 50 cents an hour in order that he might make just as much as he had been making in the fall of 1915.

The War Labor Board figured out that there are certain things a working man's family must have. It determined the annual budget needed for a family of five persons, husband and wife and three children. It provides, for instance, only \$76 for the man's clothing, only \$55 for the woman's clothing and only \$180 for rent. A total of \$50 is provided for recreation. There are certain other small items—*e.g.*, laundry, \$4 and paper and books, \$9. The total comes to \$1500

for the year. In other words, a working man with a family of five must make \$125 a month to make a living wage.

THE PUBLIC SHOULD PAY FOR ITS SERVICE

All of the earnings of an electric railway of course have to come from the public, because the company sells its product to the public. We felt in doing the justice we were doing to the men, we should not do an injustice to companies. We therefore incorporated in the Denver and some other awards a recommendation to the public authorities, the public commissions or the municipal authorities, that the companies be allowed to charge what additional increase in fare they needed to pay the awards. What increases in fare were needed, was a matter for these authorities to determine.

The joint chairmen of the War Labor Board have felt the matter as keenly in other cities as they have in Denver. They have written letters to the municipal authorities and to public service commissions. In Memphis the board made a study of the cost of living, found it had increased 42 per cent and raised the wages 42 per cent. We then recommended to the city that the company be allowed an increased fare to meet it. Here is the letter which Mr. Taft later wrote to the City Council:

We are advised that your honorable body has not as yet advanced the rates on the street car line of Memphis in accordance with our recommendation. We recognized the probable inability of the company to pay the increase in wages which we gave, unless the city granted an increased fare to the company. Our award was a balanced one, in the sense that had we had the power, we would have ordered an increase in the rates of fare at the same time that we ordered an increase in the rates of wages.

The people of Memphis should pay war prices for transportation just as well as for coal and for food. They cannot hope to escape this burden that we all had to bear by reason of the war. It is not fair that the public should take advantage of a public utility company and hold it down to an anti-war contract in that regard. We should think that the equity of the company in this matter should appeal to the fairminded people of Memphis and to their representatives in your honorable body.

The company has applied the award as to wages, but if as we are advised, it is likely to go into the hands of a receiver, you will find ultimately poor service. The theory that a court can run an electric railway by issuing receivers' certificates, when the company will not pay its operating expenses or much more than that, is likely to be exploded by the results of any such experiment. Courts can not borrow money any better than companies, if they cannot give better security, and public utilities securities in the present juncture are worth nothing as collateral.

The City Council of Memphis declined to take the advice offered by Mr. Taft. The company now is in the hands of a receiver.

Now, in a nutshell, the requirements of this company, and any company, to meet the wages awarded during the war is simply this: The 5-cent fare which the company in 1915 charged amounts only to 3 cents now in its purchasing power. This company cannot take

^{*}Abstract of address delivered before recent meeting of citizens' adjustment committee, Denver, Col.

5 cents and buy more than 3 cents worth of goods based on the 1915 prices. Therefore, if this company is to charge the same fare that it charged in 1915, it must be allowed to charge an 8-cent fare, because 3 cents now, in its purchasing power, equals 5 cents in 1915. This company, I understood, is not asking for 8 cents but for only 7 cents.

WILL THE PUBLIC MEET THE TEST?

This electric railway situation affords an interesting psychological study of the public as to how it will meet the test, which it must face, as to whether it will be fair to these public utilities. I have heard the cases of the men and the companies for more than eighty electric railways, including nearly all of the important lines in the United States. I know the situation that faces them.

The electric railway industry of the United States is very nearly bankrupt. Here is a calamitous situation facing this country as a whole, less important possibly than the steam railroad situation, but presenting an absolutely vital problem. Electric railways are going into the hands of receivers, but they are absolutely essential. If it had not been for their work in carrying war workers to and fro, the work turned out by the factories would have been greatly hampered. Electric railways are essential to the growth, to the health and to the progress of any community.

A suggestion which has forced itself on my mind in my study of the electric railways is that the present basis of fare is not just. The railways, regardless of their past history, are giving too much for the money. We do not like to say that anybody is giving us too much for our money, but that is the case. The other day I was in a city where one could ride 18 miles for a nickel. It might be said there are lots of short hauls that would make up. That may be true, but probably the best method of remedying the situation is by some system of zone fares. That is being given a good deal of study.

Another thing has impressed itself on my mind, i.e., that the electric railways themselves want their franchises adjusted, and they want this adjustment in co-operation with the public. That is the only way it ought to be, in co-operation, with the public utility bodies, in co-operation with the city councils. It ought not to be done in any spirit of antagonism to the public and these councils, but previously for what is best for the community.

I hope the Denver committee will study in all of its aspects what has been adopted lately in several cities—the service-at-cost plan. I have had occasion to see its workings in several cities. I know how well it works. The plan is fair to the public and fair to the company, because it is based on a certain appraised valuation of the property of the company made by the public and the company. There is no over-appraisal or under-appraisal. The plan allows the company to charge a fare that will pay the actual cost of operation, including a fair return on the investment. I think that Denver could wisely study the results of such a plan.

Smoking has been customary in suburban cars in Japan although prohibited in city cars. On Feb. 1, 1919, however, the Imperial Government Railways inaugurated new regulations prohibiting smoking in suburban cars.

Making Casual Riders Pay

Manager Proposes Sale of Annual and Monthly Pass Cards Permitting Daily Riders to Ride at 5 Instead of 10 Cents

THE application of the commutation principle to electric railway fares, so as to lessen the rate as the rides per month or per year increase, is discussed in an article contributed to the *Wall Street Journal* by R. Schaddelee, vice-president and general manager United Light & Railways Company, Grand Rapids, Mich. He believes that the public, when it understands the fairness of the system proposed, will welcome it as a very desirable improvement.

Under Mr. Schaddelee's plan the regular cash fare would be 10 cents, but anyone could pay \$6 for an annual card entitling him to ride for 5 cents per ride as often as he desired. The pass card for 1919, for instance, would be of a distinctive color and have the figures 1919 prominently printed over its face. It would be sold at \$6 during January, \$5.50 during February, \$5 during March, etc. Similar pass cards could be sold at 50 cents each and would be good for only one month. The passes would be non-transferable.

Anyone using the street cars not more than ten times a month would have no object in purchasing either a yearly or a monthly pass card. The following table shows how the average cost per passenger would be reduced as the number of rides taken per month increased:

COST OF RIDE TO PASSENGERS UNDER PASS-CARD SYSTEM

Number of Rides per Month	Cost of Monthly Pass Card	Cost of Cash Fare (10 Cents per Ride)	Cost of Cash Fare (5 Cents per Ride)	Total Cost	Average Cost per Fare in (Cents)
5	\$0.50	.....	\$0.50	10
10	1.00	.....	1.00	10
15	\$0.50	.....	\$0.75	1.25	8 2/3
20	1.00	1.50	7 1/2
25	1.25	1.75	7
30	1.50	2.00	6 2/3
35	1.75	2.25	6 1/2
40	2.00	2.50	6 1/4
45	2.25	2.75	6 1/5
50	2.50	3.00	6
60	3.00	3.60	6
70	3.50	4.00	5 2/3
80	4.00	4.50	5 1/2
90	4.50	5.00	5 1/3
100	5.00	5.50	5 1/2

Some of the advantages of this pass-card system, according to Mr. Schaddelee, are as follows:

When this system supersedes a flat 5-cent fare, the occasional rider pays an increase of 100 per cent; the passenger who rides twenty-five times a month, an increase of 40 per cent; one who rides fifty times a month, an increase of 20 per cent, and one who rides 100 times a month, an increase of 10 per cent. This system would do away with the handling of pennies altogether. A passenger would either pay a nickel fare or a dime fare. Every passenger not showing a pass card to the conductor would pay a 10-cent fare.

Every passenger would be entitled to the usual transfer, although this system could easily be adapted to a separate charge for transfers by charging 25 or 50 cents a month extra to passengers desiring a monthly pass card entitling them to nickel fares with free transfers. In that case these cards would have a different color and have "Transfer" printed prominently on their face.

There would undoubtedly be some misuse by owners losing their cards or allowing other people to use them, but this would be negligible. Every system of fare collection has some loopholes, and this scheme would have fewer than any other scheme.

Passengers should deposit their own fares in the fare box, the conductor merely seeing to it that every passenger not having a card should deposit a dime. The conductor would handle no fares or money except to make change. He would have no punching to do.

This scheme would also work out well with one-man car operation. One glance at the card is all that would be necessary to determine whether it was genuine.

The passenger, once having paid his 50 cents for the monthly pass or his \$6 for the yearly pass, would undoubtedly be more likely to ride and reduce his average cost. The riding would thus be stimulated, and the cost of the service would be more equitably distributed than under any straight-fare system.

In Mr. Schaddelee's opinion, it is the large number of working people, and medium and small-salaried people, who depend upon the street car system entirely as their daily mode of local transportation, that make it possible for the automobile owners and other classes of people, who use the street car service only as a matter of occasional convenience to themselves, to have street car facilities available at all. This is the defect of any straight-fare system. The annual pass-card system is designed to remedy this defect by placing more of the cost of operation upon the casual rider and less upon the daily rider.

Traffic Characteristics

A Simple Graph Designed to Visualize The Relationship of the Supply and Demand of Service

BY JOHN A. DEWHURST

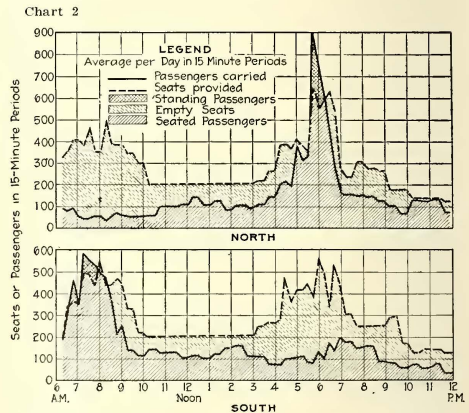
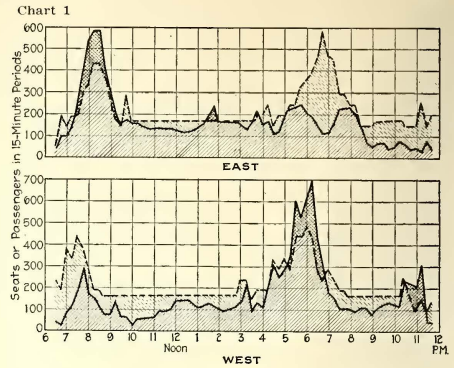
THE charts presented herewith illustrate a method of visualizing graphically the relation of the service furnished on a car line or route to the demand for service.

The charts are prepared from data observed at definite points on the line and represent the adequacy of service at that point. In the case of the charts accompanying this article, the points of observation are maximum-load points previously determined, and hence represent the adequacy of service for the entire line, assuming, of course, that the short-line possibilities are satisfactory.

To prepare a graph as represented, the line to be studied should be checked for several days (not necessarily consecutive days) in order to obtain a typical condition for that particular season of the year. The average number of passengers riding per day in fifteen-minute periods should be calculated from the traffic data thus obtained and plotted on the chart. In the illustrations accompanying this article this passenger record is represented by the solid line.

Likewise, the average number of seats offered during the same periods should be calculated in a similar manner (number of cars passing the point of observation times the average seating capacity). These average daily fifteen-minute totals are then plotted as shown by the dotted lines.

The areas shaded depend upon the relationship of these two lines with respect to each other. When the passenger "Service Demand" curve is in excess of the seats furnished or the "Service Supply" curve, the area is shaded with double cross hatching, indicating passengers standing. In portions of the chart where the supply of seats is greater than the passenger demand, the area is shaded with dotted-line hatching indicating empty seats. Then the area shaded in single solid-line hatching would indicate passengers accommodated with seats.



CONVENIENT METHOD OF CHARTING SERVICE—THE UPPER CHART SHOWS BETTER PLANNING THAN THE LOWER ONE

Under ideal conditions of a seat for every passenger and a passenger for every seat, the solid lines and the dotted lines would coincide, and the entire area would be shaded with only solid-line hatching. Unfortunately, such conditions do not prevail.

By means of a series of such charts the management can, however, endeavor to keep down the area representing empty seats, especially during portions of the day at which more than the basic service is provided. At the same time the area representing standing passengers can often be regulated so as better to serve the requirements, oftentimes without additional expense.

THE CHARTS SHOW ACTUAL CASES

Both of the charts presented illustrate the actual conditions existing on lines of large properties in the United States. The first one is selected as typical of well applied service. The peaks in service correspond to the peaks of travel demand and show a minimum of wasted service.

The second chart illustrates poorly applied service. For instance, during the morning rush hour southbound the peaks in seats furnished actually occur three quar-

ters of an hour after the peak in travel, and the travel is even so low that sixty empty seats are operated during fifteen minutes of the peak, a service, which, of course is most costly to provide. The entire tapering off of the rush hour is from thirty to sixty minutes later than it should be. Likewise, at night the tripper service northbound starts at 3.45 o'clock, whereas the passengers riding would not occupy all of the base headway seats until an hour later, or at 4.45. There also occurs at 6.30 a minor peak of seats that are empty. Even after the tripper service is off at 7 p.m., up to 9 p.m. there are 25 per cent to 50 per cent more seats operated than during the middle of the day, whereas the travel would not even occupy the seats that would be provided by the base headway alone.

OTHER USES OF THE CHARTS

If the charts are analyzed still further it will be observed that the area under the dotted line (service furnished) is "Seat-Hours" which, with the introduction of a constant, can be converted directly into car-miles. In other words, the area outlined by the dotted line bears a direct relation to car-miles operated or the entire expense of operating the line.

To illustrate the application of this point, if a company desires to obtain approximately the relative cost of operating a new schedule, the proposed seats to be furnished passing the maximum-load point should be plotted on the graph and the respective areas measured with a planimeter. The ratio of the respective areas multiplied by the car-miles of the existing schedule would give an approximate indication of the mileage of the proposed schedule, providing no pronounced change were made in routes or short-line cars, as this scheme assumes the same average length of trip.

Graphs of this nature are simple to construct from data that should be collected continuously. Where records of this kind are kept different colors are used for the different areas instead of shading, the shading having been substituted in this article only on account of the difficulty in reproducing colors.

It is suggested that the line representing passengers be drawn in black, the line representing seats in red and the areas colored in red for standing passengers, in green for empty seats and in blue for passengers accommodated with seats. The charts then stand out in a very striking manner and not only illustrate very characteristically to those familiar with such data the conditions of a line, but also serve to illustrate to a layman facts that otherwise are hard to present. For instance, it is very apparent that the numbers of passengers required to stand during the rush hours are remarkably small in the average case compared to the number of empty seats that are operated on nearly every line during the off-peak hours. Charts of this kind have been found to be of great help in presenting the traffic problem to regulating bodies that often are not familiar in detail with the usual operating conditions.

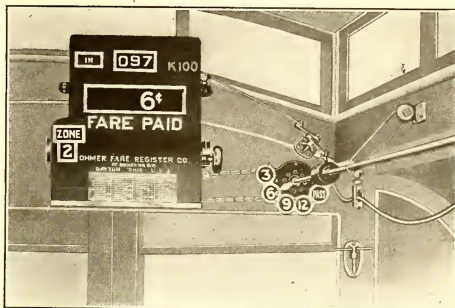
It is not advocated that all traffic records should be worked up as extensively as outlined in this article, but it is of great help to build up such a picture of the traffic characteristics of all lines, say at least once or twice a year, at the times when they represent typical conditions.

Zone Fare Registering Machines

Recording Fare Register and Identification Check Issuing Machine Recently Developed

THE Ohmer Fare Register Company has recently developed a register for zone fare collections. In one form for small properties, the register is largely an adaptation of the company's standard form, the principal difference being that it carries a zone indicator. One of these registers, designed for five rates of fare, is shown in the accompanying illustration. The records made by this register are as follows: The zone number, the trip number, the direction, the division or line number, five columns showing the registration of each kind of fare, the register number, the total number of passengers carried, the date and the conductor's identification number. The distinctive difference between this register and the company's latest city register, as already explained, is the indication on the front of the register of the zone number and its record on the printed report.

To take care of the collection of zone fares on large city and interurban properties a modification of this register has been developed together with a zone check printing and issuing machine where identification checks are given on the front platform, as with the proposed



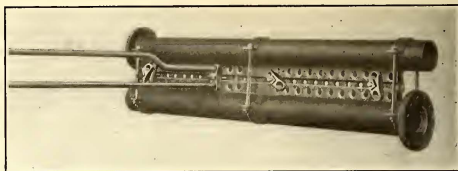
ZONE FARE REGISTER FOR FOUR ZONES

Public Service Railway zone system. In the register the fare indicator is set rapidly and accurately by setting a lever to the desired fare on a dial on the side of the machine. The fare is then registered by a treadle. The capacity of the machine is from 1 cent to 99 cents. As the end of each zone is reached and a new zone entered, the conductor takes a print and thus makes a record of all fares collected in the previous zone. At the same time, the visible zone indicator in the register advances progressively to show the number of the zone just entered. This movement is automatic and the zone indicator cannot be turned back until the complete number of zones on the line has been reached. The records made cover, besides the usual ones, the total number of free tickets, total number of purchased tickets and total number of transfers. This record is made for each zone.

The register is mounted on a pedestal and can be carried easily from one end of the car to the other. Its weight is 65 lb.

The identification check-issuing machine will print and issue, one at a time, a check showing the number of the zone in which the passenger boarded the car,

the direction in which the car is moving, the serial number, the date, month and year, the motorman's identification number, the serial number of the machine and other information. The machine cannot be operated until the motorman's identification key is inserted. The zone number is set by a lever which simultaneously rings a tell-tale bell and also sets the visible zone indicator. The ticket is printed and issued by the motorman pressing his foot on a pedal, or it can be operated by a hand lever. Tickets can be issued at the rate of 60 or 70 to the minute. The weight of this machine is 35 lb.



SUPERHEATER HEADER SHOWING METHOD OF ATTACHING UNITS

Superheater that Can Be Applied to Existing Boilers

The Connection Between the Tubes and the Header Is Made by Means of a Ball and Socket Joint

THE following points have been kept in mind by the engineers of the Locomotive Superheater Company, New York City, in designing a new type of superheater for use in stationary power plants: (1) Safety; (2) accessibility for inspection and repairs; (3) protection against overheating; (4) high superheating efficiency; (5) improved efficiency of combined boiler and superheater; (6) consideration of steam velocities and areas to provide minimum drop in steam pressure; (7) uniformity of superheating and ease of regulation; (8) provision for expansion and contraction; (9) provision for cleaning; (10) minimum possibility for leaks; (11) flexibility and adaptation to different designs of boilers.

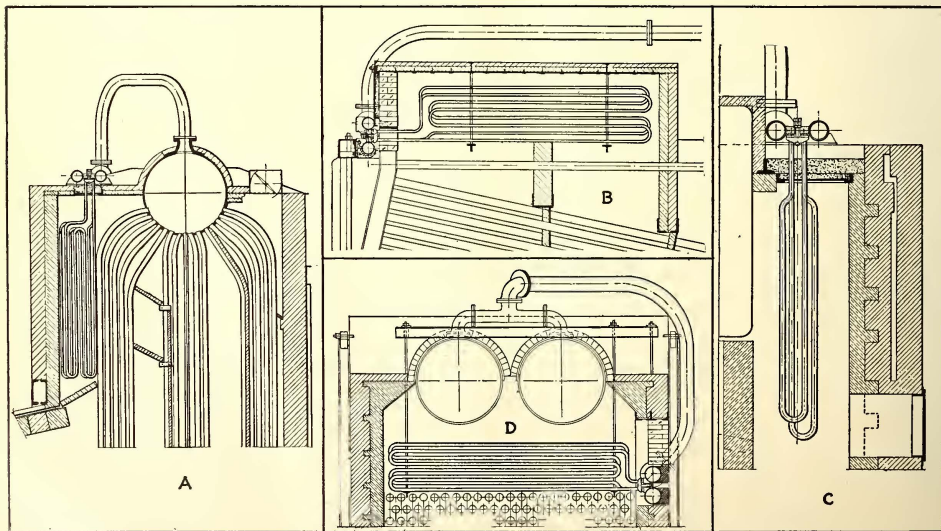
The general plan of the superheater is shown in the accompanying illustrations. It consists of two headers, one of which is the distributor for the saturated steam coming from the boiler and the other acts as the col-

lector of the superheated steam. The headers are of steel and are located outside of the hot gas path, usually outside the boiler setting proper.

The superheating units are of heavy cold-drawn seamless steel tubing, bent in such form as to provide freedom for expansion and contraction. They are connected to the headers by means of ball-and-socket joints with ground surfaces. The ball of the joint is forged on the end of the tube, and it is faced and ground. It fits into a ground seat in the header made at an angle of 45 deg. The ball and seat are held in close contact by means of clamps, bolts and washers.

The drawings reproduced below show not only the general construction of the superheater but also illustrate some typical plans for installing it in boilers of usual forms.

A recent bulletin of the National Safety Council calls attention to the danger of accidents from incorrect handling of wrenches, evidently a prolific source of injuries to men in shops. The bulletin contains this trenchant statement: "Pulling away from the open end of a monkeywrench or an 'S' wrench is like attempting to hold your weight on a bar with one finger. You can hold on if you have the strength; so can the wrench if it has the strength."



SUPERHEATERS INSTALLED IN BOILERS OF SEVERAL TYPES: (A) VERTICAL WATER-TUBE BOILER; (B) CROSS-DRUM TYPE BOILER; (C) HORIZONTAL RETURN TUBULAR BOILER; (D) HORIZONTAL WATER-TUBE BOILER

Getting More Life from "K" Controller Segments and Contact Fingers

Renewable Arcing Tips for Contact Segments Reduce the Expense of Replacement, and Careful Adjustment of Fingers Increases the Life of Contact Parts

BY R. S. BEERS

General Electric Company, Schenectady, N. Y.

WITH a "K" controller the most severe duty is on the contact fingers and segments, and for this reason they require the most attention. It is essential for satisfactory operation that the contact surfaces of the fingers and segments be smooth. This means frequent inspection, as the arcs broken in the controller burn the lubricant and roughen the segments and fingers. The burning takes place when the finger and segment break contact and is more pronounced at the end of the segment. On account of this it is often necessary to replace a segment that shows wear only at the end. To reduce the expense of such renewals, railway controllers designed in recent years have a removable "burning tip" as part of the segment. These tips are used only with the segments subjected to burning.

Figs. 1, 2 and 3 show three general types of burning tips. That shown in Fig. 3 has proved the most satisfactory. Burning tips of this type, with a suitable segment, may be put on a controller cylinder in place of



FIGS. 1, 2 AND 3—ARCING TIPS FOR DRUM TYPE CONTROLLERS

those of the Fig. 2 type without change in the drilling of the segment screwholes in the controller cylinder. If the controller has the short Fig. 1 type of burning tip it is necessary to drill and tap new segment screwholes before a Fig. 3 type of burning tip can be used. The older types of railway controllers, as the K-6, K-10, K-11, K-12 and K-23, have never been provided with burning tips. To use them would require a considerable relocating of the segment screwholes and a possible modifying of the body casting in order to provide sufficient material for tapping the segment screwholes.

When a new burning tip is put on a controller cylinder with an old segment, the surfaces of each should be made nearly the same height, so that the finger will slide easily from one to the other. If the burning tip is on a segment that engages with a finger when turning from the "off" position to the first point, it is important to have it very nearly the same length as the other burning tips engaging at this time. Otherwise, when the controller is turned off, the burning will be localized on the one with the shortest segment instead of being distributed over several fingers.

The function of a "K"-controller finger is to supply a flexible connection between the segments and the finger base. With the earliest "K" controllers, when cars and motors were of small capacity, this was accomplished with a finger consisting of a copper contact piece riveted

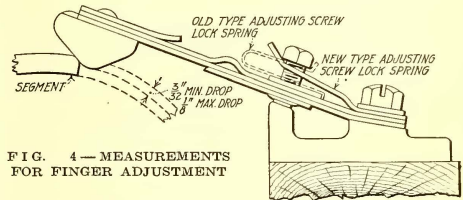


FIG. 4—MEASUREMENTS FOR FINGER ADJUSTMENT

to a flat phosphor-bronze spring. The latter provides the requisite flexibility, presses the contact piece on the segments firmly enough to insure their making good contact and conducts the current from the contact piece to the finger base. As electric cars increased in size and their motors in capacity, shunts were added to the fingers to carry the increased current. Since the shunt is used to increase the current capacity of the finger it is self-evident that the contact tip should make good contact with the shunt and finger spring, otherwise heating and burning will take place where they join. Although the usual method of insuring this is to rivet the parts together, there are two other methods which are used. One is to replace the rivet with a machine screw; the other is to use spring pressure alone to hold the parts together. With these two types, the contact tips may be changed without removing the finger from the controller.

The life of finger springs is increased by the proper adjustment of the fingers. Too much "drop" causes the

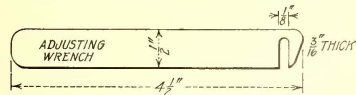
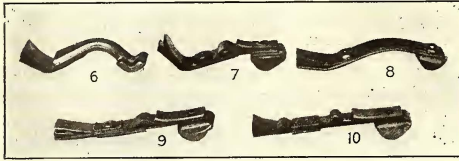


FIG. 5—FINGER ADJUSTING WRENCH

finger to stub, producing severe strains on the spring; while on the other hand, too little drop will reduce the pressure of the finger on the segment to such a degree that the contact surfaces will burn. "Drop" is the distance the finger falls below the surface of the segment when they are separated by turning the controller to the "off" position. It should be measured from the surface of the segment to the part of the finger that

engages the segment. If the segments are worn at the ends, measurement should be made from the normal surface of the segment and not from the end, as the total movement of the finger at its point of contact with the segment should not exceed $\frac{1}{8}$ in. When adjusting new fingers in a controller having badly worn segments particular attention should be given to this point. If the proper adjustment cannot be obtained the segment is worn out and should be replaced. An exces-



FIGS. 6, 7, 8, 9 AND 10—TYPES OF FINGERS FOR DRUM CONTROLLERS

sive drop makes the controller operation more difficult, increases the wear on the fingers and segments, and materially shortens the life of the finger spring. It frequently causes the finger to stub and buckle, and if continued will finally break the spring. Fig. 4 illustrates the method of measuring drop and gives limits of variation that have been found satisfactory, both as to contact and life of the finger spring.

FINGERS SHOULD MAKE CONTACT ACROSS ENTIRE WIDTH

Another adjustment of controller fingers, of vital importance in securing good contact, is to twist the finger so that it touches the segment across its entire width. Frequently, when a new finger is put into a controller, no attention is given to this adjustment and the finger touches the segment at only one point.

If the fingers do not have a line of contact across the segments, overheating of the segments and fingers may take place, causing the finger spring to soften and lose tension. Twisting the fingers, particularly the reverse fingers, can best be accomplished in the K-35 and K-36 controllers by using the adjusting wrench shown in Fig. 5. This wrench fits over the finger spring and shunt and it is of sufficient width to permit adjusting one-half the fingers at a time. It should be put on the spring just back of the finger tips.

One way of preventing springs from breaking in service is to discard the spring when the tip is worn out. As a general rule the finger spring cannot be depended on to out-wear more than one tip, though in some cases a single spring will out-wear several tips. This will occur oftener with the more recent designs of fingers, where the spring is relatively longer than the contact piece, than with the older types where the spring is shorter. In designing these later types of fingers particular attention has been given to distributing the bending throughout the length of the spring, as a spring will break much more quickly with the bending localized than when distributed.

Fig. 6 shows the familiar old-type finger, while Figs. 7 and 8 show fingers of recent design having long springs and short tips that may be used in place of the old-type finger. The finger illustrated in Fig. 8 is for

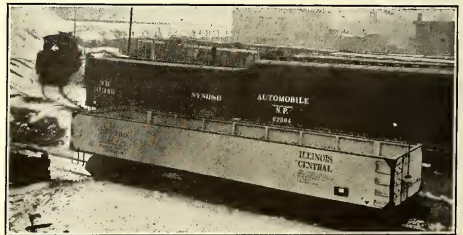
the K-6 controller, while Fig. 7 shows the one for the K-10, K-11, K-12 and K-28 controllers.

Fig. 10 shows the type of finger used in K-34, K-35, K-36, K-39, K-40 and K-51 controllers. Fig. 9 is a similar finger but of more recent design which embodies several improvements over the earlier finger. Among these are the use of a single grommet instead of three rivets around the adjusting screwhole, thereby leaving more metal in the finger; and the bending of the finger spring is better distributed by the long brass plate under the finger spring than with the short plate used with the old finger. The brass plate on top of the shunts, through which the adjusting screw passes, assists the lower plate in distributing the bending and also prevents turning of the locking device for the adjusting screw.

First Concrete Gondola Car

A GONDOLA CAR with concrete walls and floors on March 17 was turned over to the Illinois Central Railroad for operation. This car was invented and designed by Joseph B. Strauss, president of the Strauss Bascule Bridge Company, and was built by the R. F. Conway Company of Chicago. The construction of this car was started as a war measure when it was thought that, due to the shortage of steel, it might be possible to relieve the car shortage materially by developing concrete construction.

The fundamental feature of the design consists of a steel skeleton body forming the outer boundary of the car and mounted upon a steel underframe. The concrete walls and floors are contained within this frame, and, together with the frame and floor reinforcement, are connected to and interlocked with the underframe. The steel frame forms the finishing and protecting edges, thus entirely shielding the concrete and also serving as a complete system of stress-bearing members. The car was designed for a capacity of 100,000 lb. plus the usual 10 per cent overload. The



FIRST REINFORCED CONCRETE CAR

car has an over-all length of 41 ft. 6 $\frac{1}{2}$ in., and an over-all width of 10 ft. 2 $\frac{1}{2}$ in., with sides 4 ft. 10 $\frac{1}{2}$ in. high. The steel members of the underframe consist only of the center sill, which is of two 12-in., 35-lb. ship channels, with a $\frac{1}{2}$ -in. x 20 $\frac{1}{2}$ -in. cover plate, and the body bolsters and diagonal corner braces, which conform to standard design. There are six reinforced concrete cross-bearers in the car, spaced approximately 4 ft. 6 $\frac{1}{2}$ in. apart. The floor is 2 $\frac{1}{2}$ in. thick, reinforced with longitudinal and transverse rods $\frac{1}{2}$ in. in diameter and the walls are 1 $\frac{1}{2}$ in. thick. Arch bar type trucks fitted with M. C. B. No. 2 brake beams are used. The car weighs 53,600 lb.

Composition and Characteristics of Lining Alloys*

Cost of Lining Alloys Depends Upon Proportion of Various Metals Used — Should Not Be Judged by Prices Quoted

THERE is only one babbitt metal, and that is made to the formula originated by Isaac Babbitt about sixty years ago. It is composed of 88.9 per cent tin, 3.7 per cent copper and 7.4 per cent antimony. All other lining alloys are the result of attempts to improve the physical characteristics of the composition produced according to this formula or to reduce its price. By custom these various combinations have been called babbitt metals, even though they contained no tin or copper, but consist of lead and antimony.

A lining alloy is a soft metal interposed between two hard surfaces. One of these, which holds the metal, is usually stationary and the other revolves. The purpose of the lining is to eliminate friction as far as possible, and should lubrication be neglected it would present such a surface to the revolving shaft that should frictional heat develop the metal will wear out without damaging the shaft. In other words, the true function of a lining alloy is to wear out and if the lining alloy does not wear the shaft will.

Tin is a crystalline metal about No. 9 in the Brinell scale of hardness. It is very malleable and takes a high polish. When antimony is added the tin becomes harder and its compressive strength increases. This also increases its brittleness so that copper must be added to give toughness or tensile strength. The addition of antimony and copper, as found in genuine babbitt metal, brings the composition up to a Brinell hardness of about 28, or more than three times that of pure tin.

VARIOUS ELEMENTS HAVE DIFFERENT MELTING POINTS

The mixing of copper, antimony and tin is not an easy matter, because tin melts at 453 deg. Fahr., antimony at 786 deg., and copper at 1982 deg. In order to get the copper and antimony properly introduced to this mass of tin an understanding of how to handle these metals at their widely varying temperatures is required. Genuine babbitt, properly made, shows a matrix of tin, and all through this are crystals composed of tin and antimony, copper and antimony, and tin and copper. These crystals constitute the bearing points in genuine babbitt. All other lining alloys are of the same structure to a more or less extent. Tin and antimony are anti-frictional, but lead, an oily and greasy metal, is the best for anti-frictional purposes. Unfortunately, however, pure lead is very soft and by itself has no value as a bearing metal. It also alloys with other metals with great difficulty.

Manufacturers of alloys have recognized the value of lead as an anti-friction metal and have tried to use as much of it as possible. This has resulted in a series of alloys ranging from 92 per cent of tin and no lead, down to 95 per cent of lead and no tin. There are hundreds of branded alloys varying from each other a few points in tin, lead, antimony and copper, which have been brought into being in an attempt to conserve price. A purchasing agent can always buy a lining metal at his own price. This will be readily

understood when it is taken into consideration that with tin selling at 75 cents a pound and lead at 5 cents a pound, it is only necessary to take out 2 per cent of tin and add 2 per cent of lead to make a difference of 1½ cents per pound in the price. The proper way to buy lining metals is for each purchasing agent to specify his requirements by giving sufficient data as to the maximum revolutions per minute, the pressure per square inch which will have to be withstood, together with the method and character of lubrication and the condition of the service. This information should be furnished the lining alloy manufacturers so that they can recommend the proper alloy to be used.

CHARACTERISTICS NECESSARY IN LINING ALLOYS

There are four fundamental requisites in a lining alloy: compressive strength, tensile strength, heat resistance and anti-frictional qualities. These are enumerated in the order which seems to be the order of their importance. A lining alloy to be of value must have, first, sufficient compressive strength so that it will be able to hold up the maximum load per square inch that is liable to be put on the bearings without squashing out. Second, it must have sufficient tensile strength so that if the bearings are subjected to vibration or pounding it will not break apart. Third, it must have sufficient heat resistance so that should the bearings become hot the alloy will stand the highest possible temperature before it begins to flow. Without these three qualities any anti-friction metal has no great value. Under ideal conditions there is supposed to be a film of oil between the lining metal and the shaft at all times. It is only when the oil film is not maintained that the anti-frictional qualities of the metal become of real importance.

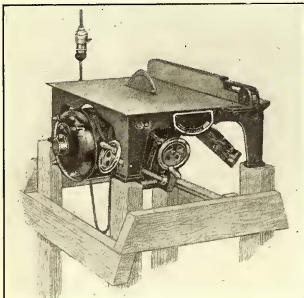
Another matter of interest is the relation of the above four points to the characteristic of the four metals used in the manufacture of bearing alloys, namely, tin, lead, antimony and copper. If compressive strength was all that was needed, an alloy could be made of 80 per cent lead and 20 per cent antimony, which would be of 32 Brinell hardness, or harder than genuine babbitt. As far as holding up the load is concerned, this metal would answer every purpose. While antimony will harden lead, when a certain percentage is passed the antimony and lead become very brittle, so that with 80 per cent lead and 20 per cent antimony the alloy is almost like glass and the slightest vibration will break it to pieces. Therefore, to combine the qualities of compressive strength with tensile strength tin must be added to the lead and antimony. Tin has an affinity for lead and together they give a quality of hardness, that is, compressive or tensile strength and elasticity. It is not sufficient to get this elasticity alone, but the metal must be tough in its elasticity. Copper must then be added, which, having an affinity for tin, will toughen the tin. The amount of each element that is put into the alloy has a definite relation to the necessary characteristics.

The question has often been asked as to whether lining alloys can as satisfactorily be made from scrap metals as from new metals. A good lining alloy can be made from scrap metals and may do the work satisfactorily because of the unusual factor of safety that is used. But although alloys made of scrap metals are sold at a lower price they are really not cheaper than alloys made of new metals. Every time that metals are melted a certain amount of oxidation takes

*Abstract of an address made by Alfred A. Greene of the National Lead Company, before the Purchasing Agents' Association of St. Louis at the meeting held on Feb. 18, 1919.

place. If scrap metals are used the oxides are present, and in the ordinary shop practice they cannot all be eliminated. These oxides come to the top when the metals are melted and are skimmed off in the form of dross. Thus there are not as many pounds of metal in the bearings from the same formula as when new metal is used. Again, the physical structure of the alloy is weakened when scrap metals are used, as for example when old lead pipe is employed. This is usually obtained from buildings where it has become corroded or rotted due to the fluid that has passed through it. It may contain lime, potash, sulphuric acid, or a number of other things. The impurities cannot be removed simply by melting the lead. A chemical reaction has taken place in the lead and it has lost its original characteristics. Where scrap tin is used there is liable to be a small percentage of iron left in the metal from the detinning process, which will destroy the lining alloy. In genuine babbitt the presence of less than one-fourth of 1 per cent of arsenic or sulphur effects the metal so that it will not stick to iron or brass boxes, and the mass will be filled with little holes which tend to weaken the physical structure of the metal. New copper is soft and tough and it is the toughness that is wanted in the bearing metal. Where scrap trolley wire is used it is often found that it has become brittle in use due to having lost some of its tensile strength. This condition cannot be changed by simply putting the copper into a pot and melting it over again.

New Bench Saw for Woodworking Shop



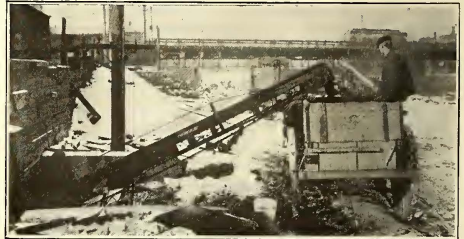
NEW TYPE PORTABLE BENCH SAW

ing up the table. This makes it possible to cut long stock without fear of breaking the angle by the stock coming in contact with the floor. The table is always in a horizontal and safe position, and the exact angle of the cut can be set by turning a hand wheel until the angle desired is registered on a dial in the front of the machine. This tilting mechanism swings the cradle in which the motor-driving mechanism and saw are mounted.

The saw can be raised and lowered so as to cut or groove the stock to any depth up to 2 in. The raising and lowering mechanism is similar to the tilting mechanism and is controlled by the hand wheel in the front of the machine. The bench saw is provided with a Wallace shutter saw guard. This is built into the machine and slips back as the stock goes through, so that it never interferes with the efficient operation of the saw.

New Type of Conveyor Reduces Cost of Handling Material

A NEW TYPE of portable scoop conveyor shown in the accompanying illustration has been placed on the market by the Portable Machinery Company, Inc., of Passaic, N. J. The most distinctive feature of this, as compared with other similar types of machines, is the scoop on the digging end, which can be pushed or completely buried in the materials to be conveyed. This makes it possible simply to scrape the material into the carrying belt instead of lifting it up by shovelfuls and putting it into hoppers, as is ordinarily the practice with conveyors. The sides or skirt plates



LOADING A WAGON WITH COAL BY MEANS OF A SCOOP CONVEYOR

of this conveyor form a trough, which increases the carrying capacity of the belt to a considerable extent. These sides hold the material together, thus making the whole width of the belt available for carrying.

The carrying capacity of the scoop conveyor based on handling coal is 1 ton per minute, provided a sufficient amount of coal is maintained at the receiving end of the machine. With a storage pile of sufficient height, one man can easily feed 1 ton in one and one-half minutes, or if the pile is low he may require from two to four minutes. This scoop conveyor may be used for storing, reclaiming and loading bulk material and light articles such as coal, ashes, sand, earth, crushed stone, salt bags or light packages. It may be used singly or in tandem as required.

The steel frame holding the rollers of the conveying belt is mounted on wheels. The whole is perfectly balanced so that one man, by inserting the pipe handles into the ends of the horizontal members, can easily lift or move the machine around. An electric motor or gasoline engine mounted under the frame transmits power to the conveyor by means of a chain and sprocket connection to a shaft extending beneath the conveyor. From a sprocket on the other end of this shaft the power in turn is transmitted to the driving sprocket located at the upper end of the conveyor. The carrying belt is of fine grade duck and rubber, with duck cross-strips. These transverse cleats are provided to prevent the material from slipping back down the incline. The conveyor is made in three different sizes—with lengths of 13 ft. 8 in., 19 ft. 8 in. and 24 ft. The width of the conveying belt on any of these sizes may be either 12 in. or 16 in., as desired. Size 13 ft. 8 in. elevates its load to a total height from the ground of 5 ft. 9 in.

In the accompanying illustration the conveyor is shown handling coal on the property of the Haverhill (Mass.) Electric Company.

LETTERS TO THE EDITORS

Is Pipe Drainage a Cure for Electrolysis?

165 BROADWAY

NEW YORK, N. Y., March 16, 1919.

To the Editors:

My attention has recently been called to an article by D. W. Roper in the issue of the *ELECTRIC RAILWAY JOURNAL* for Dec. 7, 1918, entitled "Drainage if Necessary vs. Negative Feeder Electrolysis Protection." In this article Mr. Roper essays the role of a champion of pipe drainage as a solution of the electrolysis problem. Lest Mr. Roper's enthusiasm for pipe drainage may perhaps lead some who have not closely followed this subject to think that a cure for all electrolysis troubles has now been found, it seems well to point out that no such interpretation should be placed on what Mr. Roper says. On the contrary, it should be understood that: (1) It is an open question whether pipe drainage ought to be used at all; (2) assuming that there is a field for pipe drainage, no one knows to what extent its use is justified, and (3) neither of the foregoing questions can be answered rationally and conclusively until a great deal of additional data have been secured, properly analyzed and thoroughly studied and digested. No one questions the effectiveness of drainage for cable sheaths, but lead cable systems and piping systems are fundamentally different, and Mr. Roper's argument that because drainage will protect lead cable sheaths it should also protect gas and water piping systems is merely begging the question.

As to the comparison between a drainage installation and an insulated return feeder installation in Chicago the results obtained from these two throw little or no light on their relative merits as electrolysis protective systems, nor do they permit of generalizing as to costs because the conditions are so different in the two cases. In the Illinois Street substation district, where pipe drainage was installed, the area under test is relatively small, the rail network is congested and the feeding distances are short. In the Crawford Avenue substation district, where the insulated return feeder system was installed, the area involved is extensive, paralleling and inter-connecting tracks are relatively few, and feeding distances are long. It is obvious that the cost of reducing stray currents in pipes to a given value is much greater under the conditions prevailing in the Crawford Avenue district than under the conditions in the Illinois Street district. So much for the relative costs. As to the relative performance of these two installations in reducing electrolysis damage, little or nothing has been made known. The figures given by Mr. Roper showing current flow on pipes in the Illinois Street district, with and without drainage, have no direct bearing on this question.

If the matter of efficacy in preventing electrolysis damage is ignored, there is no rational basis for making comparisons between costs of pipe drainage and costs of insulated return feeders.

Extensive investigation is required to determine how much electrolysis protection is afforded by either the pipe drainage system or the insulated track feeder system. However, it is known that the insulated feeder system, by reducing stray currents, gives some elec-

trolysis protection. Whether pipe drainage affords any protection against electrolysis as a net result is not definitely known.

The writer cannot agree at all with Mr. Roper's argument of conclusion respecting so-called "joint electrolysis." This phenomenon has frequently been pictured as localized right at the pipe joints, the current being supposed to leave the pipe and enter it again within a few inches of the joint. On this supposition, corrosion would be expected in the immediate proximity of the joints on the positive side. Now the writer has seen instances of corroded joints, but anyone who will consider the stray current paths and their electrical characteristics will readily see that the effects due to joints are usually of quite a different character. A joint which has a resistance markedly different from normal tends to cause a shunting of current through by-paths or to other structures, at points which may be near to or may be remote from the joint in question. Bearing this in mind it is not surprising that certain efforts, to which Mr. Roper refers, to find corroded joints proved unavailing.

Mr. Roper makes reference to the insulated return feeder system installed in the Ann Avenue substation district in St. Louis, and gives curves showing potential differences between rails and pipes in this district and in the two Chicago installations. In this Mr. Roper makes the serious error of comparing such potential differences in a district where the pipes are drained with the potential differences in districts where pipe drainage is not employed. Whatever significance as to the electrolytic condition of the pipes such potential differences may have in an undrained district—and at best they do not afford a dependable criterion—they have no comparable significance in a district where pipe drainage is employed. Such comparisons are, therefore, fallacious. This error may possibly be related to Mr. Roper's misinterpretation of the passage which he quotes from a report on the Ann Avenue installation in St. Louis, of which the present writer was a joint author, as follows:

Values which experience has shown afford a substantial measure of protection from injury by electrolysis to underground structures.

Mr. Roper takes these "values" to refer to potential differences between rails and pipes. This is not correct as is apparent on reading the entire sentence in the report from which he quotes, which reads as follows:

The tests above detailed show that it is feasible by means of a small number of insulated return feeders to bring about an approximately constant potential condition over a large area, and to reduce the drop in the tracks and, therefore, in the earth, to values which experience has shown afford a substantial measure of protection from injury by electrolysis to underground structures.

The statement, therefore, did not refer to potential differences between rails and pipes but to potential drop in the tracks, which is quite a different matter, and consequently the conclusion drawn by Mr. Roper from this reference is unsound.

The writer does not despair of the ultimate establishment of some procedure which will effectually prevent damage from electrolysis, but he wishes to enter a plea for caution in drawing conclusions on a subject which is so little understood and so fraught with speculation, prejudice and misinformation. Though ultimately it may possibly be found that pipe drainage

has a field of justifiable use, sufficient evidence is not yet available either to justify it or condemn it, but in the writer's opinion such evidence as we now have tends much more strongly to its condemnation than to its justification as a primary means of electrolysis protection. However, considerable scientific work has been done and much more is under way or under consideration, and it is the writer's plea that final judgment be withheld as to the efficacy of any system of mitigation until sufficient facts are available to permit conclusions of real value to be drawn.

ELAM MILLER.

[EDITOR'S NOTE—Mr. Miller's letter was submitted for comment to Mr. Roper who replied as below.]

COMMONWEALTH EDISON COMPANY
CHICAGO, ILL., March 30, 1919.

To the Editors:

I have read with considerable interest Elam Miller's comments on your abstract of my paper presented before the St. Louis section of the A. I. E. E. The paper was an attempt to present the technical data and the results of tests of a carefully designed drainage system installed in Chicago, together with similar information regarding an insulated negative feeder system installed in another district in Chicago, and also to compare these results with such published information as was available regarding similar systems installed in St. Louis. The insinuation that I think that "a cure for all electrolysis trouble has now been found" is hardly warranted by any statement in the text; and as far as the word "now" is concerned, the abstract includes a reference to the published description of a drainage system by Mr. Farnham nearly twenty-five years ago.

Mr. Miller endeavors to prove that he has been misquoted and alleges that the writer in error misrepresented the intent of his statement so that potential drop in the tracks was made to appear as potential differences between rails and pipes. Another quotation from the same report, of which Mr. Miller was a joint author, may serve to illuminate this point:

In the article contributed by the Bureau of Standards to the ELECTRIC RAILWAY JOURNAL of Jan. 17, 1914, to which reference has already been made, the cost of this insulated return feeder installation is shown to be comparatively small.

The same article gives results of tests which show that the currents and potentials on underground piping systems in this district have been rendered so small that the structures are considered comparatively safe from injury by electrolysis.

It will also be noted that Mr. Miller uses the measurements of current and potential to prove the effectiveness of the installation in the Ann Avenue district, but he seriously objects to having exactly similar figures exhibited as an argument in favor of the drainage system as applied in the Illinois Street substation district.

Mr. Miller's statements and arguments appear to say that if the currents in the pipes in a district where the insulated negative feeder system is employed are no greater than the currents in the pipes where the drainage system is employed, then the two systems are equally effective; but in making it so appear, he overlooks the fact that with the insulated negative feeder system, currents traveling along the pipe must leave the pipe somewhere and have no place to leave except through moist earth where damage by electrolysis will be caused; but in the case of the pipes where the drainage system is used, the currents traveling along the

pipes leave the pipes over a metallic connection through the drainage cable so that their departure occurs without damage to the pipes.

Mr. Miller presents a carefully devised description of "joint electrolysis" which is quite different from the phenomenon that has heretofore been known by that name, but it is somewhat difficult to understand how electrolysis could occur in the manner which he describes with certain differences of potential between pipes or between pipes and rails, which are plainly set forth, when the same potential differences in the Ann Avenue installation in St. Louis are declared to be "comparatively safe."

The generalizing as to costs specifically referred to the systems under discussion and was largely an arithmetical deduction from the data presented. It would hardly have been given, however, had not the figures been verified by similar calculations in other districts.

The writer shares with Mr. Miller the desire to see the ultimate establishment of some procedure which will effectively prevent damage from electrolysis, but if the advocates of any one system of electrolysis mitigation or prevention will thrust aside as having no direct bearing on the situation all information which tends to favor some other system, then the final conclusions regarding the merits of the several systems may be deferred until judgment day.

It is the writer's opinion that in the determination of the best system of electrolysis prevention, no better way can be found than to publish all information that will add to our knowledge regarding the merits of the several systems, and wherever possible, to make a careful comparison of the several systems on the same basis. It is hoped that you will continue to publish such information when it is available, and in doing so to express your own comments on the data presented as freely as you did in the present instance, by substituting for the author's title, "Electrolysis, A Comparison of Conditions in St. Louis and Chicago," your own title, "Drainage If Necessary versus Negative Feeder Electrolysis Prevention," and by inserting a number of paragraph headings which were not in the original paper, as for example, "Drainage Cables Better Than Negative Feeders." It is suggested, however, that the editorial comments might preferably be separated in some manner from the contributed matter. Apparently these editorial comments were considered by Mr. Miller as portions of the original paper and evoked a large part of his criticism.

D. W. ROPER,
Superintendent of Street Department.

Is Electrolytic Joint Corrosion Serious?

AMERICAN GAS ASSOCIATION
PHILADELPHIA, PA., March 20, 1919.

To the Editors:

An article has recently appeared in the ELECTRIC RAILWAY JOURNAL entitled "Drainage or Negative-Feeder Electrolysis Protection." D. W. Roper, the author of this article, proposes electrical drainage of gas and water pipes as a cure for all electrolysis troubles. It is true that this would be an easy solution of this difficult problem if the gas and water pipes were continuous conductors, such as are the lead cable sheaths. Mr. Roper's conclusions are all based on the supposition that gas and water-piping systems do not have high-resistance joints, and that current flowing

along a pipe encountering a high-resistance joint does not cause corrosion of the joint where the current flows around the joint through the surrounding soil.

Joint corrosion is by no means the most serious objection to electrical drainage of piping systems. High-resistance joints such as are always present in gas and water-piping systems with lead or cement joints will cause the stray currents carried by these piping systems to leave the pipes, to flow to other sub-surface metallic structures, causing electrolytic corrosion of the pipes at locations other than directly at the joints. This trouble is generally more serious than electrolytic corrosion directly at the joint.

However, let us discuss the question of joint corrosion. Mr. Roper states that "an earnest endeavor was made to find an actual case of joint electrolysis in Chicago. No such case has ever been found." This statement is quite sweeping in character and misleading to those not familiar with conditions in Chicago and throughout the country. The Palmer report, covering the electrolysis investigation in Chicago, shows a photograph of a serious case of joint corrosion where the fittings in the pipe were on the spigot end of the pipe. Such authorities as the late Prof. A. F. Ganz, D. H. Maury, chairman of the electrolysis committee of the American Waterworks Association, Professor Blake who reported on electrolytic conditions in Kansas City and Richmond, and A. A. Knudson who reported on the electrolysis situation in New Bedford, all agree that joint corrosion may be serious.

Mr. Von Maur, chairman of the electrolysis committee of the American Gas Association, reports a number of cases of serious joint corrosion in St. Louis where holes were eaten entirely through the gas mains, all of the trouble being confined to the 18 in. near the joint. The writer has seen a number of serious cases of joint corrosion in locations where the gas and water mains are negative to all adjacent structures, where electrical measurements were taken to establish this beyond doubt. I question whether electrical drainage of piping systems should be permitted at all.

It should be further pointed out that the electrical drainage system which was installed in the Illinois substation district in Chicago was in operation less than ten days. No conclusion can therefore be drawn from this installation.

H. C. SUTTON.

Coasting Saves Power in Twin Cities

Even Fractional Installation Indicates that Substantial Savings Are Being Made

AS OF JUNE 15, 1918, the Twin City Rapid Transit Company had already installed 340 out of the 1100 Rico coasting recorders purchased to outfit its system completely. Part of these 340 were on four fully-equipped lines out of Nicollet station as follows: Marquette and Grand; Fourth Avenue south and Sixth Avenue north; Monroe and Bryant; Fifty-fourth Street and Columbia Heights. Other lines are in process of being equipped and while the installation is still not complete the company is well pleased with the results obtained.

Records were taken from the time the first recorders were put out, but the first comparative statement for the information of the men at Nicolett station was not issued until April 1. This was accompanied by a bulletin from General Superintendent Caufield, who ex-

plained why men on the extra list would be grouped by themselves for the sake of fairness. Mr. Caufield also pointed out that a man's coasting record was in direct proportion to the amount of his willingness and earnestness to "Save and Serve."

At the very beginning of the year 1918 the company issued to the trainmen a booklet entitled "Doing Our Bit—Coasting and Its Relation to the War." At the opening was this quotation from Bulletin 183 of the United States Fuel Administration: "An investigation convinces us that electric railways offer a chance for large savings." The relationship between coasting and fuel savings was succinctly portrayed thus:

MORE COASTING → LESS POWER
 LESS POWER → LESS COAL

An informal coasting campaign had indicated to the company that with the co-operation of the trainmen the total amount of coasting then being done could be increased by not less than 10 to 15 per cent. This estimate, as will appear later, already was very greatly exceeded—a compliment to the management, the men and the coasting recorder.

The remainder of the pamphlet gave the men good suggestions on how to operate more efficiently through increased coasting and how to key the coasting recorder and turn in the printed record therefrom. The conclusion said: "The more you coast, the more coal you will save, the easier will be your work, the less will be the wear and tear on the car equipment, and the safer and more comfortable will be the ride of passengers, the customers who pay your wages.

"In the interest of safety and economy, and on behalf of the nation at large, the management asks the hearty co-operation of each trainman toward the successful carrying out of this campaign."

That the men responded heartily from the start to this appeal to save power is clear from the following results secured during the first half of last year:

COASTING PERCENTAGES ON TWIN CITY LINES OUT OF NICOLLET STATION

	January	May	June
Marquette and Grand	25.6	31.2	30.2
Fourth Avenue South and Sixth Avenue North	21.5	25.7	24.9
Monroe and Bryant	22.0	28.7	28.1
Fifty-fourth and Columbia Heights	22.2	27.8	26.8
Extra list	23.9	25.5	25.4

It is hardly necessary to point out that from the very beginning the men showed a big advance over the ordinary unchecked motorman. The slight drop in June did not indicate a decrease in efficiency, because some of the lines were speeded up at the same time that increased travel increased the number of stops per mile. Nor is any attempt being made to drive the men. The management is satisfied that if the men are thoroughly imbued with the importance of coasting they will continue to improve steadily and permanently. It is much more to the point to have a good general average than a few very high ones and a mass of low ones.

On the basis of only 30 per cent equipment of the Twin City lines with coasting recorders, Chief Engineer Scofield found an energy saving of 5 per cent for the whole system, which would indicate a saving of at least 16 to 17 per cent for complete installation. Mr. Scofield has kept careful records of energy consumption per car-mile over many years. With due allowance for weather and temperature conditions, the saving can be accounted for only through the correct use of the coasting recorders.

AMERICAN ASSOCIATION NEWS

Current Association Questionnaires

THE committee on power generation has just sent out data sheet No. 187 to secure statistics on the cost of producing electrical energy. The questions are such as to permit the character of the load to be considered, and the operating expenses are to be segregated under these accounts: Superintendence of power, buildings, fixtures and grounds, power plant equipment, power plant employees, fuel for power, water for power, lubricant for power, miscellaneous power plant supplies and expenses.

The committee on one-man car operation is asking for very comprehensive information on this subject. Among the important items are the following: Number of one-man cars of Birney and other safety types operated; number converted from former types; safety devices installed; average car weight on system and of one-man cars; length of time one-man cars have been operated; average energy distributed per car-mile on system and on lines equipped with Birney cars; hourly wages paid to operators of one-man cars and other cars; popularity of one-man cars; type of employee most suitable for one-man car operation; relations with trainmen in connection with one-man car service; attitude of the public toward one-man cars; relation of one-man cars to increases in services, schedule speed, headway, track capacity, etc.; effects on earnings; effects on jitney competition; effects on accident hazards; effects on car and track maintenance.

Way Committee Starts Work

THE Engineering Association committee on way matters met at association headquarters on March 28. A digest was presented showing the work which had been done by the committee just previous to the suspension of activities. The executive committee assignments were then considered and divided among the members. Those who attended the meeting were C. H. Clark, Cleveland, Ohio, chairman; W. R. Dunham, Jr., New Haven, Conn.; H. Fort Flowers, New York; C. G. Keen, Philadelphia, Pa.; E. M. T. Ryder, New York, and N. B. Trist, Pittsburgh, Pa.

Optimism Prevailed at Waterbury Meeting

AS A RESULT of an unusually energetic publicity campaign on the part of the local committee the Waterbury meeting of the Connecticut Company section, held on March 27, was attended by a large number of members and guests, namely 312. As usual an informal dinner preceded the meeting. Special cars were run from Hartford, New Haven and Bridgeport to the meeting. C. H. Chapman, local manager, presided and aroused enthusiasm by the statement that the safety cars for Waterbury will begin to arrive on April 7 and will be received at the rate of three per week until fourteen are delivered.

Corporation Counsel Hugh G. Church represented the Mayor in welcoming the visitors and he was followed by John H. Goss, general superintendent Scovill Manufacturing Company, who spoke on industrial re-

lations. Mr. Goss criticised the basis on which the War Labor Board was founded, the work of the board being of a curative rather than a preventive nature. Mr. Goss attributed the freedom of Waterbury from labor disturbances to the fact that the industries are home owned and that mutual understanding exists between the managements and the employees. J. F. Berry, attorney for the Connecticut Company, touched upon legislation affecting the local trolley lines and explained the investigations regarding which a report was to be made on April 1. It was understood that the investigating committee is ready to grant relief necessary to keep the roads going for the next two years, but payment of dividends is not yet in sight.

Another legal speaker was Benjamin I. Spock, formerly attorney for the railway company. He told of the co-operation which had been necessary between the Chase interests, which he represents, and the railway company, which had worked together to keep up the service between Waterbury and Waterville in order to keep the mills going on necessary war work. John J. Cassidy, attorney and general manager Waterbury-Milledale Tramway, paid a powerful tribute to the loyalty of the Connecticut Company employees. In conclusion Chairman Chapman spoke briefly regarding the trials and tribulations of the electric railway business but said that he considered the future to be promising.

The evening was enlivened with music, and a clever sketch showing the operation of the one-man car was staged by the local committee.

War Reminiscences at Chicago Meeting

AT THE MARCH 25 meeting of the Elevated Railways company section several speakers told of their personal experiences at the front. Sergeant E. A. Schaff of the First Gas Engineers described his work, Captain H. E. Fisher took up the Army medical work and Ensign W. G. Woods spoke of his training and work in the Navy. J. A. Jarvis emphasized the importance of loyalty on the part of employees toward the company and the value of co-operation between departments. J. M. Feldhake urged that each employee in traveling over the system constitute himself a committee to observe and report any feature in connection with train operation that might call for improvement. R. N. Griffin also gave a humorous outline of his work as superintendent of the "Loop."

Activities of the London Safety-First Council

A VERY active organization for accident reduction is the London (England) Safety-First Council which was organized about two and a half years ago. It comprises representatives of thirty-eight local authorities, six of which are also tramway authorities, seven railways, three tramways, five omnibus companies, two vehicle workers' associations, sixteen technical research societies, professional associations, etc., thirteen commercial firms and a few others. The detail work is assigned to the drivers' educational committee, the street safety committee, the railway safety committee, the schools propaganda committee, the industrial safety-first committee, the publicity committee and the general purposes committee. That the work of the council is effective is indicated by the fact that during two years the decrease in fatal accidents was about 24 per cent and in the total of accidents 36 per cent.

Recent Happenings in Great Britain

Labor Unrest Continues—Need for Higher Fares More and More Apparent—Plans Developing for Reconstruction and New Work

(From Our Regular Correspondent)

Great Britain, no less than the United States, has been troubled with labor unrest and strike upheavals. The Bolshevik element among the ship-building and engineering workmen on the Clyde brought about strikes and riots in Glasgow in the beginning of February. Belfast industries were brought to a standstill through strikes. Local railway transportation in London was paralyzed. The trade unions concerned backed the London strikers, but elsewhere stoppages were "unauthorized." Outside of London there is a special tendency for the workmen to break away from their trade union leaders and to go on strike in defiance of agreements. The spirit of unrest and impatient desire for improved conditions everywhere leads to demands which are often impracticable. Among the pretences for asking for shorter working hours without reduction of pay is that unemployment will thus be prevented. Unemployment does exist to some extent, but it can only be temporary, and there is an elaborate state organization for getting into employment the men discharged from the army.

GLASGOW STRIKE A FAILURE

So far as the tramway services were concerned, the strike in Glasgow was a failure. The men refused to come out, and though a number of cars were damaged on the streets by the rioters the service was not interrupted. In Belfast the tramway service was suspended because the employees in the municipal power station stopped work. The service was restored on military protection being given. The strike on the underground railways of London was dealt with in a special article in the *ELECTRIC RAILWAY JOURNAL* for March 8, page 478.

At the end of February the British public was in a state of suspense over the result of negotiations between the government and the allied federations of coal miners, railwaymen and transport workers. The demands were extortionate and yet, if refused or no compromise reached, national paralysis was threatened.

FAVORABLE YEAR FOR UNDERGROUND

The reports presented to the annual meetings of the London underground electric railway companies in February show that in spite of adverse war conditions last year was the most favorable in their history. Labor and materials were scarce and dear, but in spite of that the companies carried more passengers than they did in any previous year. Dividends to shareholders have improved, but they are still low, as the capitalization of such lines is necessarily very heavy. That being so, and considering also the present congestion of traffic, it is un-

likely that any great improvement in the percentage return on the par value of the stock can be looked for unless there is considerable increase of fares. The 50 per cent increase imposed by government order on the railways of the country generally does not apply to the London "tube" railways, which up till now have increased their fares only slightly. Further increases were foreshadowed at the annual meetings in February and also additional capital expenditure for developments and improvements now much in arrears owing to the war.

LONDON SUBURBAN TRAFFIC DEVELOPING

The chairman of the London & South Western Railway, Brigadier-General Drummond, gave some interesting particulars at the annual meeting of the company on Feb. 21 on the development of traffic on the London suburban lines of the company since they were changed from steam to electric traction. He said that the improvement had exceeded all expectations. In the year 1913 the number of local passengers carried in the suburban district was 25,000,000; in 1915, before electrification, the number had increased to 29,000,000; in 1917 the number was 33,000,000 and last year the total number of local passengers carried was 40,000,000, or an increase of not less than 17,000,000 compared with the year 1915, or about 75 per cent.

Two of the biggest municipal extension schemes at present specified are those of Liverpool and Coventry. The former city wishes to borrow an additional sum of £550,000, to be expended as follows: Generating plant, £200,000; electric mains, £190,000; new cars, £70,000; motor garage and equipment, £15,000; new car shed, £10,000. Coventry proposals are estimated to cost £333,000 for reconstruction and doubling of certain tracks, reconstruction and extension of other lines, new cars, new car shed, etc. The Corporation of Manchester intends to build 100 new car bodies itself and ask tenders for others. In regard to motor omnibuses, the Associated Equipment Company, sole builder for the London General Omnibus Company, seems in a fair way to getting much of the business.

Prices are, of course, very high, but arrears accumulated during the war are so heavy that tramway authorities must have the stuff, now that it is beginning to be obtainable. In regard to rails, during the war when none could be obtained in this country Middlesex County Council ordered a small quantity from the United States which included freight and insurance cost £30 a ton, compared with £7 10s. before the war. The maximum price in this country is now £17 10s. a ton. Major Fred Coutts, manager of the Paisley

Tramways, and secretary of the Scottish Tramway Officials' Association, has issued an appeal to tramway authorities to support a movement in favor of their getting authority speedily to increase fares in order to meet higher working expenses and the great cost of materials. In connection with the latter he has put forward a very interesting tabular comparison of prices which is included in the review of electric railway trade conditions in Great Britain in the *Manufactures and Markets Department* elsewhere in this issue of the *ELECTRIC RAILWAY JOURNAL*.

PLEA FOR FARE INCREASE

Major Coutts makes a very strong case for authority to raise fares immediately above the present statutory maxima instead of having to wait as at present until after a loss on working has been shown. As an additional reason for such power, he points to the present extortionate demands of tramway employees for a forty-four-hour week and other concessions. Such demands if conceded will spell bankruptcy for many tramway undertakings unless they can largely increase their revenue. The position seems to be quite as acute as the corresponding one in the United States.

In this connection it may be noted that during February the Glasgow Town Council granted to all its employees a forty-eight-hour working week without reduction of pay and with increases in the war bonus raising it to a maximum of 30s. per week. It was stated that the change would mean in the tramway department an annual deficit of £40,000. This is in spite of the fact that the undertaking in the past has been so successful that it is in the unique position of having paid off all its capital liabilities, so that there are no payments for interest and sinking fund. The Glasgow fares are, however, so low at present that there is ample margin for raising them without difficulty.

FORTY-FOUR HOUR WEEK

The Town Council of Newcastle has granted a forty-four-hour week to all its employees, including the tramway men. These two cases are rather a break-away so far as tramways are concerned, because in the end of February negotiations were still going on between the two tramway associations of the country and the men's unions on the question of hours, and something like a deadlock had been reached.

The English Electric Company has gone to allotment. It consolidated under one direction and management the Coventry Ordnance Works, Dick-Kerr & Company, the Phoenix Dynamo Manufacturing Company, the United Electric Car Company and Willans & Robinson. About 90 per cent of the Dick-Kerr shareholders have accepted the offer to exchange their shares for shares in the new company. The authorized capital is £5,000,000 and the issued capital on allotment is just under £2,000,000.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE · PERSONAL MENTION · CONSTRUCTION NEWS

Voting on City Ownership

Review of Terms Under Which Detroit People Are Asked to Sanction Municipal Ownership

Provided the agreement and a charter amendment accompanying it are approved by three-fifths of the electors (male and female) of Detroit, voting on the propositions on April 7, the contract for the purchase of the railway property of the Detroit United Railway will be effective, and the city will come into possession of the property on July 1, 1919.

MANY LONG CONFERENCES

The purchase agreement entered into is the result of numerous sessions of great length during which practically every phase of the railway problem which has confronted the city for more than a score of years, was carefully considered.

The three possible methods of acquiring a railway system, i. e., purchase by agreement, condemnation and piecemeal construction, were earnestly weighed, and, with the advice of street railway experts, the Board of Street Railway Commissioners of the city unanimously concluded that the purchase by agreement plan was the most practicable and feasible method of affording relief from the conditions which have prevailed in the past.

The board says that in arranging the agreement every effort was made to safeguard the interests of the people of Detroit, and it requests that the voters study the agreement carefully and then express their preference at the election.

For the sum of \$31,500,000, of which \$15,000,000 is to be paid down on July 1, 1919, and the remainder on or before Dec. 31, 1931, the city of Detroit will acquire the railway property of the Detroit United Railway within the city of Detroit, the city of Highland Park, the village of Hamtramck and the township of Warren, Macomb County.

WANTS APPROVAL OF \$24,000,000 OF BONDS

At the election on April 7, the voters will be asked to approve bonds to the value of \$24,000,000, to take care of the initial payment of \$15,000,000 on July 1 and to permit of the making of extensions, betterments and improvements to the railway system as now existing.

The city is to pay interest at the rate of 6 per cent on the unpaid portion of the purchase price (which is to come out of earnings) until the balance is fully liquidated, but it has the right to stop the running of interest by retiring

the outstanding bonds secured by mortgage upon the property at any time before Dec. 31, 1919, if it wishes to do so.

Upon conveyance and delivery of the railway system to the city, the Detroit United Railway is to be permitted to run its interurban cars into the city substantially as heretofore, on payment to the city of cost of the transferring of cars over the city's tracks, plus 30 per cent. At all times the entrance of these interurban cars into the city is to be under the reasonable control and regulation of the Board of Street Railway Commissioners.

The agreement between the city and the Detroit United Railway, relative to the compensation for use of the city's tracks by interurban cars, may be reviewed at five-year periods, and in case the city and company are unable to agree, the difficulties are to be submitted to the Michigan Railroad Commission for determination.

INTERURBAN LINES FOR INTERURBAN PASSENGERS

Neither the city nor the company is to issue transfers for transportation of passengers over lines or on cars of the other party, and the interurban passenger cars are to carry only passenger traffic originating in the city districts for points beyond the city limits, and passenger traffic originating outside said city limits coming into the city.

Important Power Plant Improvements

The St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., managed by Henry L. Doherty & Company, New York, N. Y., will spend \$1,000,000 on its plant, according to a communication submitted to the Council of St. Joseph by J. H. Van Brunt, general manager of the company.

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. A new power house will not be built, but much new equipment will be installed. Additional pumps will be placed in service so that the company will not be forced to depend upon the city water plant for water. The consulting engineers for the company decided that a new plant could not be built before next winter but that improvements could be made to the present plant which will place it in good shape. Last winter the power plant interruptions greatly embarrassed the management and caused much financial loss to the company.

Sliding Scale Commended

Mr. Babson Thinks Service-at-Cost Plan Needs to Include Incentive for Efficient Operation

Roger W. Babson of the information and education service of the Department of Labor, in recent articles in the Washington *Star*, suggested various possible cures for electric railway ills in the District of Columbia. The plans have been submitted to the Public Utilities Commission for consideration in connection with the application of the Washington Railway & Electric Company for financial relief.

AGAINST MUNICIPAL OWNERSHIP

The plans mentioned by Mr. Babson include municipal ownership, service-at-cost, service-at-cost with a sliding scale of return, and partnership with the city. Mr. Babson characterized the first as tending eventually to uneconomical operation.

The service-at-cost plan, in Mr. Babson's opinion, would also lead to uneconomical operation because it lacks the salient feature of the plan recently proposed for the New Brunswick Power Company, St. John, N. B., as noted elsewhere in this issue. This feature is that an incentive for efficient operation is provided by including in the cost of service a sliding scale of return on investment, changing inversely with the rate of fare.

Discussing the advisability of a partnership plan, Mr. Babson said in part:

A loan of public funds or even the guarantee of securities seems somewhat out of the question for the present. The only other form of relief which seems practical would be to have a partnership arrangement entered into between the companies and the District of Columbia. By such an arrangement the companies would be allowed a dividend of say 5 per cent on their stock, with the understanding that the net earnings over and above this amount would be divided fifty-fifty between the company and the district.

IMPARTIAL ACCOUNTING NECESSARY

Such a system requires impartial accounting. Companies working under such partnership tend to put so much back into the property that there is never any excess to divide. This principle is all right, provided there be an increase of stock commensurate with the excess put back into the property, and that arrangements be made for the district to receive one-half of such stock increases.

Perhaps the most practical method of handling the situation at the present time would be along the lines of the national banking system. In the case of the banks, private interests are the stockholders and they are given a certain maximum and minimum leeway between which they can work. The capitalists always represent the real money, and an effort is made by the government to enable the banks to make a fair rate of interest on this money and lay up a surplus besides. In return, however, the government makes a very careful examination of the banks and has a close supervision. This is done primarily in the interests of the public, who are depositors in the bank, rather than in the interests of the stockholders.

Temporary Aid for Connecticut

Special Commission Proposes That Taxes Be Deferred for Two Years and That Jitneys Be Regulated

Eight recommendations for legislation designed to relieve electric railways in Connecticut were made to the State Legislature on April 1 by the special commission appointed to investigate the condition of the carriers. The recommendations cover, in general, a temporary deferment of taxes, a temporary positive relief from bridge and paving assessments, a regulation of jitneys and a grant for motor vehicle operation by railways.

The report was signed by Senator John B. Dillon, co-chairman; Senator C. E. Hough, Representative O. H. Beckwith, Representative J. T. McKnight, W. M. Waitt, I. M. Ornburn and F. R. Cooley. A supplementary report was filed by Messrs. Beckwith, Dillon and McKnight, in favor of a loan from the State. Dissenting reports were made by Representative S. C. Shaw, co-chairman; Senator W. C. Fox and Representative J. S. McCarthy.

CONTRIBUTING CAUSES

According to the majority report, 98 per cent of the 828 miles of electric railways in Connecticut are either in receivership or insolvency and must be partially or completely suspended or abandoned unless substantial temporary relief is given by the 1919 Legislature. Only the Bristol & Plainville Tramway is paying.

The vital causes contributing to this situation are said to be these:

1. War conditions.
2. Abnormal increase in wages.
3. Abnormal increase in cost of material.
4. Abnormal increase in cost of coal.
5. Taxation requirements of the State.
6. Paving assessments required by State laws.
7. Bridge assessments required by State laws.
8. Rapid development of unregulated jitney competition.
9. Operation of non-paying lines.
10. Depreciated purchasing power of the former unit of electric railway fare, the nickel.
11. Improved facilities required of companies.
12. Great increase in use of private automobiles.

The commission believes that some of the above named causes will adjust themselves within the next two years after the return to peace conditions, such causes as No. 1, No. 3 and No. 4. Within two years there may be a reduction in cost of material, and equitable means may be found for a decrease in percentage of cost of labor to the gross revenue. As to items No. 5 to No. 11 inclusive, however, the commission sees no hope for relief from the pressure and hindrance of these causes, except by means of definite and adequate legislation.

REMEDIES SUGGESTED

In the commission's opinion, the situation is so critical that it is a serious question whether the lines can be saved intact or not. It is necessary, therefore, at once to take steps along these recommended lines:

1. The suspension of any call or demand for the payment of taxes due to the State at the present time or which may become due to the State on the rising of the General Assembly of 1921. A uniform rate of 5 per cent per annum (instead of 9 per cent) should accrue upon any unpaid taxes up to that time.

2. Complete relief, until the rising of the General Assembly of 1921, from all charges due to the State on the rising of the construction as assessed under the present State laws, except cost of maintaining the track and other railway equipment required by them for operation.

3. Complete relief, until the rising of the General Assembly of 1921, from all paving charges as called for by the present laws of the State, except the maintenance for 3 in. beyond the rails and except the re-laying of the motor vehicle tracks on any paving which the railways may remove or injure.

JITNEYS

4. The so-called Jitney should be declared a common carrier and thereby be placed under the same control and supervision as the electric railways, so far as schedules, routes and rates are concerned; and under the same control as to the issuing of licenses as licensing and providing security against damage to persons are concerned.

PERMISSION TO OPERATE MOTOR VEHICLES

5. Permission should be granted to the electric railways to operate a motor-vehicle service, and to abandon non-paying portions of their lines provided other adequate means for conveying the traveling public is furnished, all subject to the approval of the Public Utilities Commission.

6. Permission at the expense of the State, and under the supervision and approval of the highway commissioner, of the electric railway approaches to the New London bridge, the railway concerned to maintain the property and pay a rental of 10 per cent of the cost of construction to cover use and depreciation.

7. Permission should be granted to the Hartford & Springfield Street Railway to carry over certain tracks of the New York, New Haven & Hartford Railroad.

8. Appointment by the Governor of an electric railway commission of three members to continue study and to report to the General Assembly of 1921 on conditions of the case of 1920, together with recommendations and necessary legislation required to place the railways upon a safe, fair and efficient operating basis. The commission should, if deemed desirable, have authority to engage a competent expert to make a careful appraisal of properties after July, 1920.

Bills have been submitted carrying out all the recommendations stated above, together with an additional one, providing that the State may lend not more than \$2,000,000 to electric railways, if necessary, and further providing for bond issues to raise the money, with the stipulation that the railways pay one-half of 1 per cent more interest to the State than the State would pay on the bonds. This last mentioned bill was drawn up by Messrs. Beckwith, Dillon and McKnight.

URGES PUBLIC CO-OPERATION

In closing its report the commission says:

We believe at present that in spite of many causes for criticism and complaint it is now the earnest effort and endeavor of the officials of electric railways to give the best service possible to the public, and we further believe that the operating officials of the public utilities should be commended. The Public Utilities Commission will gladly enter into correct abuses and lacks in efficient service if the public will co-operate by bringing to the attention of the commission the attention. We are not justified in expecting perfection in railway companies any more than in individuals, but by kindly co-opera-

tion much can be done by the public to help the operating officers in giving more satisfactory service.

The dissenting reports in the main favored merely a suspension of the bridge or paving assessments or both for two years, or until the rising of the next General Assembly, with a 5 per cent charge on unpaid assessments and a preferred lien in favor of the State on the companies' properties for the assessments.

To Stimulate Business

Utilities Committee Co-operates in National Campaign to Stabilize Trade at Present Prices

In an effort to stabilize prices, lower the cost of living and stimulate business reconstruction a "National Prosperity Campaign," under the chairmanship of Philip H. Gadsden, vice-president United Gas & Improvement Company and chairman of the National Public Utilities Committee, began on April 4. The object is to bring business men to the belief that it is within the power of industry to resuscitate itself.

According to a statement issued at the headquarters of the campaign, Room 700, Commodore Hotel, New York City, the stabilization of business at present price levels rests within the power of industry itself, is the belief of the National Federation of Building Industries. This is the message that is being forwarded to members of the War Service Committees and the Chambers of Commerce of the United States, as well as by leaders of business, by the "National Prosperity Campaign." The statement continues:

Regardless of government attitudes toward the present price situation, there is a realization of the necessity for the upkeep of production and the absorption of the unemployed, and the distribution of such propaganda as will stimulate confidence as well as activity in business projects. Several hundred firms throughout the country have wired their approval and co-operation.

It being granted that general retail buying by the ultimate consumer is still enjoying its usual boom even at present prices, the fact remains that industry has been waiting and is waiting for basic prices to strike a permanent level that would justify industry in going ahead and still be protected against loss by a drop in prices. Present prices are here to stay, so far as price levels are concerned, cannot await the industrial adjustment of the entire world. Factory fires must be kept burning and wheels turning, and labor must be employed at a scale of wages commensurate with the prices of commodities.

Appeals have been sent to the Governors of the States and mayors of principal cities, requesting conferences with their business interests that are now awaiting building and highway construction.

The organizing committee of sponsors of the "National Prosperity Campaign" include the following: P. H. Gadsden, chairman; Milton E. Ailes, vice-president Riggs National Bank, Washington, D. C.; E. P. Albrecht, president Philadelphia Bourse; Joseph E. Davies, former chairman Federal Trade Commission; James H. McGraw, president McGraw-Hill Company, Inc., New York; Franklin T. Miller, president F. W. Dodge Company, New York; John Hays Hammond, Washington, D. C.; Cardinal Gibbons; Julius Rosenwald, president Sears Roebuck & Company.

City Takes Over Railway

Seattle on April 1 Formally Came Into Possession of Railway Lines of Puget Sound Company

Formal transfer of the railway lines of the Puget Sound Traction, Light & Power Company at Seattle, Wash., to the city took place on March 31. Superintendent of Public Utilities T. F. Murphine states that plans for operation by the city provide first for a physical connection between the already existing municipal lines and the traction lines, thus eliminating duplication of service, and also contemplate express or limited service from the outlying districts to the industrial districts, the adoption of traffic regulations, the elimination of present congestion on downtown streets due materially to parking of automobiles, and the installation of the skip-stop system.

PRELIMINARY OPERATING PLANS

The type of one-man cars now in use will be continued wherever practicable, with the installation of a larger type of one-man cars, and a campaign of power saving and the speeding up of the service. Car tickets will be done away with and the nickel made the standard and only fare, except for school children. All free riding will be abolished. Safety zones will be established, with the end in view of loading and unloading passengers more rapidly.

The sum involved in the transfer is \$15,000,000. The company accepts utility bonds against the property transferred in payment, and under the agreement with the city the Supreme Court has passed upon the validity of the securities to be taken in lieu of cash. A forty-five-day period was permitted in which the company was to clear the title of all incumbrances, this period to date from the day the Superior Court received the *remittitur* from the Supreme Court. When that is done the title of the property passes to the city and the \$15,000,000 of utility bonds are turned over to the company.

The purchase of the properties by the municipality was primarily the result of war emergency conditions. The company was confronted with the problem of meeting greatly increased costs of operation, increased interest rates for money needed for maturing bonds and notes and to keep pace with community growth and development and of meeting the competition of war industries for all labor required. Involved with this was the immediate future problem of expiring franchises.

EXPIRING FRANCHISE A PROBLEM

One of these problems might have been solved in part by increased rates of fare, but no fare within reasonable limits could have solved the other—the problem presented by the franchise tenure. It was impossible, as it proved, to solve even the problem of increased costs by any adequate proportionate increase in revenues, or such increases as would be possible only under proper

increase in rates of fare being charged.

A State statute, since amended, provided that no railway could charge a fare in excess of 5 cents for a continuous ride within the city limits of any city of the State, and continuous ride had been construed to mean and include any transfer to which the rider is entitled.

SUSPENSION NOT POSSIBLE

The company's first thought and effort was to have the City Council permit such temporary suspension of franchise requirements, by agreement between the city authorities and the company, as would allow the company to increase its rates of fare, but it was not possible to overcome all objections to that arrangement. In the meantime the labor problem was particularly pressing. Men were leaving the company's employ to work in the shipyards. Costs were mounting higher day by day and revenues were not increasing in any like proportion. The company could not increase fares, but the city as owner of the properties would not be bound by this rigid fare statute. It was at this juncture that the first suggestion was made that the city could solve the transportation problem by acquiring the railway lines. That suggestion came from Councilman R. H. Thomson as early as May 14, several months before it was considered seriously by the city, the company or the public.

On Aug. 13, after returning from Washington, where he had been in conference with the Capital Issues Committee and officials of the government's transportation and housing bureau, Mayor Hansen came out in a public statement declaring that the only solution of the transportation problem was for the city to acquire all of the railway lines in the city, consolidate them and operate them as a single publicly-owned, publicly-operated system.

PUBLIC SENTIMENT TESTED

On Sept. 6, after an all-day session of city officials and railway officials and representatives of the United States Shipping Board, the city made an offer of \$15,000,000 for all of the railway lines and railway operating property of the company within the limits of the city of Seattle. On Sept. 11 the company filed an answer accepting the offer.

The city officials, after entering into negotiations on the basis of the price offered, determined to have the authority of the people for its final consummation, and accordingly submitted the purchase question to an advisory referendum in the election of Nov. 5. The referendum carried by a vote of 29,726 to 8309. After obtaining this affirmation of the purchase by the people, the city officials felt freer to proceed with the details.

The offer made for the properties and the acceptance by the company was a general offer and a general acceptance based upon the ability of the city and the company to get together on all of the details. One by one these were agreed upon, by a process largely of give and take, and by both sides remaining on a common ground of mutual understanding and open and above-board dealing.

STATEMENT OF PROPERTY ACQUIRED

The city is acquiring from the company 194.08 miles of electric railway tracks and 8.60 miles of cable tracks, a total of 202.68 miles; 477 passenger cars, with twenty-seven motor-equipped freight and work cars and thirty-six freight and work cars without motors, or a total of 540 cars of all descriptions. There are thirteen other vehicles ranging from touring cars to tar wagons, and all of the railway distribution system, including trolley and span wires, poles, etc., together with the signal and interlocking apparatus used in train dispatching. There are seven carhouses and yards, three cable stations, freight sheds and freight terminals, smaller miscellaneous buildings and structures, many parcels of real estate and rights-of-way and thousands of tools of all descriptions, together with a large car repair shop and much land at Georgetown. Stores and supplies on hand go with the lines, where such stores and supplies are used exclusively for street car operation.

The city is acquiring a transportation system which carried last year about 117,500,000 passengers and with gross revenues for the year of about \$4,500,000.

As noted in the department "Personal Mention" elsewhere in this issue many important changes in personnel have followed the taking over of the lines by the city.

Company Withdraws from Employees' Association

An announcement posted in the carhouses and employees' waiting rooms of the Brooklyn (N. Y.) Rapid Transit System indicates that the company is prepared to comply with the recommendation of the War Labor Board to remove all company control over the Employees' Beneficial Association.

According to the posters, the company will hereafter allow the employees to elect their own president. In the past the president of the association has been appointed by the president of the Brooklyn Rapid Transit Company subject to confirmation by the trustees, five of whom were appointed by the company and five elected by the members of the association. The company also announces a new insurance scheme. It offers \$1,000 of life insurance to every employee, each employee to pay a flat rate of 25 cents a month, the company to pay the balance of his premium. It is figured the company's share of each premium will amount to from \$15 to \$25 a year, according to the age of the person insured.

Boston Elevated Act Declared Constitutional

At the present session of the Massachusetts Legislature several bills authorizing the State to help defray part of the cost of electric railway transportation are under consideration, and before going farther with them the legislature thought it wise to learn whether such bills, if passed, as well as the existing Boston Elevated Railway act, were constitutional. Hence, on Mar. 12, the Senate asked the justices of the Supreme Court to decide four questions of law.

The first was whether Senate Bill No. 54 would be constitutional, if enacted. This provides in substance for a maximum fare of 5 cents on the Boston Elevated Railway, but if the income thus received shall be inadequate to meet the cost of service, the deficiency is to be made up to the company from the treasury of the Commonwealth and the sums so advanced shall be assessed upon the cities and towns in which the lines of the company operate.

The second question was whether House Bill No. 722 would be constitutional, if enacted. This bill aims to reduce fares on the Boston Elevated Railway by the payment by the state to the company of an amount equal to the rental due from it for the use of subways, and the assessment of the sum so paid in the same way as in the Senate bill already mentioned.

The third question was as to the constitutionality of Chapter 159, which is the law under which the Boston Elevated Railway is now being operated.

The fourth question was whether any part or parts of this law which have a direct relation to the validity of the two bills just mentioned were unconstitutional.

The court answered the first two questions by "yes" and the second two questions by "no." In other words, it declares the present law constitutional and that the bills, if enacted, would be constitutional.

San Francisco Encroachment Case Argued

Senator Hiram Johnson of California appeared as chief counsel for the city of San Francisco when arguments were begun in the Supreme Court of the United States on March 25 on the right of the city to construct its own railway lines parallel to those of the existing lines owned and operated by the United Railroads, San Francisco. An appeal was taken by the private company from the lower federal court decrees dismissing injunction proceedings started by it to enjoin the city from constructing the proposed municipally-owned lines.

The case has aroused country-wide interest because of the important issue involved. In asking the Supreme Court to reverse the judgment of the lower courts, counsel for the company argues that the refusal of the lower courts to

enjoin the city impaired the company's contract and deprived it of its property without due process of law.

Brooklyn Men Present Demands

The demands of the unionized employees of the Brooklyn Rapid Transit Company for increases in wages, shorter hours and various improvements of working conditions have been addressed to Lindley M. Garrison, the receiver. With the demands was sent a letter requesting that the members of the committee be permitted to appear in person before the receiver.

It is stated unofficially that motormen and conductors on the surface lines are asking 60 cents an hour for a nine-hour working day and time and a half for overtime. They also ask some sort of payment for time consumed in "swings" between working hours. Shop workers are asking for an eight-hour day at 45 cents an hour, with time and a half for overtime. Structural workers and blacksmiths want 53 cents an hour for a nine-hour day and time and a half for overtime.

No date has been set by the men for a reply to their request.

News Notes

City Will Take Over Railway.—The Common Council of Niagara Falls, Ont., has notified the Niagara, St. Catharines & Toronto Railway that upon the expiration of the latter's franchise a year from now the city will take over the railway and operate it as a public utility.

Ford Promises a "Flivver" Street Car.—Announcement was made on April 3 by C. E. Sorenson, general manager of the Henry Ford & Son Tractor Company, that Henry Ford and other members of his tractor organization are now working on plans for a street car driven by an internal combustion motor which will demonstrate in Detroit this summer.

Commision Control in North Dakota.—Public utilities, including electric railways, have been placed under control and supervision of the State Railroad Commission in a bill passed by the Legislature and signed by the Governor. Publicly owned utilities are exempt. No rate for service fixed by legislation may be increased by the commission.

Wage Increase Asked in Pittsburgh.—The motormen and conductors of the Pittsburgh (Pa.) Railways have presented a new wage scale to the receivers, effective on May 1. A substantial increase in pay is asked, although neither the receivers nor the men have announced the details. The present

wages of the men are 42, 45 and 48 cents an hour.

Wage Request Refused.—F. R. Coates, president of the Toledo Railways & Light Company, Toledo, Ohio, at a conference on March 28 told the men the public would not stand a fare increase sufficient to meet the wage demand. He offered two counter propositions, both declared unsatisfactory by the unions. The employees demand a scale of from 50 cents to 60 cents an hour, and the electricians from 50 cents to 75 cents.

Women Incident Closed.—The Cleveland (Ohio) Railway considers the conductorette issue closed, John J. Stanley, president, announced on March 28. He is reported to have said: "We propose to take no action in the matter of reinstating the women, regardless of the action of the War Labor Board and the inquiries of the women. I said as much in my reply, dated Thursday, to an inquiry from Miss Rose Moriarity, who has been championing the conductorette cause."

Indeterminate Franchise Measure Defeated.—After a bitter fight in which there were many hearings in the Twin Cities and before the Minnesota Legislature the Warner street railway bill was defeated in the House eighty-six to forty votes. The bill proposed dual control of the railways in the major cities. It was defeated because it appeared that control of the railways was removed to the State Railroad & Warehouse Commission, thus defeating operation of the home rule idea. The bill made it possible for a company to surrender its franchise and operate under a State license.

M. O. Bill for Minneapolis.—A bill has been introduced in the Legislature, authorizing Minneapolis to take over its railway lines and other property necessary to operate them under the right of eminent domain, as provided in the statutes through condemnation. It may assume outstanding debts and agree to pay those debts as part of the compensation to the company which created them. Provisions limiting a city's debt may be ignored in pledging the credit of the city and issuing bonds to buy the railway. Fares are to be fixed at a sum that will operate the property efficiently and pay interest on the indebtedness.

Reports Against Purchase by Municipality.—Thomas Bradshaw, financial expert of Toronto, Ont., engaged by the city of Ottawa, Ont., to inquire into the reasonableness or unreasonableness of the offer of the Ottawa Electric Railway to sell to the city at a price approximating \$6,500,000, has submitted his report. In his opinion, the company's offer is too high; the best interests of the city would be served by waiting until 1923 to acquire the enterprise. Mr. Bradshaw advises against proceeding with any valuation of the physical assets of the railway at the present time. Prices of both material and labor, he contends, will be cheaper several years hence.

Financial and Corporate

Chicago Loss Heavy

Lower Earnings and Higher Expenses Cause 25 Per Cent Loss in Residue of Surface Lines

The gross earnings of the Chicago (Ill.) Surface Lines in the fiscal year ended Jan. 31, 1919, suffered a decline of \$404,535 or 1.1 per cent, \$380,023 of this loss being in regular passenger earnings. This showing was made

dated June 1, 1917, which ran for a three-year period, or until June 1, 1920. These two wage increases, within a period of fourteen months, made an aggregate wage increase of more than \$4,700,000 a year.

The residue receipts of the combined surface lines, as a result of the adverse showing in both gross earnings and expenses, fell off \$3,034,777 or 25.2 per cent. The balance of \$8,978,161, was

Public Service Losses

* Operation in 1918 Resulted in Deficit of \$4,800 with Reduced Depreciation and No Stock Return

During the calendar year 1918 the Public Service Railway, Newark, N. J., without earning a dollar upon its nearly \$50,000,000 of capital stock,

TABLE 1—INCOME STATEMENT OF THE PUBLIC SERVICE RAILWAY FOR 1918, WITH ADJUSTMENTS FOR ACCIDENTS AND DEPRECIATION

	Seven Months Ended July 31, 1918	Five Months Ended Dec. 31, 1918	Year 1918
Operating revenue.....	\$10,683,258	\$8,977,471	\$19,660,730
Maintenance (excluding power).....	1,525,684	1,385,008	2,910,692
Other operating expenses.....	5,103,085	4,729,725	9,832,811
Depreciation.....		333,333	333,333
Taxes.....	927,281	644,741	1,572,022
Total.....	\$7,556,050	\$7,092,807	\$14,648,858
Net operating revenue.....	\$3,127,208	\$1,884,664	\$5,011,872
Other operating income.....	6,337	3,071	9,408
Operating income.....	\$3,133,545	\$1,887,735	\$5,021,280
Non-operating income.....	95,585	88,669	184,255
Gross income.....	\$3,229,130	\$1,976,405	\$5,205,535
Income deductions.....	3,029,989	2,180,368	5,210,357
Net income.....	\$199,141	*\$203,963	*\$4,822
			* Deficit.

TABLE 1—REVENUES AND EXPENSES OF CHICAGO SURFACE LINES FOR YEARS ENDED JAN. 31, 1918 AND 1919

	1919		1918	
	Amount	Per Cent	Amount	Per Cent
Earnings:				
Passenger cars (including mail carriers).....	\$34,186,578	98.50	\$34,566,601	98.44
Other sources.....	523,520	1.50	548,032	1.56
Gross earnings.....	\$34,710,098	100.00	\$35,114,633	100.00
Expenses:				
Maintenance.....	\$3,810,266	10.98	\$3,214,948	9.16
Renewals.....	2,776,808	8.00	2,835,636	8.08
Power—operation.....	2,841,211	8.18	2,558,192	7.28
Conducting transportation.....	12,477,148	35.95	10,802,909	30.76
General and miscellaneous, including Board of Supervising Engineers.....	2,366,504	6.82	2,197,908	6.26
Taxes.....	1,460,000	4.20	1,495,000	4.25
Total expenses of operation.....	\$25,731,937	74.13	\$23,101,695	65.79
Residue receipts.....	\$8,978,161	25.87	\$12,012,938	34.21
Divided:				
Chicago Railways, 60 per cent.....	\$5,386,897	15.52	\$7,207,762	20.52
South Side Lines, 40 per cent.....	3,591,264	10.35	4,805,175	13.69

worse by the accompanying advance in operating expenses.

Owing to wage increases and higher material costs, the operating expenses rose \$2,630,242 or 11.3 per cent during the last year. The largest item of increased expense was "conducting transportation," which jumped \$1,675,139 or 15.5 per cent.

Effective Aug. 1, 1918, the National

TABLE II—INCOME STATEMENT OF CHICAGO CITY RAILWAY FOR YEARS ENDED JAN. 31, 1918 AND 1919

40 per cent of the residue receipts of Chicago Surface Lines.....	\$3,591,264	\$4,805,175
Deduct joint account expenses, interest on capital investment of the Chicago City Railway, Calumet & South Chicago Railway and Southern Street Railway.....	3,580,613	3,661,805
Divisible income of Chicago City Railway.....	\$10,650	\$1,143,369
City's proportion, 55 per cent.....	5,857	628,853
Company's proportion, 45 per cent.....	\$4,792	\$514,516
Add interest on capital investment.....	2,668,657	2,623,510
Income from operation.....	\$2,673,450	\$3,138,026
Other income—deficit.....	7,046	58,358
Interest on bonds and notes outstanding.....	\$2,601,403	\$3,196,384
Net income.....	\$846,186	\$1,501,384

War Labor Board awarded a wage increase amounting to \$3,700,000 a year. This was in addition to the wage increase of more than \$1,000,000 a year given the employees under the contract

divided 60 per cent or \$5,368,897 to the Chicago Railways and 40 per cent or \$3,591,264 to the south side lines; namely—The Chicago City Railway, the Southern Street Railway and the Calumet & South Chicago Railway.

The comparative figures of the Chicago City Railway for the last two fiscal years are given in Table II. A sign of the year's decline is shown in the fact that the city's 55 per cent share of the divisible income of this company amounted to only \$5,857 in the year ended Jan. 31, 1919, as compared to \$628,853 the year before.

After the payment of operating expenses and bond interest, the net income of the Chicago City Railway was reduced from \$1,501,384 to \$846,186. The item of other income last year, amounting to \$58,358, was more than balanced this year by the loss of \$82,625 in the ordinance 15 per cent on new construction, decrease in bank interest and other miscellaneous income. Three quarterly dividends were paid during the year, 2 per cent in March, 2 per cent in June and 1 per cent in September, the one due in December being passed.

At the present time the company is not earning the 5 per cent interest rate fixed by ordinance on its purchase price. In the last year the percentage of net income to capital stock at par was 4.7 per cent. The foregoing figure does not reflect the full result of the second wage increase, which was effective only during the last six months of the year.

showed a loss of \$4,822. During this period, too, the company set up only \$333,000 for depreciation instead of the \$800,000 desired. For seven months of the period a 5-cent fare was in effect; for five months, 1 cent for a trans-

TABLE II—OPERATING RESULTS OF THE PUBLIC SERVICE RAILWAY FOR FIRST TWO MONTHS OF CALENDAR YEAR 1919

	January	February	Total
Revenue from transportation.....	\$1,896,226	\$1,737,875	\$3,634,102
Revenue from other railway operations.....	40,446	40,059	80,504
Operating revenue.....	\$1,936,672	\$1,777,934	\$3,714,606
Operating revenue deductions.....	1,578,141	1,464,916	3,043,057
Railway operating income.....	\$358,531	\$313,018	\$671,549
Auxiliary operating income.....	405	433	839
Total operating income.....	\$358,936	\$313,451	\$672,388
Non-operating income.....	4,406	4,935	9,341
Gross income.....	\$363,342	\$318,386	\$681,729
Income deductions.....	429,333	434,842	864,175
Net income.....	*\$65,991	*\$116,456	*\$182,446
Car-miles.....	4,833,378	4,471,005	9,304,383
Car-hours.....	509,746	471,569	981,315
Federal income and profits taxes included above.....	\$5,402	\$11,322	\$16,724
			* Deficit.
			NOTE—In the above figures no allowance is made for depreciation.

fer, and from Oct. 15 to Dec. 31, a 7-cent fare. Detailed results for the year are shown in Table I.

In January, 1919, the company, without setting up one dollar for deprecia-

tion, lost \$65,990. In February the company lost \$116,455. Detailed figures are given in Table II. These losses were incurred in an "open" winter, when the company was not troubled with snow removal and similar items.

The foregoing data were presented to the Board of Public Utility Commissioners of New Jersey by President T. N. McCarter at a hearing on March 26 in regard to the proposed zone system of the Public Service Railway. It will be recalled that the commission had granted a 7-cent fare effective until April 1, 1919, to pay fixed charges and make up back losses, with a 6-cent fare after this date to keep the company going.

The commission ordered the company, however, to investigate the possibility of a zone system and file a report by Jan. 1. The company was not able to complete its report and received two months' additional time. In filing its report it asked for an extension of the 7-cent fare period in case the new zone rates should not be allowed to go into effect on April 1 (the 6-cent fare has since been ordered restored).

At the hearing Mr. McCarter stated that if the new zone rates were suspended for the maximum period up to July 1, the loss for the first six months of 1919 would be \$145,580 with a 7-cent fare in operation for the whole period and \$334,041 with a 6-cent fare in effect between April 1 and July 1. These figures include \$400,000 or half of the current depreciation set-up for 1919 but not a \$200,000 loss from the recent strike.

Expenses Continue High

Higher Costs of Operation Cause London Street Railway to Suffer Small Loss in Net for 1918

The net income of the London (Ont.) Street Railway for the year ended Dec. 31, 1918, showed a loss of \$2,978 as compared to that for the preceding year. This loss was the direct result of the higher operating costs imposed upon the company during the year. The wage increase in May imposed an additional burden on the basis of \$37,500 a year. The operating cost per car-mile increased from 17.12 cents in 1917 to 20.37 cents in 1918, or an advance of 19.37 per cent. The operating cost per car-mile in 1915 was only 14.13 cents.

The gross earnings of the company for 1918 amounted to \$456,356, an increase of \$38,493 or 9.21 per cent. This gain, however, was more than counterbalanced by the heavier operating expenses. These totaled \$373,124, an advance of \$42,029 or 12.70 per cent. The net earnings from operation at \$83,232, therefore, showed a decrease of \$3,535, which was only partly affected by the decrease of \$557 in interest on bonds and floating debts, taxes, etc. Net income before providing for depreciation amounted to \$44,499, a decrease of \$2,978. The sum of \$29,208 was charged against net income for de-

preciation, and the balance of \$15,290 was transferred to surplus account.

Revenue passengers carried in 1918 were 12,322,170 as compared to 11,374,396 for the preceding year, and the average fare per revenue passenger was 3.65 cents as compared to 3.63 cents. Car-miles operated decreased from 1,933,557 in 1917 to 1,832,208 in 1918. Gross earnings per car-mile were 21.61 cents in 1917 and 24.91 cents in 1918. The gross earnings per mile of track were \$11,575 in 1917 and \$12,641 in 1918.

Milwaukee Costs Up

Operating Revenues Gained \$987,402, But Operating Expenses Rose \$1,309,088

The operating revenues of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., for the year ended Dec. 31, 1918, showed a gain of \$987,402, or 12.4 per cent, as compared to those of 1917. The operating reve-

lows: Railway, 20.12 per cent; electric light and power, 15.11 per cent, and heating, 13.09 per cent. The appropriations for maintenance and depreciation were maintained at a subnormal level during 1918 in order to stabilize net earnings pending the receipt of adequate fare relief from the Railroad Commission of Wisconsin.

The gross income available for the payment of interest and dividends was \$1,942,060, a decrease of 13 per cent compared with the corresponding amount in the previous year. Interest charges were increased because of the larger amounts of bonds and notes outstanding.

The expenditures during the year for additions, extensions and betterments to the plants and systems aggregated \$984,454. This amount does not include any additions through the purchase of the Commonwealth Power Company. Of this total \$452,607 is chargeable to the railway department.

In connection with the question of operating costs, James D. Mortimer,

COMPARATIVE INCOME STATEMENT OF MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY FOR YEARS ENDED DEC. 31, 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Operating revenues	\$8,955,595	100 0	\$7,968,192	100 0
Operating expenses	7,147,827	79 8	5,838,738	73 3
Net operating revenues	1,807,768	20 2	\$2,129,454	26 7
Non-operating revenues	134,292	1 5	108,127	1 3
Gross income	\$1,942,060	21 7	\$2,237,581	28 0
Interest charges	1,224,258	13 7	931,361	11 7
Net income	\$717,802	8 0	\$1,306,200	16 3
Credits to surplus	192,709	2 1	.....	.....
Total	\$910,511	10 1	\$1,306,200	16 3
Dividends on preferred stock	270,000	3 0	270,000	3 4
Dividends on common stock	620,550	6 9	1,034,250	12 9
Surplus for year	\$19,961	0 2	\$1,970	0 0

nuces of the railway department amounted to \$5,365,805, an increase of \$412,449, or 8.3 per cent. Those of the electric and heating department amounted to \$3,589,789, an increase of \$574,953, or 19.1 per cent.

On the other hand, the high costs of material and labor referred to in the preceding year's annual report reached higher levels during 1918. While op-

president of the company, says: "So long as the cost of living remains at its present level there appears to be no tendency for wage rates to recede. The company looks for no reduction in the cost of labor except that which will come from higher efficiency of utilization."

Newspaper Favors Customer-Ownership Plan

In the March "Investors' Guide" column the Chicago Tribune said:

A study of the list of several hundred cities where traction and other utility companies have obtained increased rates in the last year tends to confirm the opinion that people should invest their money at home.

Companies whose securities are held largely by residents of their respective localities have fared better than others. The reason for this is plain. If a considerable number of citizens of a town own stock and bonds of its railway the rate-making board cannot help seeing that to refuse a necessary increase will be merely to take the property of part of the citizens and gradually distribute it to the others until bankruptcy stops the process. The people whose property is imperiled are on the ground where they can and do use their influence in protecting their interests.

Rate-making boards, of course, should act as courts of justice and treat both sides fairly. It seems, however, that in practice they often follow the line of least political resistance and give in to wild claims of unknown owners in order to grant unjust demands of insistent patrons.

The investor who owns bonds of a company in a distant state is negligible, but the man whose money is invested in home companies must be considered.

STATISTICAL DATA OF MILWAUKEE COMPANY FOR 1917 AND 1918

	1918	1917
Receipts per mile of track operated	\$29,753	\$27,460
Revenue passengers carried	114,149,000	115,626,143
Transfer passengers carried	45,709,197	47,232,242
Per cent transfer to revenue passengers	40 04	40 85
Receipts per revenue passenger	\$0 0466	\$0 0425
Revenue car hours operated	1,847,403	1,862,456
Receipts per revenue car hour	\$2 90	\$2 66
Revenue car miles operated	16,591,121	16,670,189
Receipts per revenue car mile	\$0 3234	\$0 2971

erating revenues increased \$987,402, operating expenses rose \$1,309,088. No detailed operating expense figures are presented in the 1918 report.

The appropriations for maintenance and depreciation of physical property in percentages of the operating revenues of the various utilities were as fol-

Reorganization Bill

Incorporation Act for Successor to Rhode Island Company Is Now Before State Legislature

A bill has been presented in the House of Representatives of the General Assembly of Rhode Island by Mr. Mitchell, Providence, which provides for the creation of a new corporation, designated the United Electric Railways, designed to take over all the property and privileges of the subsidiary companies which now lease their lines to the Rhode Island Company.

The bill, which is in tentative form so far as the incorporators are concerned, was presented at this time as the General Assembly adjourns in May for two years and it was regarded as essential to secure the necessary authority to form a new corporation, the details to be worked out as soon as possible by the general committee appointed by the receivers of the Rhode Island Company for the purpose.

The three incorporators named are Governor R. Livingston Beekman, Tax Commissioner Zenas W. Bliss, who is also one of the receivers, and Bank Commissioner George H. Newhall. The capital stock is stated as \$500,000. The receivers of the Rhode Island Company are authorized to accept securities of the new company in payment. The act specifically contains the proviso that one of the directors shall be appointed by the Governor of the State. The presentation of the bill in its present form, with State officials named as incorporators, delegates to the State the title to the charter and thus a measure of supervision of the proposed reorganization is obtained.

The first step in the reorganization will consist in determining the values of the property of the several lessor companies and the proper compensation which will be paid to each for the surrender of its holdings. When the reorganization is completed to the satisfaction of the Governor and State authorities, the charter of the new corporation will be turned over. The charter was drawn by Attorney-General Herbert W. Rice and it is regarded as certain that the measure will be passed by the Legislature without material changes in form. The new company is required to take over all or none of the subsidiary properties, subject to the approval of the Attorney-General.

Jacksonville Bondholders Organize

The Jacksonville (Fla.) Traction Company is face to face with the matter of a heavy increase in expenses. In the interval of four years from 1914 to 1918, the gross earnings have increased \$230,314 or 32 per cent, but the balance remaining after fixed charges has decreased \$57,723 or 61 per cent. It is estimated that if the present rate of wages and present prices of coal and materials continue the company in 1919 with gross earnings of about \$1,000,000

will fall by about \$40,000 to earn the interest on its outstanding bonds and notes.

Every effort has been made to secure an increase in fare, but several more months may be required to bring about this result. In the meantime the company is clearly in no position to refinance its maturing notes. To protect the notes a committee composed of Boston bankers has been formed and to the members so far selected will probably be added a fifth member to represent banks in Jacksonville which hold notes of the company.

The deposit agreement covers a period of six months, after which time the depositor may at his option withdraw his notes unless a plan has been submitted and approved. The tentative agreement provides that no settlement or adjustment of the fare situation shall be made which does not result in the payment of all notes at par and interest thereon without first giving notice to the noteholder and submitting to them the plan proposed so that they may withdraw should they disapprove of the plan.

The company is now charging a 5-cent fare in accordance with the specific provisions of its city franchise. The city charter requires all franchises or amendments thereto, secured by city ordinance, to be ratified by popular referendum.

Terms of Paducah Reorganization Announced

The committee representing the bondholders of the Paducah Traction & Light Company, Paducah, Ky., have worked out a tentative plan for the reorganization of that company. It is proposed to incorporate the Paducah Electric Company, Inc., probably under the laws of Kentucky, to acquire the electric light and power properties, the gas properties, steam mains, etc., in Paducah, and all the stock, bonds, etc., of the Paducah Railway, Inc., a new company, which in turn will own in fee the railway property and the stock, etc., of the Paducah Realty Company.

The Paducah Electric Company, Inc., will issue the following securities: \$536,000 of first mortgage bonds, \$576,000 of 6 per cent twenty-year convertible debentures and \$605,000 of capital stock, of a par value of \$25 for each share. The holders of securities of the Paducah Traction & Light Company will receive (1) for each \$1,000 Paducah Traction & Light Company bond, \$600 of Paducah Electric Company, Inc., 6 per cent debentures and \$500 of Paducah Electric Company, Inc., capital stock, being twenty shares at the par value of \$25; (2) for each share of preferred stock of the Paducah Traction & Light Company one share of the capital stock of the Paducah Electric Company, Inc., par value \$25.

The bondholders and stockholders of the Paducah Traction & Light Company who desire to secure the benefit of this plan are asked to notify Stone & Webster, Boston, the deposit managers.

Consolidation Announcement

Reorganization Plan at Scranton and Binghamton Provides for New Company to Take Over Existing Lines

The plan adopted by the protective committee representing the bondholders of the Scranton & Binghamton Railroad, Scranton, Pa., is said to provide for the consolidation of the Scranton & Binghamton Traction Company, the Northern Electric Street Railway and the Binghamton Railway, all controlled by the former company.

FORECLOSURE FIRST

It is proposed as a first step to foreclose the mortgage, sell the property and incorporate a new company with \$5,000,000 of first-mortgage 6 per cent thirty-year coupon bonds, with a sinking fund provision beginning on April 1, 1930. These bonds will be dated April 1, 1919, and subject to the existing Northern Electric mortgage, covering the property from Providence Square to Lake Winola and Montrose and 26 miles to be built from Tiffany Junction to Binghamton.

The committee announces that it will reserve the right to change capitalization to such extent as may seem wise in its judgment, without affecting the proportions to bondholders of the Scranton & Binghamton Railroad Company and stockholders of the Northern Electric Company.

It is further advised by the committee in order to cover the immediate financial requirements of the company, that the bondholders shall take and pay for 20 per cent of the par value of their present holdings of bonds in the proposed new bond issue of the successor company.

In the plans it is specified that the mortgage shall contain a provision for the issuance of additional bonds under proper restrictions and safeguards as may be necessary and advisable for further development, extensions and improvements and for the acquisition of property, and for the issuance of \$400,000 of income bonds and \$3,000,000 of common stock.

\$989,000 NEEDED

The committee believes that the earnings will more than provide the interest charges on the first mortgage bonds issued when all of the improvements have been completed and that the returns will also be sufficient to care for a sinking fund, assure the payment of interest on the income bonds and dividends of 6 per cent on preferred stock and leave the balance of net earnings to the common stock. The immediate requirements under this plan are approximately \$989,000.

The chief engineer's estimate of the cost of extending the railroad from Tiffany Junction to the New York State line, 16 miles, is \$494,494. Preliminary surveys have been made of the proposed route for this extension on options taken on much of the necessary right-of-way.

Receiver Made Permanent

Federal Judge Julius M. Mayer on March 31 issued an order appointing Job E. Hedges permanent receiver of the New York (N. Y.) Railways. William P. Burr, the City Corporation Counsel, did not oppose the order, but appeared to urge that the financial difficulties of the company be met by reducing the rentals it pays to the companies from which it leases railway lines and not by abolishing transfers or raising fares.

Judge Mayer said that the question of fares, transfers and rentals would be determined in accordance with the facts developed under the receivership. If it were found that the elimination of transfers or the increase of fares was necessary to keep transportation systems in New York alive, the court said that the people of the city would favor this remedy. Judge Mayer is quoted as follows:

In respect to the financial situation, I have been extremely careful to say nothing on the much-mooted question as to the increase of fares. When all the facts are clearly understood, then it will be found out what is the right thing to do. If increases of fare are unnecessary, all will understand it. If increases of fare prove to be necessary after full and fair discussion, I am convinced that the public of New York is so fair and reasonable that it will not hesitate in making it known that it desires the remedy of increased fares to be adopted.

Financial News Notes

Would Issue \$200,000 of Bonds.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has asked the Board of Public Utility Commissioners for permission to issue \$200,000 of bonds to pay back taxes and to provide funds for several improvements requested by the board.

Receivers File Inventory.—The fixed capital of the plant and equipment of the Memphis (Tenn.) Street Railway is given at \$15,803,469 in an inventory of the company's property which T. H. Tutwiler and Frank S. Elgin, receivers, have filed in the Federal Court. The report comprises 292 typewritten pages. Funds turned over to the receivers on Jan. 20 are given as \$105,475, including \$92,265 on deposit at the Union & Planters Bank.

Fare Bill Reported Favorably.—The Martin bill has been reported out by the judiciary committee of the New York Assembly. This measure is designed to amend the public service commission law by extending the jurisdiction of the commissions over the rates on electric railways fixed by agreement with local authorities, notwithstanding fare limitations in the franchises. The hearing on this bill was reported at length in the *ELECTRIC RAILWAY JOURNAL* for March 15, page 542.

Slow Progress on Cleveland Fund.—The report of the Cleveland (Ohio) Railway for the month of February showed the interest fund total was \$136,246 on March 1. When this fund reaches \$700,000 the fare is automatically reduced. The report also showed that during February 28,848,038 passengers were carried on cars covering 2,675,061 car miles. This is a decrease of 3 per cent from the passengers carried in February, 1918, but only 0.13 of 1 per cent in service.

Receiver at Pascagoula.—Judge E. R. Holmes of the Sixth United States District Court of Mississippi has appointed L. J. Fohr receiver of the Pascagoula Street Railway & Power Company, Pascagoula, Miss. The receiver was formerly general superintendent of the company. The receivership followed a petition filed on March 25 by the Columbia Finance & Trust Company, Louisville, Ky., representing as trustee the holders of \$350,000 of the company's bonds on which interest is in default.

Will Abandon Rather Than Pave.—Rather than stand the cost of paving between tracks under the contemplated improvement campaign this year, the Utah Light & Traction Company, Salt Lake City, Utah, will abandon some of the lines, according to a notice served upon the City Commission. In a letter sent to the commission, the company declares its intention of asking the Public Utilities Commission for permission to abandon and tear up the lines where the expenditure of the proposed paving cost would be unwarranted.

Bond Extension Arranged.—Arrangements have been completed whereby the \$500,000 of first mortgage bonds of the Cleveland, Painesville & Eastern Railway, Willoughby, Ohio, and the \$1,131,000 of first consolidated mortgage 5 per cent bonds maturing on Oct. 1, 1918, have been extended for five years to Oct. 1, 1923, at 7 per cent interest. As explained in the *ELECTRIC RAILWAY JOURNAL* for Sept. 28, 1918, the company found that it was practically impossible to refund the indebtedness at that time and the only course possible was to provide for an extension to Oct. 1, 1923.

Kansas Road Suspends.—Acting on directions of the general office in St. Louis, L. E. Lanigan, superintendent of the Iola (Kan.) Electric Railroad, on March 21 ordered the suspension of the city and interurban lines connecting Iola with Gas City, La Harpe and Bassett. Rising cost of operation, coupled with the failure of the company's gas field, depriving it of cheap power, are given as the cause of the shutdown. The Kansas Public Utilities Commission has announced that the railway acted illegally in suspending the operation without first seeking permission of the commission.

Another Six-Cent Fare in Lockport.—The Public Service Commission for the Second District of New York has passed an order authorizing on April 1 a 6-cent fare on Buffalo, Lockport &

Rochester Railway cars and its successor in Lockport, to remain in effect for one year and thereafter until further order of the commission. Transfers are not affected by the order. There was no opposition at a hearing before Chairman Hill at Buffalo to the complaint of the company that a 5-cent fare did not yield sufficient compensation for the service rendered. The company operates in Lockport on the International Railway's tracks. The latter is now charging a 6-cent fare.

Must Restore Streets After Dismantlement.—The Illinois Public Utilities Commission has issued an order that the Alton & Jacksonville Railway, which operated between Alton and Jerseyville, cannot completely dismantle its lines until it has restored streets in the city of Alton and has paid \$338 due for taxes. The company was authorized in 1917 to abandon operation. It recently asked for an order from the commission to remove additional equipment. Objections were made and a hearing was held, showing that taxes had not been paid and that portions of streets in Alton which had been torn up by employees of the company had not been replaced. The company has ninety days in which to comply with the order of the Public Utilities Commission.

B. R. T. Interest Payment Postponed.—Judge Julius M. Mayer, in the Federal District Court at New York, has set May 5 for further hearing on the recommendation of the referee in the Brooklyn (N. Y.) Rapid Transit Company receivership for payment of interest on the \$7,000,000 of Brooklyn Rapid Transit first gold 5 per cent bonds due on April 1. Ex-Judge E. Henry Lacombe, special master in the case, recommended to Lindley M. Garrison, receiver of the railway, that payment on these bonds be deferred for ninety days and added that the postponement of the paying of interest did not constitute a default. Judge Mayer, in extending the hearing, remarked that it would give those most concerned ample time to consider the matter and that it would not result in working any hardships to anyone.

Chicago City Dividend Resumed.—According to the *Wall Street Journal* there has been much comment over the resumption of dividend payments by the Chicago City Railway. That paper says: "It is understood that the only reason the company recently declared a dividend distribution was that failure to pay a dividend would mean default on the interest on the Chicago City & Connecting Railways 5 per cent collateral trust bonds and foreclosure on the collateral. These bonds are secured by deposit of a large part of the Chicago City Railway stock. The dividend declaration is regarded as a temporary expedient to avoid default on the collateral trust bonds as long as there remains a chance of the company obtaining an increase in fare. The next interest payment on the bonds is due April 1."

Damages Claimed Under Lease.—A suit for \$100,000 against the Rhode Island Company, Providence, R. I., has been filed in the Superior Court of Rhode Island by the Narragansett Pier Railroad. The basis of the suit is the claim of the plaintiff company that its property leased to the Rhode Island Company had deteriorated to the extent of \$64,000, this being represented by damage to roadbed of \$30,000, to rolling stock \$24,000 and to bridges, sidings and stations \$10,000. In addition to the damage alleged to have resulted during the lessee's tenancy, the declaration recites that taxes amounting to more than \$6,000 remain unpaid by the Rhode Island Company, although subject to accrued interest at the rate of 10 per cent. The writ bears the date of Jan. 27, three days prior to the filing of a petition for the appointment for a receiver to take charge of the Rhode Island Company.

Valuation Hearings Resumed.—The hearing that is to fix the valuation of the Capital Traction Company's property for rate-making purposes was resumed on March 25 before the Public Utilities Commission of the District of Columbia at the point where it was discontinued before the war. The company introduced evidence as to increased costs due to the war and arguments were commenced by G. Thomas Dunlop, counsel for the company. When he concludes, the commission is expected to take the case under advisement. Reproduction cost of the physical plant had been agreed upon before the war by the commission and company experts as \$10,966,214. Evidence on March 25 was to the effect that the cost of reproduction at present prices would be 100 per cent above this figure. Company experts contended that at least 40 per cent of this increase would be permanent.

Equipment Trust Certificates Offered.—The \$1,000,000 of equipment trust certificates for the Cincinnati (Ohio) Traction Company, which was referred to in the ELECTRIC RAILWAY JOURNAL for March 22, page 621, are being offered for subscription by the bond department of the Fifth-Third National Bank,

Cincinnati, the prices ranging from \$100 to \$98.16 and interest, yielding from 5 per cent to 6.25 per cent, according to maturity. The certificates are dated April 1, 1919, and mature at the rate of \$50,000 each April and October from Oct. 1, 1919, to April 1, 1929. The total issue is \$1,000,000, known as series G-1. The certificates are in the denomination of \$1,000. The principal and interest are unconditionally guaranteed by the Cincinnati Traction Company. The equipment by which they will be secured will include 105 44-ft. pay-within, double-truck closed motor cars, costing about \$1,250,000. The title of these cars will be vested with the trustee until the entire issue of equipment notes has been paid.

Receiver Asks State Aid.—Reference was made recently in the ELECTRIC RAILWAY JOURNAL to the conditions of competition from jitneys under which the Danbury & Bethel Street Railway, Danbury, Conn., is operated. At the recent general hearing at Hartford to inquire into electric railway conditions throughout the State Judge J. Moss Ives, receiver of the company, summarized the situation confronting the Danbury & Bethel Street Railway as follows: "We practiced economy in every way but the State wants \$26,000 taxes, and I don't know how I can pay the money and I don't see how I can go on operating the road. I have asked to have the taxes abated. We need money to repair our roadbed and rolling stock. It is sound public policy to grant us this relief. I think the State tax should be based on net earnings, not gross earnings. Certainly it isn't fair to impose \$26,000 tax on a road which is barely paying operating expenses. If the State insists on the tax being paid the road will have to be sold. We also have got to have relief from jitney competition."

Asks Permission to Abandon.—Declaring that the traffic and freight handled on the Hamilton branch of the Sacramento (Cal.) Northern Railroad does not justify its maintenance, the company has asked the California Railroad Commission to make permanent

the order issued by the commission in 1913, temporarily suspending the operation of the branch. The company would except from the provision of the order approximately 2 miles of trackage running out of the city of Chico, which it would use during July, August, September and October, as a spur track for freight. The branch from Chico to Hamilton is 11.1 miles in length. The company contends that to operate the line successfully it will require the construction of a drawbridge over the Sacramento River at a cost of \$400,000, an expense not justified by the business in sight. When the line was in operation the river was crossed by means of a trestle with a pontoon span, which the company had to remove every year (in December) because of high water. In the winter of 1914 more than 1 mile of track on the west side of the river and three quarters of a mile on the east side were washed out.

Conference on Reorganization.—There was a conference before the Public Service Commission for the Second District of New York on March 27 upon the proposed reorganization of the Buffalo, Lockport & Rochester Railway, which was sold at mortgage foreclosure on March 12. The conference was in anticipation of a formal application to be made to the commission by the reorganization committee and, as Chairman Hill expressed it, to save time. It was stated among other things that there is \$4,000,000 in preferred and common stock of the old company holders of which as noted recently in the ELECTRIC RAILWAY JOURNAL will not participate in the reorganization. Mr. Ingham and Mr. Steele, who have joined the reorganization agreement and deposited their stock, objected to the plan on which it is proposed to proceed. They claimed that the new company should put a mortgage on the property and issue bonds as at present, or that the contemplated preferred stock issue should contain the privilege to holders to convert their stock into bonds. Objection was also made as to the expense of the reorganization. The commission still has the matter under consideration.

Electric Railway Monthly Earnings

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$121,784	\$59,006	\$62,778	\$34,944	\$27,839
1m., Jan., '18	108,978	*41,606	67,372	31,893	35,474
12m., Jan., '19	1,194,219	*584,714	609,505	400,236	209,269
12m., Jan., '18	1,115,436	*428,885	686,551	362,475	324,076

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$110,965	\$67,920	\$43,045	\$14,041	\$29,004
1m., Jan., '18	84,459	*47,767	36,692	13,029	23,663
12m., Jan., '19	1,158,258	*682,312	475,946	164,711	311,235
12m., Jan., '18	943,181	*524,581	418,600	140,522	278,078

FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '18	\$375,559	*\$215,967	\$159,592	\$40,044	\$119,548
1m., Dec., '17	307,865	*212,254	95,611	50,970	44,641

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$3813,648	*\$2,660,656	\$1,152,992	\$1,540,218	*\$384,557
1m., Jan., '18	3,569,021	*1,964,320	1,604,701	1,170,105	476,420
12m., Jan., '19	23,766,807	*16,668,380	7,098,427	10,280,084	*12,832,689
12m., Jan., '18	23,238,037	*13,059,033	10,179,004	7,652,190	12,829,540

* Includes taxes. † Debit ‡ Includes non-operating income.

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$85,867	*\$77,984	\$7,883	\$17,074	\$19,191
1m., Jan., '18	65,576	*47,060	18,496	15,866	2,630
12m., Jan., '19	965,879	*740,590	225,289	200,276	25,013
12m., Jan., '18	704,519	*478,449	226,070	189,214	36,856

NEW YORK (N. Y.) RAILWAYS

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '18	\$979,862	*\$876,675	\$103,187	\$266,725	*\$130,325
6m., Dec., '17	918,775	*762,955	155,820	282,419	126,618
6m., Dec., '18	5,998,834	*4,932,233	666,601	1,677,306	*278,122
6m., Dec., '17	6,306,105	*4,698,063	1,608,042	1,691,167	122,757

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$44,489	*\$16,173	\$28,276	27,967	\$67,31
1m., Jan., '18	250,311	*149,492	100,819	28,790	181,117
12m., Jan., '19	2,923,397	*1,896,114	1,027,283	336,965	\$698,519
12m., Jan., '18	2,661,325	*1,489,941	1,171,384	348,303	\$861,414

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Jan., '19	\$50,495	*\$39,943	\$10,552	9,137	\$1,415
1m., Jan., '18	37,143	*25,421	11,722	7,960	*3,763
12m., Jan., '19	519,402	*374,904	144,498	101,100	\$43,392
12m., Jan., '18	360,555	*213,448	147,107	93,824	53,288

Traffic and Transportation

Atlanta Fares Again

Company Renews Its Appeal for Relieving Court Decision Establishing Authority of Commission

On account of the recent fare decision by the Supreme Court of Georgia affecting the Georgia Railway & Power Co., Atlanta, Ga., to which reference was made in the *ELECTRIC RAILWAY JOURNAL* for March 22, page 622, the fare matter in Atlanta has again come before the Railroad Commission of Georgia. A petition from the representatives of the city sets forth that the plea of a war emergency argued before the commission by representatives of the Georgia Railway & Power Company at the first hearing of the case no longer applies, and the company is not entitled to the increase. The city asks the commission to have an expert appraisal and inventory made of all the company's properties, including those of the Georgia Railway & Electric Company and the Atlanta Gas Light Company, and likewise an expert audit of the books of the companies by the Railroad Commission.

COMPANY REOPENS CASE

The appeal by the city for an appraisal and audit is based on the petition now pending before the commission by the company to increase fares in Atlanta and vicinity. This petition by the company reopening the case follows the recent ruling by the Supreme Court to the effect that in the absence of a valid contract and ordinance on the subject of fares it was the duty of the Railroad Commission to fix and determine rates on appeal to it.

On Aug. 14, 1918, the commission ruled that it had no jurisdiction on account of certain contracts between the petitioner and the cities of Atlanta, College Park and Decatur, but it recommended that the company be permitted to charge a 6-cent fare.

SOUGHT TO COMPEL ACTION

The Georgia Railway & Power Company instituted mandamus proceedings against the commission with the object of compelling the commission to assume jurisdiction of its petition and decide the case. The contention of the petitioner was that no contract existed between it and the city of Atlanta fixing fares therein, and that in any event such a contract would be invalid just as, in the cases of College Park and Decatur, it contended no valid contracts could be made by such municipalities pertaining to the rates of fare to be charged by railways serving them.

The Superior Court of Fulton County, to which the application for a writ of mandamus was made, refused the issuance of the writ, holding that a con-

tract fixing fares existed in the case of Atlanta as well as in the case of College Park and Decatur, and that all of such contracts were valid.

On March 15, 1919, the Supreme Court of Georgia reversed in part the conclusions of the Superior Court of Fulton County, and held that there was no contract between the city of Atlanta and the power company fixing fares within Atlanta, while there was as to transfers, but that there were contracts between the company and the towns of College Park and Decatur and that such contracts are valid. The commission was accordingly held to be without jurisdiction over the rates of fare prescribed in such contracts with College Park and Decatur, but was held to have jurisdiction over the rates of fare within the city of Atlanta, but not as to transfers.

At the time the decision of the Supreme Court was handed down P. S. Arkwright, president of the company, said that although the war was over, labor and material costs showed no decrease. It was his opinion that the commission would, therefore, follow its original recommendation with an order for higher fares.

Zone Fare and Service Studies in Boston

Pending a decision by the Supreme Court of Massachusetts as to the constitutionality of the Boston Elevated Railway public control act, no further steps are being taken toward the installation of the zone-fare system lately described in these columns. The trustees of the company, however, are giving considerable thought to the zone system and have determined that to install it would cost the company considerably more than \$100,000.

There is no immediate probability of an increase in fare unit above the present 8-cent charge, although it is reported that the wages committee of the employees' union has formulated a demand for a maximum of 73 cents an hour and an eight-hour day in place of the existing maximum of 48 cents for surface line motormen and 50 cents for rapid transit motormen. The wage agreement between the company and the union expires on May 1.

Two bills are pending in the Legislature which are also tending to hold back the trustees from inaugurating a zone-fare system. One of these, sponsored by Senator Walsh, establishes a 5-cent fare unit for the system, leaving the deficit to be supplied through community taxation, and the other, fathered by Representative Hays, prohibits the institution of any zone system of fares. In legal circles it is expected that the constitutionality of the Boston public control act will be affirmed.

Higher Fares in 378 Cities

More than 53 Per Cent of Urban Population Is Now Paying More for Car Rides

Recently granted increases in fares, according to the information bureau of the American Electric Railway Association, bring the total number of cities which are paying increased fares to 378, representing more than 53 per cent of the urban population of the United States. Additions to published lists previously compiled are as follows:

City	Population
Ten-cent Fare Granted:	
Albany, Ga.	10,979
Seven-cent Fare Granted:	
Oil City, Pa.	20,162
Northampton, Mass.	20,006
Tempe, Tex.	12,904
Portsmouth, N. H.	11,730
Franklin, Pa.	11,555
Merrill, Wis.	8,798
Belton, Tex.	4,164
Six-cent Fare Granted:	
Springfield, Ohio	52,296
Springfield, Mo.	41,169
Hazleton, Pa.	28,581
Lockport, N. Y.	20,923
Eau Claire, Wis.	18,587
Athens, Ga.	18,319
Rome, Ga.	15,600
Manitowac, Wis.	13,931
Chippewa Falls, Wis.	9,476
Valdosta, Ga.	7,656
Houghton, Mich.	5,113
Five-cent Fare; Reduced Rate Tickets Abolished:	
Dayton, Ohio	268,439
Richmond, Va.	158,702
Roanoke, Va.	46,282
Lorain, Ohio	38,266
Wausau, Wis.	19,666
Grand Rapids, Wis.	6,521

To date twenty-eight cities are paying a 10-cent fare, and eighteen an 8-cent fare. Ninety-six cities pay a 7-cent fare, seventeen of which also pay an extra 1-cent for each transfer issued. One hundred and sixty-two cities pay a 6-cent fare. The remaining cities are paying increased fares either through a zone system, an additional charge for transfers or the abolition of reduced rate tickets.

I. R. T. Breaks Traffic Records

According to figures furnished to the Public Service Commission for the First District of New York, the traffic on the lines of the Interborough Rapid Transit Company on March 24 and March 25 were the greatest in the history of that corporation. The date second named was the day of the parade and review of the Twenty-seventh Division, New York's own returning national guard units. There was also very heavy traffic on many of the Manhattan surface lines, particularly on the parade day. On March 24, which was the day of another important military parade and review in the Borough of Brooklyn, the subway carried 1,824,735 passengers, and the Interborough elevated lines 1,332,607 passengers; while on the following day the subway carried 1,753,772 passengers, and the elevated lines 1,122,394 passengers. On both days, according to reports furnished to the commission, the Brooklyn Rapid Transit Company carried an extremely large number of passengers, on March 24 the traffic records being broken for several of its lines.

Houston Must Have Increase

At the End of Its Financial Rope, Company Appeals to District Court for Relief

The Houston (Tex.) Electric Company on March 28 filed a suit in United States District Court in Houston asking the court to grant a temporary injunction restraining the city of Houston from enforcing the present 5-cent fare ordinance on the ground that the fixing of the fare at 5 cents is resulting in the confiscation of the company's property.

THE END REACHED

"The end has been reached and we might as well realize it and face the facts," said Luke Bradley, district manager for Stone & Webster, in discussing the situation. Mr. Bradley said that patrons who now ride on a 5-cent fare are getting the ride at less than cost, and this cannot continue.

The petition filed by the attorneys for the company refers to a 7-cent fare as one that would allow the company to pay operating expenses, care for depreciation and realize a return on the investment. The suit just filed is, however, for the primary purpose of having the 5-cent fare declared confiscatory. In order for the court to do that a valuation of the railway would have to be made, and officials of the company assert that is what they desire. Sometime since the company sought to have the city go into the valuation of its property, but when the people by referendum vote turned down the 6-cent fare, the city dropped the matter.

The suit just filed before Federal Judge J. C. Hutcheson, Jr., is of an entirely different nature from that filed several months ago before Judge H. J. Dannenbaum in the District Court. That suit merely challenged the right of the people, by a popular vote, to fix the rate for a public utility, and contended that this power was vested only in the City Commission.

In the suit filed in federal court the company goes directly to the issue it raises and contends that the refusal of the city to allow the company to charge more than a 5-cent fare is confiscating the property of the company.

CASE IN REVIEW

The petition reviews the steps the company has taken before the City Council to obtain a higher fare. It declares that the Mayor and the City Commissioners granted some relief once by passing a 6-cent fare ordinance, and tells how that ordinance was knocked out by a referendum election.

Mr. Bradley made the following statement of the company's position:

Conditions over which we have had no manner of control have forced us to go into the United States Court in order to protect the company from being rapidly destroyed through the refusal of the city of Houston to permit it to earn sufficient revenues to maintain itself.

In June of last year, having foreseen the fact that we could not continue to operate the system, keep up the property and meet the growing needs of Houston without an increase in fare, we went before the City Council and sought relief which we knew

to be absolutely necessary to the very existence of the company.

We went fully into the condition which confronted us, showed conclusively that costs of operation had progressed to the point where relief was essential if we would escape disaster, narrowly alike to those who had invested in the property, as well as to the property itself, and asked the privilege of putting into effect in Houston a 6-cent fare.

While this application was pending and under discussion, it became necessary to increase wages, due to high cost of living and general war conditions, which by this way, still obtain, to the amount of \$160,000 per annum.

The relief granted by the city was turned down by the referendum, which was held, wherein about one-fourth of the voters participated.

Since that time the condition of the company has grown steadily worse instead of better. A summary of its operations for the five months ended Feb. 28, 1919, will make it clear to anyone who will study these figures, which are taken from the bill we have filed in the United States Court.

Gross earnings	\$693,423
Operating expenses	547,520
Balance	\$145,921
Taxes	47,624

Balance	\$8,296
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The bill also sets out that the company should have had depreciation during that time, \$33,333; for supplementary maintenance, \$30,000; for return on the investment, \$166,666, or a total of \$280,000, leaving a deficit for five months' operation of \$181,702.

What does this mean and what is the answer? It means that there can be no development of railway transportation in Houston until some satisfactory understanding of the present problems is reached with the public.

Decision Again Diverting Traffic

Removal of tracks from Main Street, between Ervay and Austin Streets, in Dallas, Tex., is again being considered. Richard Meriwether, general manager of the Dallas Railway, said that the removal was a matter for the merchants on Main Street to decide. He said that the company was not averse to the removal of the tracks from Main Street, and the diversion of the traffic to Elm and Commerce, which parallel Main Street one block distant on either side, if the removal could be effected without offense to any of the merchants on Main Street. The company is now laying new railways on Main Street and Mr. Meriwether asked that a decision in the matter be reached at once, before the new rails were put down.

The merchants on Main Street seem to be equally divided on the removal plan. In connection with this matter it has been recalled that the proposal was laid before John A. Beeler, New York, traffic engineer, at the time Mr. Beeler made a survey of the railway properties in Dallas. Mr. Beeler then opposed the removal. It could be effected now, however, without causing inconvenience, and according to Mr. Beeler it might prove of advantage. Dallas will, however, grow too much in the near future for the plan to be feasible. Mr. Beeler told the city in his report. In time, it would become absolutely essential that cars be operated on this originating fare to care for the traffic originating in the down-town section of the city.

In view of this opposition and Mr. Beeler's report, it is not likely that the tracks will be removed, and with this belief, the railway is going ahead with the work of laying heavy steel.

Zone Charge Modified by Shore Line

On April 1 the Shore Line Electric Railway, Norwich, Conn., changed its old 3-cent zone to a 2½-cent zone. The system of fares in force heretofore has covered a 5-cent minimum fare in two zones, this charge making a 5-cent fare within the cities of New London and Norwich, with free transfer at the center of the city, and the interurban lines divided in short zones of 3 cents each. The company has reduced the interurban rate to 2½ cents a zone, so that for a ride wholly within the city the rate is 5 cents and for a ride wholly within the city and one zone outside 7½ cents; two zones outside, 10 cents; three zones outside, 12½ cents, and for two zones on any of the interurban lines, 5 cents; three zones, 7½ cents, with a minimum charge of 5 cents for a ride in one or two zones.

Briefly, the only effect of the modification is a slight reduction in the interurban rate which in some instances was higher than the steam roads that parallel the electric railway, although the rate per mile on the electric railway was about 2.8 cents. The company is collecting everything up to 10 cents with the Rooke register, the 2½ cents being paid by use of a token collected through the register. The use of the token is not permitted for any other purpose than the payment of the odd change. In other words, the company does not allow the use of two 2½ cent tokens for a 5-cent fare.

Six Cents Being Charged in New Jersey

A 6-cent fare on the lines of the Public Service Railway in New Jersey went into effect on April 1. This is a reduction of 1 cent from the fare which patrons have been paying since an order of the Board of Public Utility Commissioners last fall, but in addition passengers have to pay 1 cent for initial transfers.

During the week ended March 29 the company applied to the commission for permission to continue the 7-cent fare pending a decision of the zoning system which the company hopes to establish next July. Representatives of the municipalities affected opposed the application, and the commission ordered the 6-cent fare in effect on April 1, in accordance with the original ruling, pending a hearing on the matter. This hearing will be held on April 7.

A hearing will also be held on the zoning system, which would give the company the right to charge 5 cents for the first zone and additional charges for other zones. This hearing will be held on April 14. The plans for the zone system have been reviewed at length in the ELECTRIC RAILWAY JOURNAL.

Transportation News Notes

Toronto Issues Weekly Bulletin.—In order to present the facts of its case before its patrons, the Toronto (Ont.) Railway recently began to distribute in its cars, a weekly bulletin called *Public Service Topics*.

I. C. C. Approves Seven-Cent Fares.—The Interstate Commerce Commission has granted the applications of the Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company for permission to file schedules increasing the fares for the transportation of passengers between Louisville, Ky., and Jeffersonville, Ind., and New Albany, Ind., respectively, to the extent that the fares therein established do not exceed 7 cents.

Skip-Stop System Modified.—The Northern Texas Traction Company, Fort Worth, Tex., has modified the skip-stop system as employed on its lines. This action was taken after a committee had been appointed by the Chamber of Commerce to investigate the system and make recommendation for improving service. Under the modified plan, cars will stop at all churches and schools, and additional stops will be made on unpaved streets. The skip-stop plan will be continued on paved streets.

Rainier Valley Line Wants More.—The Seattle & Rainier Valley Railway, Seattle, Wash., has filed a new tariff with the Public Service Commission at Olympia, asking for an increase of fares to 6 cents. The company contends that it costs 40 per cent more to operate than the company is receiving for service. A charge of 1 cent is proposed in the tariff for all transfers from the company lines to city lines, and 2 cents for transfers accepted from the municipal lines. Policemen and firemen will not be allowed to ride free.

Wants Ten Cents Now in Yakima.—N. C. Richards, president of the Yakima Valley Transportation Company, North Yakima, Wash., announced on March 23 that he would file a new schedule of rates for city passenger fares—10 cents for cash fares, 8 cents for tickets and 4 cents for school children. Mr. Richards previously filed a schedule asking for an 8-cent fare on the city passenger system. This was noted in the *ELECTRIC RAILWAY JOURNAL* for March 22. E. D. Ridley, accountant for the Public Service Commission holds this rate is not high enough to make operating costs. North Yakima has a population of about 15,000.

Would Discontinue Transfers.—Following notification by the Warren & Jamestown Street Railway, Jamestown, N. Y., that on April 15 it will stop

transfer privileges with the Jamestown Street Railway, Mayor Samuel A. Carlson of Jamestown on March 28 asked the Public Service Commission, Second District, to issue an order directing the two roads to continue transfer privileges to patrons. It is claimed termination of transfers will be a source of continuing vexation and expense to residents. The commission will serve the complaint upon the railroads for answer. A hearing by the commission will follow.

A Christening in Dallas.—*Trolleygrams* is the name selected for the little folder to be "published every now and then" by the Dallas (Tex.) Railway's Service Department in charge of Dan Fisher. This is part of the company's campaign to create a feeling of good fellowship for the company and eliminate complaints against the service. The name *Trolleygrams* was selected after a contest in which a first prize of \$15, a second of \$5, a third of \$3 and a fourth of \$2 were offered for the best names submitted. The committee reported that it received more than 1,500 letters in which more than 5,000 names were submitted.

May Boost Westerville Fares.—The Columbus Railway, Power & Light Company, Columbus, Ohio, is considering the necessity of increasing fares on the Westerville Division. Under the franchise by which this line operates the company has had the right to increase the Westerville line rates since Feb 1, when the working capital had been reduced to \$14,507. By March 1 the capital was reduced to \$12,454. The franchise provides for an increase of one-third of a cent a zone, which adds 3 cents to the round trip, when the working capital is reduced to \$15,000. The terms of the franchise have been reviewed previously in the *ELECTRIC RAILWAY JOURNAL*.

Traffic Survey for Minneapolis.—John A. Beeler, New York, N. Y., has been engaged to make a preliminary traffic survey at Minneapolis, Minn., with the understanding that expenses up to \$2,500 will be paid by the Minneapolis Street Railway. The Council has abolished skip stops on all blocks of the city more than 400 ft. long. This rule affects a large part of the residence district and parts of the central system outside the loop district where stops are made every block. The Council has ordered 101 more street trips daily for the North Side to improve service, based on a survey by the city inspector and Council Committee on the traffic needs. This will restore service to pre-war conditions.

Curbing the Auto in Kansas City.—The police of Kansas City, Mo., have issued an order forbidding motor car parking on the three chief business streets downtown between the hours of 8 a. m. and 6 p. m., but the order has been suspended until its legality may be ascertained. The order is of interest to the railway as, with lines of parked cars along the business streets, there was not sufficient room between the cars

so parked and the railway tracks for the regular traffic. In preparing the order the police had in mind more particularly the menace in case of fire. By an ordinance passed on March 21 no jitney is allowed to remain stationary on any of the business streets and may stop to discharge or take on passengers only at such corners as the police may designate. Jitney fares have also been regulated—10 cents for the first twenty blocks and 5 cents for each additional twenty blocks.

Six Cents in Gadsden.—The Alabama City, Gadsden & Attalla Railway, Gadsden, Ala., has been granted a 6-cent fare on all its lines by the Public Service Commission of Alabama in its decision on the petition of the company for increased rates. At the same time, the company is requested to issue universal transfers on all of its lines without additional charge. Books of fifty tickets for \$2.50 must be offered for sale, usable only by the purchaser. The company failed to receive the full increase asked and the city gained a point when the commission ordered the universal transfer system placed in operation in this city. The company had asked for a 15-cent rate to Attalla, but had not asked any increase on its other lines. The city had asked that the company place the universal transfer system in effect. The change in fares was scheduled to go into effect on April 1.

Conference on Interurban Fares in City.—At a conference of the Board of Public Works of Indianapolis, Ind., representatives of the Interstate Public Service Company, the Indianapolis Traction & Terminal Company and citizens living in the Shelby Street district between Southern Avenue and Martin Street, the proposal was made that if the Interstate Company would charge a 10-cent fare within the city limits an arrangement might be made between it and the local company whereby the latter would use the traction company's tracks between Southern Avenue and Martin Street. The proposal raises the question whether the Interstate Company can be relieved of its franchise obligation to charge only 5 cents within the city limits and whether or not the granting of this privilege to one company would not open the way for all companies to charge 10 cents within the city limits. The Public Utilities Commission will have to pass on the matter finally. The Interstate Public Service Company recently filed a petition with the commission asking for a 10-cent fare in Indianapolis.

Bus Competition Permitted.—The Railroad Commission of California has authorized the De Luxe Transportation Company to establish an auto passenger service between Oakland and Hayward in connection with its present service between Hayward and San Jose. The commission forbids, however, the carrying of passengers locally between Hayward and Oakland, or intermediate points, the authorization being confined to the transportation of passengers between Oakland and points between Hay-

ward and San Jose. The San Francisco-Oakland Terminal Railways and the Peerless Auto Stage Association protested against the granting of the application. The railway has increased its service between Oakland and Hayward, and testified it could not continue the new service should the local traffic between Oakland and Hayward be divided and some carried by other methods of transportation. The railroad company did not object, however, to the certificate provided no local passengers were carried between Hayward, San Leandro and Oakland.

Seven-Cent Zones for New Jersey Lines.—The Board of Public Utility Commissioners of New Jersey has made an order granting the application of the Millville Traction Company to increase the fare in each of the zones from 5 cents to 7 cents and to withdraw from sale commutation tickets, excepting those sold to school children. The company operates in Millville, Landis Township and the Borough of Vineland. There are only two fare zones in its territory. The commission found that the company during the past three years has not been able to earn its operating expenses, taxes and bond interest and may go into the hands of a receiver. In its report the commission said: "It is calculated that if the same number of passengers continues to ride under the 7-cent fare, the increased revenue to the company would be approximately \$24,400, but experience has demonstrated a large falling off in travel. Should the company lose 10 per cent of its passengers—and this is not unlikely—the actual increase in revenue would be about \$12,000 and the most favorable returns to the company from the increase, it is anticipated, will not provide sufficient revenue to pay the operating expenses, taxes and interest on the company's bonds."

Fare Modification Ordered.—The Public Service Commission for the Second District of New York has directed the Elmira Water, Light & Railroad Company, Elmira, N. Y., to amend its passenger tariff now in force by substituting Center Mills for the present designation, Elmira Heights, between Fourteenth and Lake Streets, and to change the zone designation to read Zone B on the Horseheads line, including all points intermediate between McCann's Boulevard and Center Mills. The order followed the investigation of a complaint by Commissioner Fennell that under the present tariffs the fare charged between Elmira and Center Mills, a point intermediate between Fourteenth and Lake Streets and Horseheads, was 11 cents, an increase of 6 cents over the fare charged prior to Oct. 1, 1918. The company formerly operated between Elmira and Horseheads with a two-zone fare in force and charged a 5-cent fare in each zone. The tariff which went into effect on Oct. 1, 1918, increased the fare to passengers between Center Mills and Elmira in excess of the increase to other passengers. The commission held that the 11-cent fare between Center Mills and Elmira was unjust.

Personal Mention

Raymond H. Smith Elected Vice-President of Eastern Wisconsin Electric Company Becomes President of Wisconsin Electrical Association

Raymond H. Smith, vice-president and general manager of the Eastern Wisconsin Electric Company, with headquarters at Sheboygan, Wis., has been elected president of the Wisconsin Electrical Association and the Wisconsin Gas Association.

Mr. Smith entered the utility field with the Waterbury (Conn.) Traction Company, in 1897, and held various positions in the electric and the railway departments of the Connecticut Railway & Lighting Company until 1900, at which time he became assistant superintendent of railways. In 1900 he was transferred to the headquarters of the Connecticut Railway & Lighting

In March, 1918, the Sheboygan Electric Company was consolidated with the Wisconsin Electric Railway, Oshkosh, Wis., and the Eastern Wisconsin Railway & Light Company of Fond du Lac, Wis., and Mr. Smith was made vice-president and general manager of the consolidated company, the Eastern Wisconsin Electric Company.

Walter Jackson Returns from Great Britain

After four months' absence, Walter Jackson of the ELECTRIC RAILWAY JOURNAL has returned from the United Kingdom, which he visited to secure first-hand data on the zone or graduated fare. His first studies, covering the famous system of Glasgow, appeared in the issues of Feb. 22, March 8 and March 29, but the amount of information acquired is so extensive that it will be a matter of months before the series is concluded. The articles cover the widest possible range of conditions, bringing out, among other facts, that the zone fare is not only used on cars of large capacity, operated on very short headways, but that it offers many opportunities for developing traffic to an extent undreamed of with a universal fare. The managers of both the private and municipal undertakings showed Mr. Jackson every possible courtesy, making it plain that they were only too glad to assist their American cousins with any experience at their command. They indicated by their comments and questions that they were well informed concerning operating practices and tendencies of the electric railways in the United States and Canada.

In addition to the studies of the graduated fare, Mr. Jackson also went into other topics such as the development of parcels and freight handling and the use of car-checking instruments. In the latter, particularly, British operators have been very progressive as a class, the proportion of properties using power-saving devices being much greater than in the United States.

Changes in Personnel at Seattle

With the single exception of D. W. Henderson, superintendent of transportation of the Puget Sound Traction, Light & Power Company, Seattle, Wash., it is not expected that any of the old organization chiefs or heads of department will remain now that the city of Seattle has assumed jurisdiction over the railway lines under the purchase agreement. A. L. Kempster, manager, remains with Stone & Webster at Seattle; G. A. Richardson, superintendent of the railway department, will become connected with the Phil-



R. H. SMITH

Company at Bridgeport, Conn., as purchasing agent and secretary to the general manager. In 1903 Mr. Smith was made superintendent of the company at Bridgeport and held this position until 1907 at which time he became general manager of the Albany & Hudson Railroad, Albany, N. Y. This company, two years later, passed through a receivership, and Mr. Smith was made receiver, and later was made general manager of the reorganized company, the Albany Southern Railway.

In 1912 Mr. Smith left Albany and became general manager of the Jackson Light & Traction Company, Jackson, Miss., which position he held until 1916. In November of that year he was made vice-president and general manager of the Sheboygan (Wis.) Electric Company. Mr. Smith was the first president of the Rotary Club at Jackson, Miss., and at the time of leaving that city was vice-president of the Board of Trade and also of the Country Club.

adelphia Rapid Transit Company; A. D. Campbell, superintendent of rolling stock and shops, has been loaned by Stone & Webster to report on shop practice and shop facilities of the Brooklyn Rapid Transit Company; E. D. Merrill, traffic manager, has become connected with the Milwaukee Electric Railway & Light Company at Milwaukee; E. J. McIlraith, superintendent of way and structures, is making a report on the Chicago Surface Lines; F. M. Hamilton, superintendent of the "accident prevention department," will not remain with the properties under city management. Accident claims will hereafter be handled by the city attorney's office, engineering by the city engineer's office, paving by the department of streets, etc.

New Electrification Official

W. C. Ennis, formerly superintendent of the Musselshell Division of the Chicago, Milwaukee & St. Paul Railway, has been appointed assistant superintendent of the Coast Division, the Tacoma Eastern and the main line west of Othello. Mr. Ennis will work in conjunction with the electrical forces of the system, and will make an effort to hasten the electrification of the line from Othello to Seattle, so that it may be completed during the summer. The work of completing the substations is well under way; poles are set and wires are being strung. It is stated that the only obstacle to the operation of the line early in the fall will be a possible delay in delivery of the electric locomotives. Orders for the locomotives were placed some time ago.

G. A. Richardson will shortly assume the office of superintendent of transportation for the Philadelphia (Pa.) Rapid Transit Company and thus fill the vacancy made by the elevation of H. G. Tulley, who was some months ago made vice-president in charge of welfare and public relations.

Capt. F. D. Burpee, who has not been actively connected with the Ottawa (Ont.) Electric Railway for the past three years, has returned from France and has resumed his former position of superintendent. During his absence he has been engaged in the construction of narrow and standard gage railways in France with the fifth Battalion, Canadian Railway Troops.

Charles H. Smith, assistant general manager in charge of the Troy division of the United Traction Company, Albany, N. Y., has been granted an indefinite leave of absence on account of ill health. Mr. Smith has been in the employ of the company since he was a boy. He began work for the Troy and Lansingburg line in the Lansingburg carhouse, filling and cleaning the oil lamps that were used in the horse-car days for illumination. In the course of years he received promotions, and at the time of the formation of the Uni-

ted Traction Company on Jan. 1, 1900, was placed in charge of the Troy division.

George A. Murch, who for three years has been manager of the Public Electric Light Company and superintendent of the St. Albans & Swanton Traction Company, St. Albans, Vt., has resigned. He has made no definite statement as to his future plans. Previous to his connection with the companies at St. Albans Mr. Murch was manager of the Maynard & South Acton Railway, at South Acton, Mass. He has supervised the building of many railway systems, among them roads at Toledo, Waterville, North Attleboro, Worcester and Bangor.

W. J. Henderson, chief of the division of capitalization of the Public Service Commission for the Second District of New York, which division has had charge of all accounting and financial investigations for the up-state Public Service Commission since its inception, has severed his connection with the commission to become associated with the organization of H. C. Hopson, New York, N. Y., which is specializing on matters relating to rates, capitalization, taxes, etc. Mr. Henderson, prior to his connection with the Public Service Commission, was for many years in the accounting and latterly the statistical department of the New York Central & Hudson River Railroad.

D. J. McGrath, formerly special assistant to President M. C. Brush of the Boston (Mass.) Elevated Railway, has resigned his commission as first lieutenant in the Sanitary Corps, U. S. Reserves, and has become assistant to the president of the Mobile Light & Railroad Company. Prior to his connection with the Boston Elevated Railway Mr. McGrath was research assistant in the electrical engineering department of the Massachusetts Institute of Technology and was joint author with Prof. D. C. Jackson of that institution of a book summing up the fare investigations made by that department. Mr. McGrath has also contributed a number of articles to this paper on transportation matters.

Ernest A. Murphy, superintendent of equipment of the United Traction Company, Albany, N. Y., at North Albany, has taken over the duties relinquished by Charles H. Smith, who as noted elsewhere in this department has been serving as assistant general manager in charge of the Troy division. Mr. Murphy went to Albany two years ago from the Interborough Rapid Transit Company, New York. He has had charge of the company's car shops in the northern section of the city. Under Mr. Murphy's direction the company last year started to build a number of new cars of large type. About eight of these cars are now running between Albany and Troy, and others to run between Albany and Cohoes will be put on in April. Mr. Murphy has also introduced many improvements in shop methods.

Obituary

Emil C. Braun, for fifteen years connected with H. M. Bylesby & Company, Chicago, Ill., as an electrical engineer and valuation expert, died suddenly on March 23, as the result of a fall which caused a hemorrhage. Mr. Braun was born in Germany in 1868 and came to this country in 1893 in charge of the German electrical exhibit at the World's Columbian Exposition, Chicago. He was educated at the Universities of Frankfurt and Berlin.

August Belmont, Jr., son of Major August Belmont, the banker, who was a member of his father's firm and connected with other important enterprises, died on March 29, following an operation for intestinal trouble. He began his business career as a clerk in the banking firm of his father, and on Jan. 1, 1910, was admitted as a member of the firm. Other enterprises with which he was identified at the time of his death were the Degnon Realty & Terminal Improvement Company, Degnon Terminal Railroad Corporation and Interborough Consolidated Corporation.

Major James Alfred Roosevelt, who had been in command of the 302d Ammunition Train of the Seventy-seventh Division in France, died on March 26 on the naval transport Great Northern while the vessel was 400 miles east of Sandy Hook. Major Roosevelt was a member of the advance guard of the Seventy-seventh Division, returning to make arrangements for the reception of the division, which is expected to arrive in New York during the first week in May. He was born in New York in 1885 and was graduated from Harvard University in the class of 1905. He was connected with Stone & Webster, Boston, Mass., for two years and for four years prior to 1911 was with the Third Avenue Railroad, New York, N. Y., first as assistant to the general manager and then as general superintendent. He next became superintendent of transportation of the British Columbia Electric Railway, Vancouver, B. C. Subsequently he became a member of the engineering firm of Roosevelt & Thompson, specializing in railway engineering work. Major Roosevelt attended the first Plattsburg Training Camp in the summer of 1917, and on completing the course he was commissioned a captain of infantry. He was assigned to the 308th Infantry, then being formed at Camp Upton, Long Island, and went overseas with that regiment last April. After taking part in a number of engagements with the Seventy-seventh Division he was promoted to major and given command of the divisional ammunition train. Major Roosevelt had been cited for displaying exceptional bravery and courage under heavy fire, while the Seventy-seventh Division was fighting for the possession of the Vesle River.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,

SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES

BUSINESS ANNOUNCEMENTS

Great Britain to Resume Traction Work

Delay Due to Lack of Men and Raw Materials—Linking Together of Lines Sought

In England the revival of business for manufacturers of railway supplies grows almost from day to day. Moreover, a number of the more important municipalities are arranging to raise large loans for extensive developments. Immediate expansion on a very large scale is somewhat delayed by the manufacturers requiring time to get their men back from military work, to get raw materials and to reconvert their works from military to civilian uses. The full demands of some of the railway authorities also cannot come into active operation until they get legislative sanction for their schemes and authority to raise the additional capital. There is, however, a good deal of work free from any factor of delay, of the kind which only awaits the manufacturer undertaking it.

New cars and omnibuses are wanted by many municipalities and fresh invi-

England an arrangement of the kind is now in operation.

The new call for additional rolling stock was in the first place for omnibuses, the reason being that much earlier delivery of these could be promised than in the case of cars. That stage appears already to be over, and tenders for cars are now being freely invited. It is no new development for traction companies to seek omnibuses in order to supplement their railway services, but it is more prominent at present because of the urgent necessity for additional means of transportation.

There are great arrears to make up both in cars and track work. Prices must, for some time at least, continue high, but renewals, additions and extensions are urgent. Hundreds of miles of new rails will have to be laid down it is said, no matter what the cost, as soon as plenty of labor is available. What traction companies require is a continuance of heavy traffic and of increased fares, together with some more or less permanent settlement of the labor trouble which has for some time been so menaging.

In regard to rails, during the war

Further Price Reductions in Steel Equipment

Transformers, Turbines, Brakeshoes and Track Hardware Affected—Track Equipment Not Yet Released

Following the cut in steel prices expected by the steel producers, there have been further reductions applied by manufacturers to commodities entering into electric railway equipment. These reductions, although not radical in any respect, are capable of giving some incentive to buying in a field which previous to the time of the reduction had been devoted more to maintenance than new construction.

In the issue for last week of the ELECTRIC RAILWAY JOURNAL were given a number of items of electric railway materials which had just been subjected to price reductions. These readjustments comprised general prices on rails, steel and iron bars, certain steel sheets used, among other things, for tubular poles for railway and lighting work, tubing, rigid and flexible metallic conduit, sheets, wire products and pole line hardware.

Recent inquiries have resulted in locating further lines of material which have been affected by the general reduction of steel prices. Outlet boxes, covers, brushings and nuts have decreased 20 per cent, while stamped steel boxes are easier by approximately 18 per cent. This latter item, however, went into effect before the steel prices were accepted and merely shows one instance of the downward trend before assistance by the Industrial Board.

TRANSFORMERS SHOW REDUCTION

Transformers of 200-kva. capacity and above were subjected to a reduction of 10 to 15 per cent in price about the middle of February, and in the distribution type up to 200-kva. capacity, there has just been a reduction of 10 per cent. Steam turbines for both electric generation and mechanical drive have also decreased in price to the extent of 5 per cent.

The reduction in price of brake-shoes is 10 to 12 per cent. This takes into account the different qualities of shoes for the various classes of service. Bolts, nuts and rivets have suffered a cut of from 20 per cent to 40 per cent from war prices. Reductions have also taken place in other railway materials, but to date manufacturers have not made available the new prices. As soon as the schedules are made up further information will be given on such materials as car wheels and axles, brake beams, trucks, etc.

Material	Prices, 1914	Price Dec., 1918	Percentage
Rails	2.6 per ton	£17 10/ per mile	197
Setts, Whin	18/ per ton	26/ per ton	44
Setts, Granite	25/ per ton	42/ per ton	67
Cement	34/ per ton	129/ per ton	279
Trolley wire, phosphor bronze	2102 4/ per mile	£189 per mile	85
Strand wire	16/6 per cwt.	49/ per cwt.	200
Gear wheels	£3 2/ each	£15 18/ each	348
Pinions	10/ each	£2 15/6 each	450
Tires	28/ each	£4 5/6 each	216
Armature coils	£5 per set	£17 5/ per set	245
Lamps	5d. each	1/3 each	200
Trolley heads	26/3 each	56/3 each	114
Trolley wheels	3/2 each	4/3 each	34
Oils	1/ per gallon	3/ per gallon	200
Tickets	3d. per 1000	1/3 per 1000	400
Timber			500

tations to tender are steadily being issued. A new development is promised by the London County Council. They propose immediately to apply for Parliamentary authority to own and work motor omnibuses for the purpose of linking up electric railway dead ends and for suburban prolongation of railway routes. In this way they hope partially at least to meet requirements until their traction system can be extended. Many municipal traction authorities in England have powers to work omnibus services, and there is no reason why London also should not have them. London also proposes to ask authority to construct a number of short electric lines as extensions and to link together existing lines, at a cost of over \$2,000,000. A proposal that the County Council should offer to contribute 3/4 of a cent per omnibus mile to the road authorities for road maintenance raises an important question of principle, and is still undecided. In a few places in

when none could be obtained in England, Middlesex County Council ordered a small quantity from the United States which, including freight and insurance, cost £30 a ton, compared with £7 10s. before the war. The maximum price in England is now £17 10s. a ton.

In connection with applications for higher zone rates in Great Britain, it may be interesting to note the above increases in electric railway materials from 1914 to December, 1918.

Foreign Opportunity

A man in the Azores desires to secure an agency and possibly purchase all articles and supplies connected with the construction and installation of a hydroelectric plant of 3000 hp. and the construction and equipment of an electric railway system of approximately 50 miles. Correspondence may be in English. Communicate with No. 28784, Bureau of Foreign and Domestic Commerce, Washington, D. C.

1300 Power-Saving Recorders Ordered

Will Be Used in Baltimore, Md., in Campaign Which Is Soon to Be Inaugurated

The United Railways & Electric Company, Baltimore, Md., has ordered 1300 of the Arthur power-saving recorders. Delivery on these is to begin within thirty days and to be completed within two months. These recorders are of the single-dial type, applicable to either hand-brake or air-brake cars, there being no connection with the brakes. The amount of money involved in this order is between \$50,000 and \$60,000. The purchaser has not specified any unusual features in the instrument with the exception of a particular type of lead seal. The expected coal and power saving with the recorders is from 10 to 15 per cent at the start, and 20 to 25 per cent ultimately.

Mr. Arthur will act in a consulting and organizing capacity in the inauguration of the power-saving campaign. He will give a series of talks to the motormen, special talks to the chief motormen and other instructors, using large diagrams that have been developed for the purpose. Another member of the Arthur organization, formerly chief power-saving inspector on a large property, will probably be stationed at Baltimore for some time.

Before the United Railways decided to install power-saving recorders its engineers and transportation officials visited a number of properties for the purpose of studying the matter from all angles.

Steel Prices Rejected by Director General Hines

Director General Hines, of the Railroad Administration, has refused definitely to agree to buy steel at the prices fixed recently at a conference of the Industrial Board and representatives of the steel industry. The price of steel rails offered particular concern. This somewhat disorganizes the plans of the Industrial Board for adherence by government departments to the price fixing agreements now being arranged for the great staples, such as coal and steel.

The Director General took the position that the agreements between the operators and the board amounted to actual price fixing. He cited the possible hazards of the Sherman law and insisted that the agreements would really constitute a violation of the statutes.

Rolling Stock

Central Illinois Public Service Company, Matoon, Ill., has contracted for ten new steel cars to be placed in city service in Charleston, Matoon, Paris, Taylorville and Anna. The cars will be of the safety type for one-man operation. Delivery is expected within ninety days.

Kansas City (Mo.) Railways has ordered twenty-five one-man cars for delivery early in April. They are furnished by the American Car Company of St. Louis, Mo., and the Cincinnati (Ohio) Car Company. The length of the cars will be 27 ft. 9½ in. Eleven

will be equipped with two Westinghouse No. 506—AH—2 motors and fourteen cars with two General Electric No. 258 motors. All cars will have K-10 control. Fifteen are to have Westinghouse air compressors, and ten will have General Electric air compressors, all using Safety Car Devices Company's equipment. The seating capacity will be thirty-five passengers and the cars will weigh approximately 14,000 lb.

Track and Roadway

Birmingham Railway, Light & Power Company, Birmingham, Ala.—An order for 1,500 tons of steel rails has been placed by the Birmingham Railway, Light & Power Company with the Tennessee Coal, Iron & Railway Company. The first lot of 1000 tons of rails has been ordered for immediate delivery and the remaining 500 tons is to be delivered in sixty days. The rails are ordered for the purpose of retracking 13 miles of the company's lines in Birmingham. The new rails are of a heavier type than those at present in use. The work will be started at once. The retracking work will include portions of the Twentieth Street and Avenue B Loop line, the Gate City, North Enslay, Avondale, and some of the crosstown lines.

Mobile, Ala.—The organization of the Baldwin County branch of the Gulf Coast Municipal Interurban League was recently perfected at a mass meeting held at Foley, Ala., the purpose being to have the proposed municipally-

NEW YORK METAL MARKET PRICES

	Mar. 13	Apr. 3
Copper, ingots, cents per lb.	14.75	15.50
Copper wire base, cents per lb.	17.25 to 18.00	17.25 to 18.00
Lead, cents per lb.	5.25	5.25
Nickel, cents per lb.	40	40.00
Spelter, cents per lb.	6.50	6.62
Tin, cents per lb.	172.50	172.50
Aluminum, 98 to 99 per cent, cents per lb.	30.00	30.00

† Government price in 25-ton lots or more f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Mar. 13	Apr. 3
Heavy copper, cents per lb.	12.75 to 13.25	13.00 to 13.25
Light copper, cents per lb.	10.75 to 11.00	10.50 to 11.00
Heavy brass, cents per lb.	7.25 to 7.50	7.25 to 7.50
Zinc, cents per lb.	5.25 to 5.50	5.25 to 5.50
Yellow brass, cents per lb.	6.00 to 6.25	6.00 to 6.50
Lead, cents per lb.	4.75 to 4.87	4.25 to 4.50
Steel car axles, Chicago, per net ton.	\$28.00 to \$30.00	\$26.00 to \$28.00
Old car wheels, Chicago, per gross ton.	\$22.00 to \$23.00	\$22.00 to \$23.00
Steel rails (srap), Chicago, per gross ton.	\$16.50 to \$17.00	\$17.00 to \$17.50
Steel rails (recap), Chicago, gross ton.	\$15.50 to \$16.00	\$16.50 to \$17.00
Machine shop turnings, Chicago, net ton	\$5.50 to \$6.00	\$6.50 to \$7.00

ELECTRIC RAILWAY MATERIAL PRICES

	Mar. 13	Apr. 3
Rubber-covered wire base, New York, cents per lb.	21	20
Weatherproof wire (100 lb. lots), cents per lb., New York	25.75 to 33.75	24.25
Weatherproof wire (100 lb. lots), cents per lb., Chicago	30.75 to 37.35	23.75 to 37.35
T rails (A. S. C. E. standard), per gross ton	\$60.00 to \$65.00	49.00 to 51.00
T rails (A. S. C. E. standard), 20 to 500 ton lots, per gross ton	\$57.00 to \$60.00	47.00 to 49.00
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	\$55.00 to \$60.00	45.00 to 47.00
T rail, high (Sharnak), cents per lb.	3 3/4	?
Rails, girder (grooved), cents per lb.	4 1/2	?
Wire nails, Pittsburgh, cents per lb.	3 1/2	3.25
Railroad spikes, drive, Pittsburgh base, cents per lb.	3.65	3.25
Railroad spikes, screw, Pittsburgh base, cents per lb.	8	8
Tie plates (flat type), cents per lb.	3	2.75
Tie plates (brace type), cents per lb.	3	2.75
Tie rods, Pittsburgh base, cents per lb.	7	7
Fish plates, cents per lb.	3	2.75
Angle plates, cents per lb.	3	3
Angle bars, cents per lb.	3	3
Rail bolts and nuts, Pittsburgh base, cents per lb.	4.90	4.35
Steel bars, Pittsburgh, cents per lb.	2.70	2.35
Sheet iron, black (24 gage), Pittsburgh, cents per lb.	4.55	4.20
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.	5.60	5.25
Galvanized barbed wire, Pittsburgh, cents per lb.	4.35	4.10

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Galvanized wire, ordinary, Pittsburgh, cents per lb.	3.95	3.70
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	80%
Car window glass (single strength), first three brackets, B quality, New York, discount	77%	80%
Car window glass (double strength, all sizes AA quality), New York discount	79%	81%
Waste, wool (according to grade), cents per lb.	13 to 20	14 to 17
Waste cotton (100 lb. bale cents per lb.)	11 to 13	8 to 13 1/2
Asphalt, hot (150 tons minimum) per ton delivered		
Asphalt, cold (150 tons minimum, pgs. l. weighed in, F. O. B. plant, Maurer, N. J.), per ton		
Asphalt filler, per ton	\$30.00	
Cement (carload lots), New York, per bbl.	\$3.20	\$2.90
Cement (carload lots), Chicago, per bbl.	\$3.34	\$3.05
Cement (carload lots), Seattle, per bbl.	\$3.68	\$3.13
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.53	\$1.53
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.60	\$1.60
White lead (100 lb. keg), New York, cents per lb.	13	13
Turpentine (bbl. lots), New York, cents per gal.	69 1/2	75

† These prices are f. o. b. works, with boxing charges extra.

owned electric interurban railway from New Orleans to Mobile extended from Mobile through Baldwin County, Pensacola, Fla. The Legislatures of Louisiana and Mississippi having passed identical laws authorizing municipalities to own, construct and operate interurban railways, a duplicate of this law is now before the Alabama Legislature and a similar bill will be introduced in the Florida Legislature as soon as it convenes.

Somers Electric Company, Hartford, Conn.—The House at Hartford recently rejected the bill authorizing the Somers Electric Company to buy the property of the Hartford & Springfield Street Railway and conduct the railway in the towns of South Windsor, East Windsor, Windsor Locks, Enfield and Somers. The Hartford & Springfield Street Railway is now in the hands of a receiver.

St. Petersburg-Tampa Railway, St. Petersburg, Fla.—The entire right-of-way has been secured for the proposed line of the St. Petersburg-Tampa Railway between St. Petersburg and Tampa and it is expected that construction of the line will be begun shortly. George S. Gandy, Sr., St. Petersburg, president. [Apr. 13, '18.]

St. Louis & East St. Louis Interurban Railway, East St. Louis, Ill.—The St. Louis & East St. Louis Interurban Railway, a company formed by officials of the East St. Louis & Suburban Railway for the purpose of operating cars between St. Louis and East St. Louis via the free bridge, has been granted a dissolution and returned its charter to the Secretary of State. The charter allowed the company to operate cars into St. Louis if the consent of the officials of the city of St. Louis was obtained. This consent was never sought and all efforts to complete the work of operating cars over the free bridge was dropped soon after the charter was obtained.

Mexico Tramways, Mexico City, Mex.—It is announced that if the British syndicate which owns the Mexico Tramways system is successful in its efforts to obtain the return of that property from the Carranza government, extensive plans for extensions and improvements will be carried out.

Trenton & Mercer County Traction Company, Trenton, N. J.—The Trenton & Mercer County Traction Corporation has asked the City Commission of Trenton for permission to relocate its track on a number of streets in Trenton. The company wants to abandon a part of the line on Bridge Street and extend its line to the new municipal dock along the Delaware River, using 70-lb. T-rail.

Jersey Central Traction Company, Keyport, N. J.—A report from the Jersey Central Traction Company states that it will rebuild the trestle approaches to the county bridge.

Dallas (Tex.) Railway.—The City Commissioners of Dallas are expected to issue an order to compel the Dallas Railway to build an extension through

the Mount Auburn addition to the city. M. N. Baker, supervisor of public utilities, has directed a letter to the Dallas Standard Traction Company, which now operates a short line in Mount Auburn, asking authority to examine its books with a view to determining the receipts of the company as well as to place a valuation on the property. The residents of Mount Auburn have made repeated efforts to have the Dallas Railway take over the line. It is probable the Dallas Railway will be ordered to extend its Elm Street line through Mount Auburn.

Power Houses, Shops and Buildings

Miami Beach Electric Company, Miami, Fla.—The Miami Beach Electric Company, which proposes to construct an electric railway at Miami Beach, also plans to erect an electric light system and ice plant.

Ironwood & Bessemer Railway & Light Company, Ironwood, Mich.—This company reports that during the next seven weeks it expects to place contracts for the construction of a new brick carhouse, 110 ft. x 50 ft., at Ironwood.

Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo.—A new building for handling freight will be constructed by the Kansas City, Clay County & St. Joseph Railway at South St. Joseph, Mo. The company will also purchase a complete armature for a 1500-volt rotary converter.

Jersey Central Traction Company, Keyport, N. J.—A report from the Jersey Central Traction Company states that the Monmouth Lighting Company, which leases the former company's power plant, is constructing an addition to the station and will install a 502-hp. B. and W. Sterling boiler. The work will be completed May 1.

Trenton & Mercer County Traction Company, Trenton, N. J.—A new engine is being installed at the power house of the Trenton & Mercer County Traction Company on Lincoln Avenue.

Northern States Power Company, Sioux Falls, S. D.—Work, it is understood, will soon be started on the erection of a 60,000-volt electric transmission line to connect the Sioux Falls division of the Northern States Power Company with the company's transmission system in southwestern Minnesota, between Pipestone and Dell Rapids, a distance of 35 miles. A new 3500-kw. steam turbine will be installed at the Sioux Falls power house to take care of the increased loads, which will be secured over the new line.

Chattanooga Railway & Light Company, Chattanooga, Tenn.—The power house of the Chattanooga Railway & Light Company, which supplied energy for the operation of the Lookout Mountain Railway, was recently destroyed by fire, together with considerable machinery, sheds and several cars.

Trade Notes

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, Ill., manufacturers of American Steam Ash Conveyor and other ash-handling equipment.

Chicago Pneumatic Tool Company, Chicago, Ill., announces the discontinuance of its office at Wichita, Kan., and the transfer of stock to Eldorado, Kan., where an office and warehouse have been established. The company also announces the opening of a new office and warehouse at Tulsa, Okla.

H. G. Lewis, sales manager of the Electric Service Supplies Company, Philadelphia, Pa., has recently been made vice-president. Mr. Lewis has acted in this former capacity for many years and is well known in the electric railway, mining and power fields. He will continue his work as sales manager of the company.

C. B. Finnell, formerly traveling secretary to the general superintendent of the C., B. & Q. Railroad, and later private secretary to the president of the Commonwealth Steel Company, has just been appointed private secretary to Walter A. Zelmieker, president of the Walter A. Zelmieker Supply Company. Mr. Finnell is president of the Junior Chamber of Commerce of St. Louis, an organization of 1000 members of the younger business men of that city.

Arthur F. Braid has been appointed sales manager of the metal and alloy department of the Metal & Thermit Corporation. Mr. Braid came to the company seven years ago as a traveling salesman, but after a few years of most successful service in this capacity he was appointed assistant superintendent of the Jersey City plant, in charge of the manufacture of carbon-free metals and alloys. When the United States entered the war he assumed active charge of the metal sales at the company's New York office.

New Advertising Literature

Ohmer Fare Register Company, Dayton, Ohio: Circular containing pictures showing typical interiors at the manufacturing plant.

Locomotive Superheater Company, New York, N. Y.: Bulletin No. T1 on superheaters for stationary power plants; showing construction of superheater and methods of application to typical burden.

General Railway Signal Company, Rochester, N. Y.: Bulletin 135 on absolute permissive block system circuits. Sixteen pages. The text matter and diagrams of a paper presented at the regional meeting of the Railway Signal Association of Galveston, Tex., on July 27, 1918, by one of the representatives of the company.