

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Number 2

Increased Postage Rates in Effect

NEW rates of postage on magazines became effective on July 1. These increases are material, particularly at distances of more than 300 miles from the place of publication. The obvious step would be to raise the subscription rates in distant zones to cover the added postage.

For the present, however, the publishers of the ELECTRIC RAILWAY JOURNAL have decided not to increase the subscription price, trusting that in the interests of national unity Congress will before long repeal the zone law and revert to the universal flat-rate system. The importance of such a policy is especially evident now when united action along lines of nationwide efficiency is so necessary.

Why Sell Transportation Cheapest When it Costs the Most?

THE dawn of reason in the sale of electric railway transportation may be discerned in the Bay State Street Railway's plan to charge less instead of more for off-peak riding. We wonder who it was that first conceived the idea of carrying people for less money during the rush hour. He must be quite dead by this time, for the custom dates back to the early European steam railways. Then there may have been an atom of sense in it, for anyone who has traveled fourth class in Europe will admit the possibility of making money at any rate of fare when people are put in a cattle car. In Canada and the United States, however, it is customary to give as good accommodation on the workmen's ticket as on the full-fare ticket. In the few cases where fertilizer experts or coal miners have been segregated the welkin has clanged with indignation.

Not content it seems with subsidizing the suburbanite, the electric railway has also felt obliged to hand something to the once-humble son of toil. We say "once-humble" advisedly for it is only the manual worker, whether in factory or shipyard, who has been able to outstrip the rising cost of living. There is something grossly unfair in making a \$20 a week clerk pay full fare at 9 a.m. for the short ride to the business section while at 7 a.m. the \$40 a week mechanic pays half as much for the usually longer ride to a factory district. We venture to prophesy that if the peak period carried an extra rate as light and power loads do, the labor organizations would force their employers to put through a staggered hour plan in double-quick time. The Bay State change is the first plunge in the right direction. May it succeed and inspire others to put fares on the basis of selling on some common-sense relation to cost.

Commutation in Direct-Current Machines in the Limelight Again

FOR a number of years that former *bête noire* of the electrical engineer, sparking and flashing at the commutators of direct-current motors and generators, has troubled neither the waking nor the sleeping hours of the manufacturer or operator of electrical machinery. There was a time, within the memory of engineers still far from old, when this difficulty threatened the further development of direct-current apparatus, and it certainly furnished a great stimulus to the progress of the rival alternating current. As soon as the theory of sparking and flashing was thoroughly understood suitable correctives were applied and the "black beast" vanished into the obscurity whence he came.

Credit for this happy consummation must be given largely to those engineers of scientific mind, who reasoned that if sparking and flashing are due to the unwillingness of an armature coil to have its current reversed as its terminal passed out from under the brush, then something must be done to force this reversal. Two means were found for this purpose and both are in use in all commutating machines to-day. One is to generate in the armature coil while it is short-circuited by the brush an electromotive force in a direction opposite to that produced by the reversal of the current. The commutating pole is the full development of this principle. The other means for improving commutation is the introduction of resistance into the circuit of the short-circuited coil. This is the primary cause of the success of the carbon brush which has done more than any other one device to bring about the present satisfactory condition at the commutator. In practically all of this progress the aim was to remove the source of the trouble and hence the trouble itself. An exception, of course, was the use of air jets at the brush tips to chill the "sparks" in the early Thomson-Houston arc generator, but this was a highly special machine, and it was successful in spite of its commutator rather than because of it.

Within a few years past the high-frequency (60-cycle) rotary converter, the high-voltage generator for heavy traction and the automatic substation, all electric railway machines, have forced attention again to commutation. The difficulties now are largely those incident to short-circuits, which impose a heavy task upon the commutating ability of a machine. At the same time they occur only occasionally. Hence it would appear to be logical to prevent the evil effects of flashovers by external means rather than radically to change the internal design so as to make it practically impossible for a machine to flash over. No doubt this could be done

but results would not justify the cost and probable clumsiness of an inherently non-flashing rotary or generator for the special classes of work mentioned. Two radically new such external devices have recently come into prominence, in one of which the armature is short-circuited to prevent damage, while in the other flash barriers and arc coolers are mounted around the commutator. Both are apparently beyond the experimental stage. It will be interesting to see if either or both persist as a permanent anti-flashover device. Experience only will tell.

It Is No Time to Drift, and There Is No Time to Do So

COMMENTING upon the editorial in our issue of June 29, entitled "The Debacle or the Dawn," the *Philadelphia Ledger* agrees that "the plea of the electric railways for a generous and broad treatment of the situation is a just one." But after stating that "no general order governing rates could possibly meet the infinite variety of conditions governing electric railways in different localities," the *Ledger* concludes its remarks as follows:

"The absence of uniformity surrounding conditions under which these public utilities operate makes it more than doubtful whether a solution is going to be reached by any such hasty action by the federal government as is now advocated by the railroads."

All of which makes one think of the rhyme regarding the mother who, when asked by her daughter if she might go for a swim, naively abjured her:

"Yes, my darling daughter;
Hang your clothes on a hickory limb
But don't go near the water."

Of course there are different situations in different localities. To that very point our editorial directed specific attention. The situation cannot be met either as to wages or as to fares by any general order covering the electric railways as a whole. What we did say and still maintain is that it is perfectly proper that the War Labor Board should consider the wage problem of the electric railways and that it should establish bases of minimum wages *in accordance with the conditions of life in the different communities and without primary reference to the financial ability of the companies to pay.*

As a corollary of that proposition, it is suggested that the War Labor Board should take steps to aid the electric railway companies to meet the bases of wages thus established.

It is clear to anybody that if the slow-going processes of adjustment by local authorities, responsive to local prejudices based on local political aspirations, are permitted to interfere with the prompt solution of this fundamental problem, the result will be the debacle and not the dawn. In other words, what is clearly needed to save the electric railway industry from disaster is a change of venue.

Washington can deal with this situation from the point of view of national interest, and to the national government alone can the electric railways look for settlement of the problem on a natural basis.

That does not mean that Washington will not inquire into local difficulties and into local situations; it does mean that the authority from which action will proceed will be Washington and not the local governing agencies.

Washington will have to subdivide its authority and act on the basis of recommendations and investigations, but what it does will be and should be in recognition of the conditions which confront the nation as a whole, rather than with reference to the trivialities of local prejudices and local politics.

We understand that the War Labor Board is to render in a few weeks its decision in the pending cases. Between now and that time it will have ample opportunity to consider its rights and prerogatives. There is no question that the War Labor Board will substantially increase the wages of the men employed by the companies whose cases have been brought specifically before the board. There is no question that this will have a very great influence on the whole situation affecting electric railways throughout the country. But if the subject is left there, it means disaster to the companies financially, and it ultimately means a series of wholesale receiverships or taking over of the electric railways by the federal government. This latter course is absolutely unnecessary and ought to be avoided at all hazards. There could be no more perfect advertisement of the failure of democratic government than that the nation should be forced to take over the electric railways because local authorities refused to permit them to earn sufficient revenues to keep in them the breath of life.

The alternative is clear: either the federal government, through the recommendation of the War Labor Board, should take such steps as will induce local authorities to make a proper adjustment of street railway charges, or it should avail itself of its implied powers to regulate the whole situation in the national interest.

If the state commissions or municipal governments were alive to their obligations, the situation would be adjusted immediately by them to permit adequate earnings. No company should be permitted to make anything out of the war, but every company should be permitted to maintain its full efficiency during the war, and there is the highest presumption that the conditions existing before the war were, in general, not unreasonable. In fact, the most superficial examination of electric railway conditions shows that for many years prior to our entry into the war, the trend was steadily against maintaining the earning power and the financial integrity of these companies.

It is no time to drift. There is no time for it. As Mr. McCarter says in his message this week: "All should recognize the full measure of the problem involved in the greatest catastrophe that has overtaken the world." Every electric railway company should bring the facts in its case, as aggressively as it knows how, to the notice of everybody concerned. Only by the most complete ventilation of the facts can the public be aroused to the situation. Once the public is aroused, local authorities will trail along according to their time-worn habit.

In the meantime, and pending a treatment of the problem fundamentally, we are justified in expecting the federal government to deal as the national interest demands with this vital problem. For the impulse to deal with it in such a spirit, we look with complete confidence to the national War Labor Board, presided over by ex-President Taft and Frank P. Walsh.

What Constitutes a Fair Rate of Return in War Time?

THE question of a proper rate of return on utility investment during war time is a live topic, and for this reason we think our readers will welcome Professor Bauer's article this week, whether or not they agree with him on all points. His primary thought is that the proper answer does not lie along the line of extremism in favor of either the stockholder or the public. On the one hand, the public has no right to insist that inadequate returns on investment shall not give rise to fare increases; on the other hand, the security holders have no right to expect that their former returns will be raised to counteract fully the now low purchasing power of money.

We imagine that much of the existing confusion is caused by the infrequent expression of the fact which most men must recognize—that the rates of return on old and on new utility investments need not be the same. It is obvious that the capital cost for new investment must depend upon the exigencies of the money market, and it is equally clear that no practicable means exists for readjusting the return on old investment in accordance with current conditions. It may be a fine theoretical idea to conceive of the real income of security holders being maintained in accordance with the changing worth of money, but such a procedure could not fairly be adopted for utility investors to the exclusion of all others. To make such a plan universal would mean a revolution of the whole investment system—an utterly impracticable proposition.

Those interested in old utility investments, however, are thoroughly justified in demanding the maintenance during war time of the rate of return judged fair in pre-war days. Where the prior investment has been determined there should not be a minute's delay in granting a fair return to all investors. The situation is complicated by the fact that so much indefiniteness exists in regard to old utility investments. Both the

companies and the commissions have been at fault because of their mutual distrust. Now the prolonged bickerings should be ended. In cases of undefined investment the commissions should hasten to grant the necessary fare increases to provide for operating expenses and fixed charges. This will at least save the railways until a more equitable program is developed, based possibly at first on the average pre-war earnings but eventually, when there is opportunity to develop it, on fair appraisals of the property used and useful in the public service. Delay for appraisals now, however, would be most unjust.

As for new capital, this must be paid for, as before stated, at current market prices. Some men appear to believe that the maintenance of different rates of return upon old and new investments involves practical difficulties. Such is not the case. By the sale of new bonds at a discount, or the attachment of preferential rights to the new securities, the higher rate of return on new capital can be easily managed. The fundamental requirement now is that the net income must be sufficient to pay the fair rate of return upon the old investment and the also fair, though higher, rate upon the new. Similarly, in a period of declining interest rates, the net income must suffice to meet the rate of return judged fair when the old investment was made and in addition the fair, though lower, rate upon the new. The propriety of this fundamental principle has been recognized in New York and other partnership contracts, and it is only reasonable to expect that it will be recognized by regulatory bodies in all cases.

The public, however, does not sufficiently realize that the conditions governing the acquisition and the disbursement of railway net income are subject to change, and that therefore the net income itself must be correspondingly alterable. To educate the public to an understanding that all franchise agreements and regulatory laws must permit this is the duty of the commissions.

Preservation of Utilities a National Necessity

THIS COUNTRY is now alive to the fact that it is to be the decisive factor in the winning of the world war and its men and resources are being mobilized with astonishing results. The people in general are prepared for sacrifice. The flower of the land are readily going forth and the people are accustoming themselves to previously unheard of taxes and are generously contributing to all war funds and to the support of the government through the purchase of bonds. Money does not count as against the rightful settlement of the great conflict, but the public does not seem to realize that the preservation of the utilities, by maintaining them in a high state of physical and financial efficiency, so that they can carry on the tremendous work already intrusted to them and obtain funds for increases in plant made necessary by the war, is a national necessity of prime importance, without which no other substantial war industry can be operated to the maximum of its efficiency. Why spend billions for war work of one kind and another and neglect to provide the pennies necessary for the electric railway industry, if it is to keep the wheels of shipyards, munition works, aircraft factories and cantonments revolving? This is no time for the harboring of old-time prejudice, but all should recognize the full measure of the problem involved in the greatest catastrophe that has ever overtaken the world.

Thos. W. McCarter.

Chairman American Electric Railway Association War Board.

International Railway Installs Steam Turbine in Unique Location

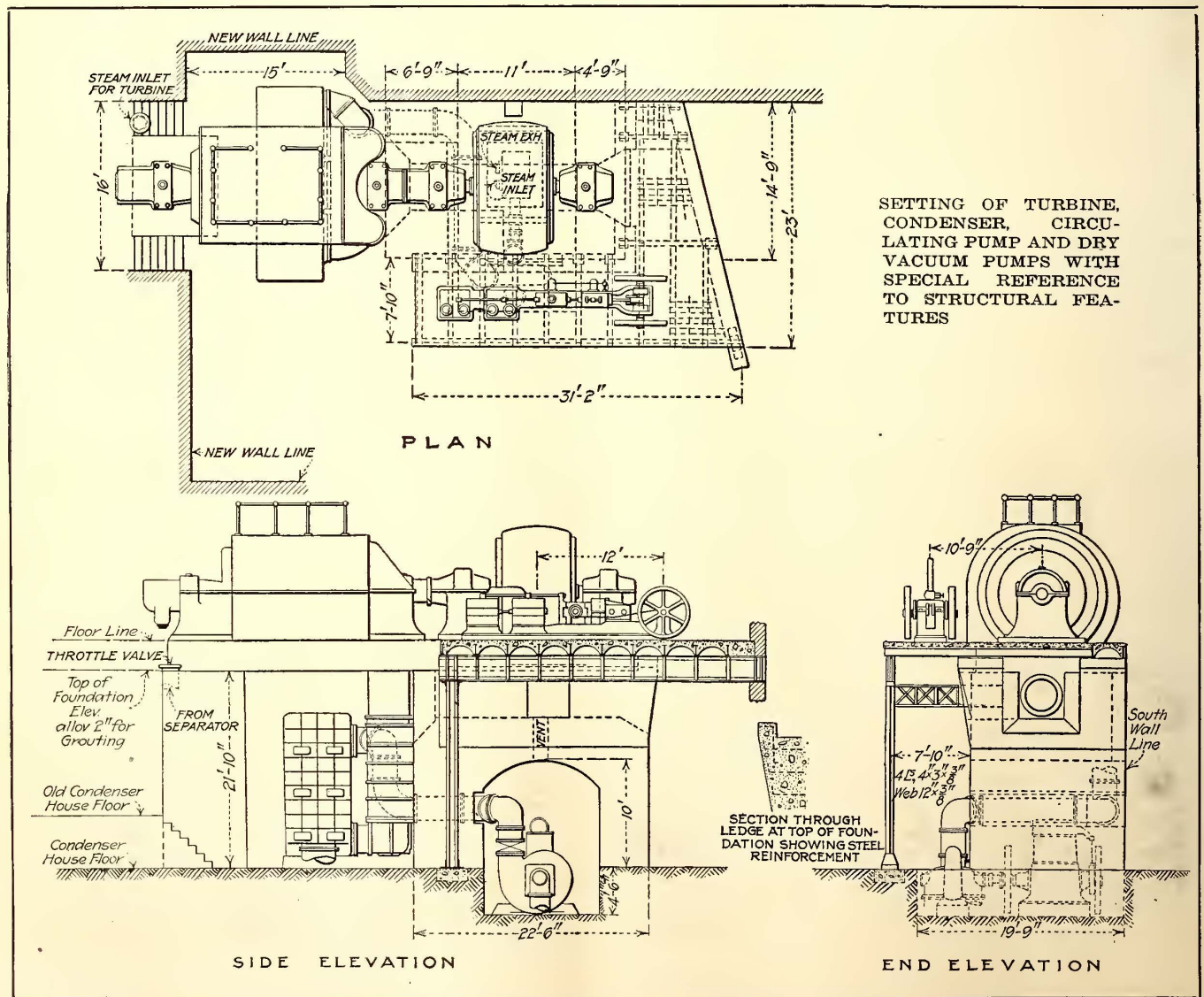
For a Peak-Load Power Supply a 5500-Kw. Second-Hand Turbine Was Purchased and Installed on the Ledge of a Rock Under the Niagara Street Power House

AS PART of the general power system improvements on its property, the International Railway, Buffalo, N. Y., has partly remodeled the famous old Niagara Street power house in Buffalo. A preliminary account of the changes was given in the issue of the ELECTRIC RAILWAY JOURNAL for April 14, 1917, page 683. At that time reference was made to the future addition of a steam turbine to the plant equipment. This increase in power capacity was made necessary partly by the limitation in available water power and partly by the augmented demand for power. The turbine was installed last fall and after a preliminary limbering up took its full load towards the end of November. Since that time it has been giving excellent service and supplementing the

peak load carrying capacity of the storage batteries and hence keeping down the charges for excess power.

The turbine is of 5500-kw. capacity and it was purchased from the Long Island Railroad. It is a three-phase, 25-cycle, 1100-volt machine, of Westinghouse-Parsons type. It operates at the steam pressure of 150 lb. per square inch with no superheat. The turbine was bought from the railroad company complete with piping, and in its installation at Buffalo the fittings that came with the machine were utilized as far as possible.

There was no exciter with the turbine, but a second-hand machine was bought from another source and installed at the same time. For reasons to be explained the turbine unit was set deep in the rock

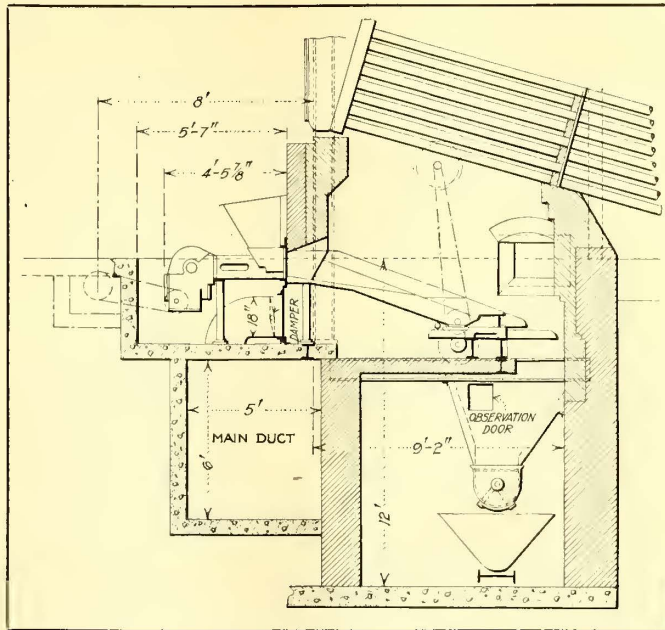


underlying the plant, but the exciter was placed in the old engine room.

It will be remembered that the Niagara Street power plant is situated on a rock ledge high above the Niagara River. As the river is the source of circulating water it was necessary to set the turbine and condensers at a very low level to economize power in circulating condensing water. Moreover, the capacity of the available circulating pump was limited, so that to avoid the purchase of a new pumping outfit there was an additional reason for setting the equipment at a limited elevation above the river level. When the original power plant was built a certain amount of excavation was made in the rock ledge for the purpose of accommodating pumps, etc. In the remodeling this excavation was utilized to the limit and enough additional rock was excavated to provide room for the removal of the condenser tubes. As finally arranged the turbine was set 23 ft. below the level of the old engine room floor, and the condenser house floor was placed 21 ft. below this. In addition a pit 4½-ft. deep was excavated for the circulating pump.

It is difficult to show the complete layout by means of drawing on account of the nature of the rock excavation. One of the accompanying illustrations shows the most important dimensions.

The turbine is supported on a concrete foundation and its floor is extended to accommodate the vacuum pump, piping, etc. The pump rests upon a floor extended out from the turbine foundation and supported



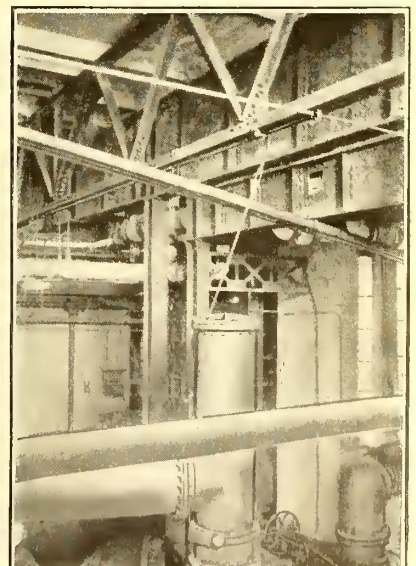
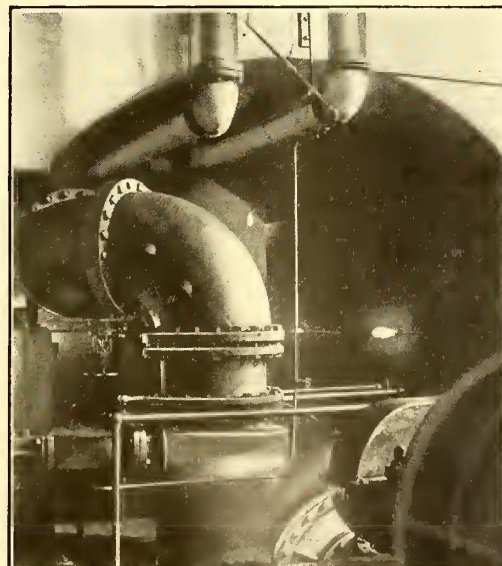
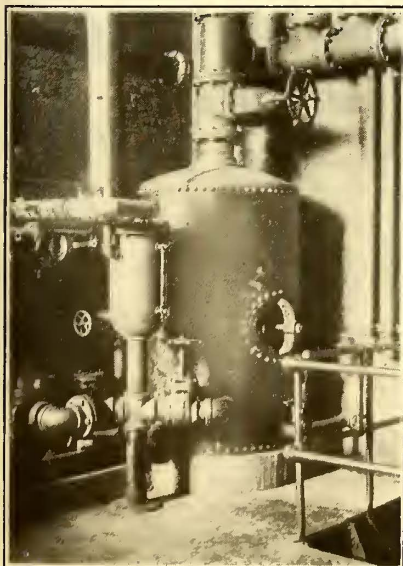
CROSS-SECTION OF BOILER SETTING SHOWING FURNACE, ASH PIT, AIR DUCT AND STOKER PIT

at one corner on a steel column, at a second corner from the wall of the building and along one edge by a projection from the turbine foundation. Under one edge of the floor is a 16-in. I-beam, and resting on the batten projecting from the turbine wall is a 12-in. I-beam. The concrete floor and foundations were all poured at once with foundation bolts in place.

On account of space limitations it was necessary to utilize every square foot of space under the turbine for the accommodation of the circulating pump and the condenser. The condenser is of the Alberger surface type, with a centrifugal circulating pump of the same make driven by a Westinghouse "Kodak" engine. This pump with its engine are directly under the generator end of the turbine in a tunnel molded in the concrete foundation. The dry vacuum pump, already referred to as being on an extension of the turbine floor, is also of Alberger make, reciprocating type.

The condensate pump, located on the condenser house floor but not shown in the drawing, is of the centrifugal type and it is driven by a General Electric direct-current constant speed motor of 20-hp. capacity. This pump was purchased new.

One of the most interesting features of the plant is the oiling system in which the gravity plan is used. It comprises a storage tank of a capacity of 1000 gal., and a Turner filter of 700-gal.-per-hour capacity is connected in the oil circuit. Two small steam pumps are used for circulating the oil. The storage tank is lo-

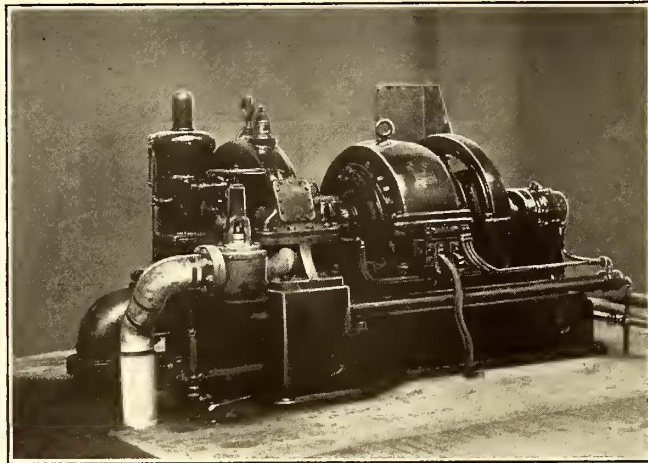


AT LEFT, DRIP TANK AND ACCESSORIES. IN MIDDLE, CONNECTION TO CIRCULATING PUMP. AT RIGHT, GIRDERS FOR SUPPORTING TURBINE AND AIR PUMPS

cated on the upper level of the plant and supplies oil at 4 lb. per square inch pressure.

Among other equipment in the turbine room worthy of special mention is the steam separator of the Sweet type. The separator is a steel cylinder 52 in. in diameter and about 8 ft. long. It is supported on springs designed by the railway company's engineers, for the purpose of taking up expansion and contraction. The separator is hung on brackets from one of the I-beams supporting the turbine, the weight being taken on the steel springs which are 6 in. in diameter, 8 in. long and made of four turns of 1-in. stock.

In connection with the separator, and to take care of the discharge from it and the pipe line, a steel drip tank $3\frac{1}{2}$ ft. in diameter and about $5\frac{1}{2}$ ft. long was installed under the separator. Bundy traps are used to remove the water. From this tank the water is pumped back into the condensate lines. A very convenient annunciator, consisting of a box divided into sections, with suitable lettering on the

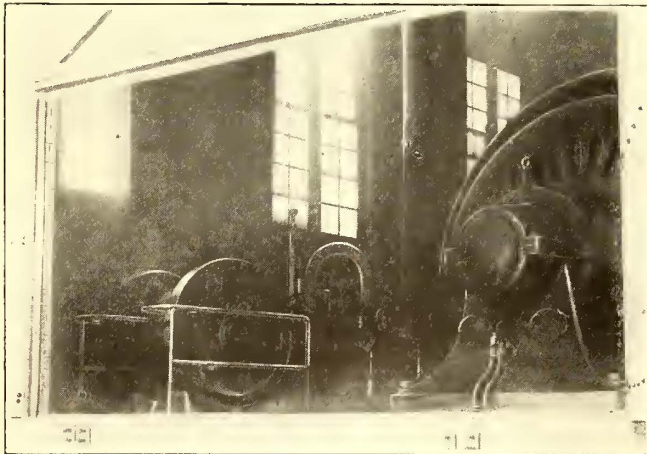


STEAM-DRIVEN EXCITER PLACED IN OLD POWER HOUSE

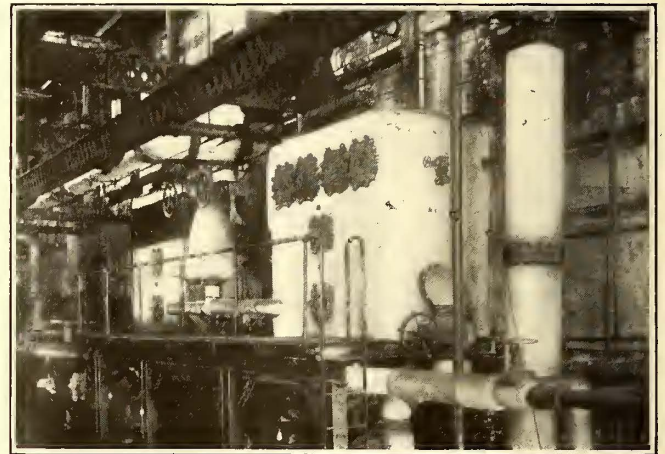
location of the feed heater was complicated by the fact that space in the firing aisle of the boiler room was limited and it was necessary to have room to remove boiler tubes and parts of the boiler feed pumps. The arrangement of the pair of Cochrane heaters on the steel structure is shown in the same drawing.

The boiler feed pumps referred to are of Worthington make, pot-valve type, duplex compound, outside packed plungers, 14 in. x 20 in. x 10 in. x 15 in., having a maximum speed of sixty-five strokes per minute. They are now running at fifty strokes.

The boiler house contains nineteen Babcock & Wilcox boilers, formerly equipped with Roney stokers. Later fifteen of these stokers were replaced with Riley underfeed stokers in order to permit of forcing the boilers. The remaining four boilers are now entirely laid up. The combined capacity of the newly equipped boilers is 3450 hp. and they can be forced to 250 per cent of rating. The warm air taken from the boiler room is forced into the



VIEW THROUGH DOORWAY INTO TURBINE ROOM



TWIN FEED-WATER HEATER EQUIPMENT IN BOILER ROOM. (See drawing on page 47)

glass covers and with provision for lighting one or another of the sections as required, was installed on the wall opposite the steam end of the turbine unit. This, like many other conveniences about the plant, was of "home-made" construction.

PROVISION FOR HEATING THE FEED WATER

While the turbine was being installed improvements were being made also in the boiler room. The most important one was the installation of two Cochrane open feed heater units, each having a capacity of 4000 hp. These heaters are mounted on a framework made up of old angle-iron built-up trolley poles, thus utilizing scrap material. A section of this framework is shown in an accompanying drawing. The boiler feed pumps are located below this structure. The

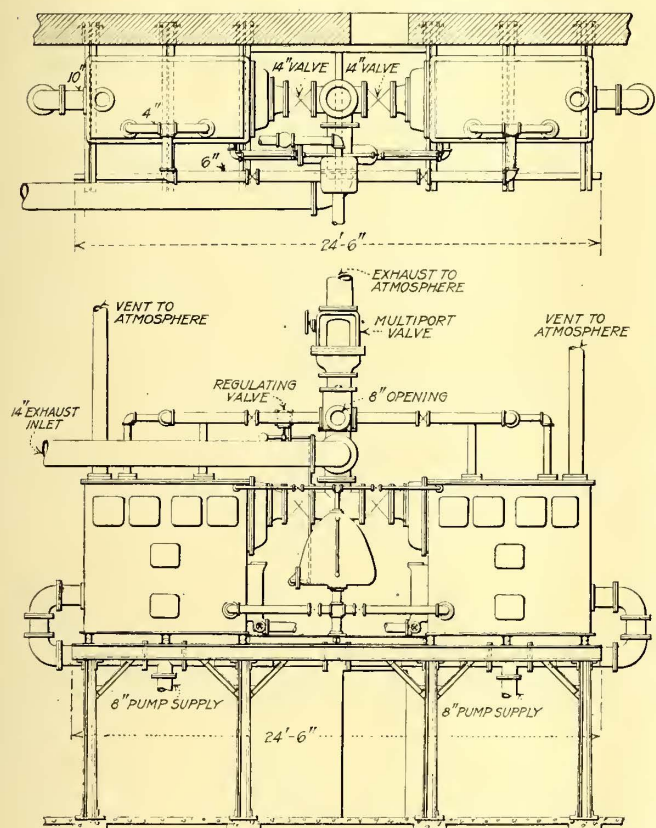
furnaces through a 5-ft. x 6-ft. conduit in the floor directly in front of the boiler setting as shown in cross-section in one of the figures. Soot pockets were also placed under the boilers.

The air supply is from two Sturtevant multivane fans driven by steam turbines of 113 b.hp. capacity. Each fan has a rating of 55,000 ft. per minute at 6 in. of water pressure, if needed, the usual value being 4 to 5 in. The fans are 44 in. in diameter and the speed is from 1400 to 1500 r.p.m., being controlled by means of an automatic regulator which in turn is controlled by the steam pressure.

The changes in the Niagara Street power plant are, of course, rather special. The material source of power for the International Railway is the water power in which the neighborhood abounds. However, the

restrictions upon the use of this water power imposed by the government are such as to make necessary the use of steam power, and this condition will presumably continue for many years to come. In addition the water power is necessarily sold on a "firm power," or twenty-four-hours-per-day basis, very high charges being made for excess power. This makes it economical to use a steam plant which is less economical than one designed to furnish the entire power supply for an electric railway.

Only occasionally would it be necessary to install



DOUBLE-UNIT ARRANGEMENT OF FEED WATER HEATERS AND PURIFIERS MOUNTED ON FRAMEWORK SUPPORTED BY OLD TROLLEY POLES

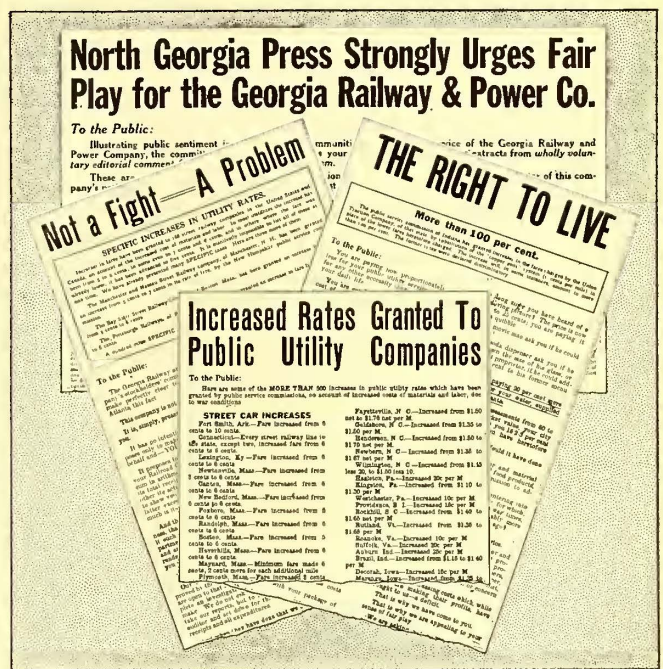
a steam turbine under space restrictions as occurred in the present case. However, there are general lessons to be learned from such special cases, particularly when the exigencies of war time require unusual ingenuity in accommodating material in hand to the time and space requirements. Special credit is due G. W. Dunlap, superintendent of power of the company, for the design and carrying out of the layout of this extension to the plant. A part of the output of this plant will be used for the operation of the new high-speed line between Buffalo and Niagara Falls.

Various ways of cleaning brake rigging are used in different shops. Most companies use elbow power and a few use acid. However, Jesse M. Yount, master mechanic, United Railroads of San Francisco, has a still more effective way. The dirty, incrustated brake rigging is simply put into a furnace until it reaches a cherry red heat, by which time all of the dross has been burnt off.

Stockholders Tell Atlanta's Story Why the Georgia Railway & Power Company Needs Higher Rates Is Aply Set Forth in a Newspaper Campaign Covering Northern Georgia

WHILE the Georgia Railroad Commission is the only body legally empowered to grant relief, the Georgia Railway & Power Company, Atlanta, Ga., has naturally been anxious to have the general public know the facts in regard to its pending application for increased rates. Hence it began during the middle of April an intensive newspaper campaign to show why it needs higher rates for gas, electric light, electric power and electric railway service, the new charges for the last covering a 6-cent fare and a 2-cent transfer charge in the city of Atlanta.

The most striking feature of the newspaper campaign is the fact that the advertisements, frequently of full-page size, were signed by a committee of stockholders, all of them being prominent Georgians. It was felt that this method, if any, would make it clear that the company was not merely a corporation but a group of sincere investors, many of whom were personally interested in the prosperity and the well-being of northern Georgia. The signers were aided by the manage-



SPECIMENS OF ADVERTISEMENTS USED BY GEORGIA RAILWAY & POWER COMPANY TO TELL STOCKHOLDERS' STORY

ment in securing the basic data, and the copy itself was written by an Atlanta publicity man.

The advertisements, of which specimens are shown in the accompanying illustration, have taken up in turn the different branches of the company's activities. In one electric railway advertisement, the company published a long list of cities in which fare increases had been granted. In another it commented on the reasons for this general tendency, and in a third it discussed increases in the cost of newspapers and other articles. In a fourth it gave specific examples of increases in the cost of labor, including a 41.4 per cent increase (\$52,890) in its own payroll and that of the Atlanta Gas

Light Company for April, 1918, as compared with April, 1916. Other advertisements quoted the recent correspondence between President Wilson and Secretary McAdoo, and the monograph of John Skelton Williams.

During the campaign the Atlanta newspapers made no editorial comment on the merits of the case, apparently waiting for developments at the hearings before the commission. The papers of northern Georgia, however, are giving the company strong editorial support under such captions as "Let Us Be Reasonable," "A Just Claim," and "Demands of Justice Must Be Met."

As far as the merits of an increased fare for Atlanta are concerned, it may be pointed out that straight 5-cent rides in that city are now as long as 9.5 miles, and with transfers 18 miles or more.

Car-Entrance Street Signs at Pittsburgh

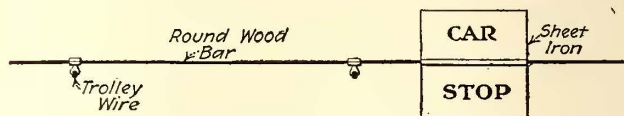
IT WILL be recalled that in the Jan. 5 issue of the ELECTRIC RAILWAY JOURNAL an article by J. F. Layng on "Engineering and Selling Principles Applied to Electric Railway Transportation" directed attention to the ride-selling and time-saving advantages of 100-per cent installation of stop signs and to the location of such signs directly at the car entrances.

P. N. Jones, general manager Pittsburgh Railways, may point with pride to his anticipation of this suggestion, for about two years ago the company began to install "stop" signs, in regard to which it said in a circular to the public:

"Car-Stop Signs.—Have you noticed the round car-stop signs? The motorman stops his car so that it

comes directly under this sign. Will you co-operate with us in saving time by standing directly underneath the sign?

"Car-Stop Signs at Congested Traffic Points ('First Car,' 'Second Car,' 'Third Car') mean that a car stopping at these points will make its stop under the 'First Car' sign if possible. If a car is already at that point it will stop under the 'Second Car' sign. If both places are taken, the car will stop at the 'Third Car' sign.



SKETCH OF PITTSBURGH RAILWAYS' CAR STOP SIGN

Thus, if necessary, three cars can be loaded at once without loss of time. Save time for yourself and others by being at the proper point when the car stops.

"Cars having made a stop under one of these signs will make no additional stop at the same loading point."

The accompanying reproduction of a page from the same circular also shows that the Pittsburgh Railways is doing all it can to promote faster interchange and speedier transportation of its passengers by direct appeal to the passengers themselves.

The stop signs now being installed are of the more convenient rectangular form, as illustrated, in preference to the round shape.

Key Route Went Over the Top Through Good Inside Work

THE San Francisco-Oakland Terminal Railways, Oakland, Cal., was brilliantly successful in securing a 100 per cent subscription to the third Liberty Loan. Nineteen hundred employees bought \$113,150 of bonds, which compares with 708 subscribers for \$44,800 of the first loan and 280 subscribers for \$18,500 of the second loan. The bonds are carried on the basis of payment in ten monthly installments.

The local Liberty Loan committee offered to send four-minute orators around, but the company decided that it would be better to do the work through the department heads who knew the status of each man in his department better than any outsider could. In some cases where an outsider might create a feeling of resentment, the company official would inspire the desire to seek counsel. Each department head acted as a chairman of a sub-committee. The plan of working from the inside as a great family proved thoroughly satisfactory, and was the occasion of a banquet by W. R. Alberger, general manager of the company, to the department heads and their co-workers on the department sub-committees.

Thus arose the Key System War Savings Society which also came through 100 per cent perfect in the second Red Cross campaign. It is now conducting whist parties at which the prizes are Thrift and War Savings stamps. Any profits from dances and other entertainments, to which the public is invited, also are devoted to win-the-war purposes. The volunteer for all this war financing is S. H. Pickhard, purchasing agent and assistant to Mr. Alberger.

Do You Know?

Some Things the People Can Do to Improve the Service:

The cars on each route are spaced at equal intervals at the beginning of each trip. Every car is operated on a definite schedule. Most irregularities in service may therefore be attributed to circumstances over which we have no control.

You, the People, can remove many of these circumstances by—

Boarding and alighting from cars promptly. Not insisting on unnecessary stops.

Providing legislation to keep wagons off the track.

Advocating "One-Way Traffic" where it is possible, and Switches, Curves and Loops to permit the use of "Pay at Entrance Cars."

There are two sides to every story. Poor service hurts us as well as you. Constructive criticism is invited.

EXTRA CAR STOPS—A LOSS TO EVERYBODY

The location and number of car stops are arranged for the greatest good to the greatest number. Any additional stops are a loss because—

Car Stops Lose Time:—The average delay to a car is 15 seconds per car stop. It does

not take many stops to lengthen the time of a trip by several minutes.

Every Stop Means a Slow Down and a Start.

Stopping the Car is Uncomfortable to Passengers:—Passengers must brace themselves against the change in motion in stopping a car.

Stops are Noisy:—The rubbing of the brake shoes on the wheels and the operation of the braking mechanism unavoidably increase the noise.

REMINDERS

Please have the exact fare ready before boarding car.

Please do not block the doorway of the car.

Please move up front.

Please leave by front door.

Do not forget to ask for your transfer upon paying fare.

Avoid misunderstanding by always stating the number of fares paid.

Our motto is "Safety Always." Make yours the same.

Remember that we seek your co-operation to prevent accidents to yourself and others.

Zone System Does Not Cause Congestion

Of-Repeated Analogy Based on European Cities Is False—City Congestion Abroad Is Due to Other Causes—Zone System Is Apparently Needed Here

BY FRANK PUTNAM

The North American Company, New York, N. Y.

HERE is a typical editorial comment: "The zone system of street car fares, as a practical proposal for ———, is not even worth talking about. It would be certain to have the effect of herding population in the inner zones, discouraging expansion and suburban growth and creating a new and acute housing problem. It would be a long step backward."

The opinion quoted above is the one commonly held and thoughtlessly uttered by most Americans who have made no practical study of electric railway service. Persons who express such an opinion as if it were indisputable and conclusive of debate on the subject usually cite European cities as proof of the tendency of the zone system to foster congestion.

EUROPEAN CONGESTION NOT DUE TO ZONES

It is true that most of the larger European cities have the zone system of car fares, both on municipal and on company-owned lines. It is true also that most of them are more densely populated than any except one or two of the largest American cities.

But these old cities of Europe had their congested areas long before the first electric railways were built. The zone system did not cause their congestion and has not added to it. On the contrary, it has helped relieve it.

The chief cause of congestion in European cities, before recent times, was their people's need to huddle together within restricted city walls for protection against military attack. The chief contributing cause, within recent times, has been the heavy cost of providing other public services which must be supplied whenever the extension of cheap transportation into outlying regions enables a considerable group of persons to make homes there. New residential districts of this kind must be provided, at the expense of their occupants or of the city as a whole, with drains, sewers, gas, electric and telephone services, pavements, sidewalks, schools and other communal buildings.

During the last forty or fifty years most of the larger cities of central and western Europe have been trying to control city growth, in conformity to scientific city plans, to the end that the people should get ample good service of all kinds without waste of their meager earnings in the construction of such services over larger areas than were actually needed. They have tried to keep down the "overhead," the fixed costs of living cleanly and comfortably in cities. European cities west of Russia have during that period been far more active than most American cities in procuring comfortable, healthful and economical housing for the people. Compared with them, our own cities, like Topsy, may be said to have just "grewed."

In most of the larger American cities there has been a vast waste of public and private capital through the

abandonment of comfortable residential districts relatively near to the city centers and through the creation, for the housing of the same population, of new residential districts farther out. Our city governments have permitted obnoxious industries to destroy, without recourse, the residential value of hundreds of thousands of comfortable small homes paid for by wage earners through long years of painful if commendable self-denial. We have permitted the makers of needless smoke and noises to destroy the residential usefulness and value of large sections once inhabited by the rich. We have only too often seen large areas degenerate into "blighted districts," unprofitable to their owners and injurious to the community as a whole.

The new outlying and suburban residential districts, always farther and farther out, have as a rule been planned and sold upon the quaint assumption that the railways would always, world without end, be able to carry their residents to and fro, regardless of length of ride, for a flat 5-cent fare. When I contemplate this fact, I am puzzled to account for any public hostility to electric railways, since in this respect at least the public appears to have shown more faith in the railways' ability to perform miracles than many have in the miracles of the Holy Writ.

The steadily increasing length and cost of the average street car ride, however, have broken down that ingenious assumption. The electric railways of the larger American cities have exhausted their power to perform this miracle for the profit of the developers and purchasers of outlying residential districts. War costs did not cause the breakdown; they merely hastened it a year or two.

ZONE SYSTEM IS APPARENTLY NEEDED

From one end of the country to the other agencies created by the public are engaged in readjusting oldtime street car fares to new demands upon the service. The most far-sighted of these public authorities are trying to procure the adoption of a fare basis which will not only meet the present emergency but, being flexible and equitable, will provide for future city expansion. This apparently means the gradual and general introduction of the zone system.

Habit is a hard master. The American people have the habit of paying a flat-rate fare. It is possible that they may prefer to continue paying such a fare, no matter how high the actual cost of the service may carry it. It is possible, on the other hand, that when the subject is better understood, the public will prefer a zone system—the same rule as is applied in buying steam railroad rides, gas, electricity, shirts, sugar, shoes, newspaper advertising space or anything else except street car service.

In this connection the Missouri Public Service Com-

mission, in its recent order establishing a 6-cent fare for the United Railways of St. Louis, said:

"The adoption of a zone system of fares, with a reduction in the fares for short rides to 3 cents or 4 cents and an increase in the fares for long rides approximately proportional to the distance traveled, would offer the most equitable solution, although it would entail some readjustment of real estate values and would undoubtedly be opposed at present by a large portion of the people of the city. Moreover, it would probably require the reconstruction of the cars at considerable expense, so as to permit of the 'pay as you leave' system of collecting fares, in place of the 'pay as you enter' system.

"The company is averse to the adoption of the zone system at this time. Under all the circumstances we have concluded, for the present at least, to retain the system of uniform rates for all distances within the city limits, though we urge upon both the city and the company a careful consideration of the zone system, with a view to its ultimate adoption, *as soon as the public can be brought to a realization of its advantages.*"

That puts it up to the company to sell the zone system to the public, just as it lately sold the public its need, in the public's interest, for a higher fare and lower taxes. It is another job of straight salesmanship, through the advertising columns of the newspapers. In effect, the commission says to the company:

"We know, as you do, that the zone system is the only fair way to sell street-car service. We realize that the 6-cent flat fare is the easiest way for you to get the necessary revenue to pay good wages, give good service and pay your investors a fair return. We realize that your present troubles would probably be doubled if you tried to get the necessary revenue by making a radical change in the system of fares without first explaining it to the public. But any time you make the public see the advantages of it, we are willing to order the change made."

This can easily be done. It certainly is not unreasonable to ask the utility to sell its propositions to the public before it asks regulatory agencies to approve them.

How Autos Steal Morning Travel

WHEN a certain Pacific Coast railway analyzed its traffic losses on an hour-by-hour basis it made the discovery that almost all the loss was from 7.30 and 9 a.m. In fact, the difference between the town-bound and home-bound travel was nearly 20 per cent. This difference was due entirely to the fact that in the morning many people while standing at corners or walking forward were picked up by their auto-owning neighbors. In the evening, however, there were many less pick-ups because autos, in the downtown section, radiate in every direction and it is therefore harder to single out the machine that is going to any particular district. So the tendency is to take the street car at once.

This condition of affairs has satisfied the railway that car-in-sight operation is the only way to regain the business. Naturally, this means modern one-man car operation, which is now being planned for the entire community.

Simplified Milk Ticket Devised

SIMPLICITY and economy are the strong points of a new combination milk and cream ticket that has been invented by Raymond C. Fiscus, chief clerk passenger department, Lake Erie & Western Railroad Company, Indianapolis, Ind. The ticket combines in one form the features for which, under the ordinary ticket system, as many as eleven forms are sometimes required.

The ticket, as shown in the accompanying illustration, contains an agent's stub, a coupon for the transportation of the full container and a coupon for the return of the empty container to the point of origin. In the margin of each coupon are shown the sizes of the containers ordinarily transported, 5, 8 and 10 gal., and the contents, milk and cream. By simply folding the ticket on the perforated lines between coupons and canceling by punch, the agent indicates the size of the container and the contents in his stub and in each coupon.

Patent applied for		©	
SPECIMEN			
Good for Return of			
ONE EMPTY CONTAINER			
Originally Shipped			
From	.....	CALLONS	5 *
To	.....	CALLONS	8 *
123456	.....	CALLONS	10 *
98765	.....	MILK *	
		CREAM *	
This coupon must be left attached to the container to cover its transportation to destination.			
Agent at destination will detach and send to Auditor			
Form C M 1		Gen'l Passenger Agent	
SPECIMEN			
Good for Transportation of			
ONE CONTAINER			
of the capacity and containing the commodity indicated by punch marks.			
From	.....	CALLONS	5 *
To	.....	CALLONS	8 *
123456	.....	CALLONS	10 *
98765	.....	MILK *	
		CREAM *	
This coupon will be detached by insurance of this handling shipment into destination and turned over to Train Conductor for cancellation and forwarding to Auditor			
DATE			
Form C M 1		Gen'l Passenger Agent	
SPECIMEN			
AGENT'S STUB			
From	.....	CALLONS	5 *
To	.....	CALLONS	8 *
123456	.....	CALLONS	10 *
98765	.....	MILK *	
		CREAM *	
Forwarding Agent will indicate whether MILK or CREAM and the capacity of the container by folding the ticket and punching the two coupons face to face and punching in the proper place.			
Issuing Agent will detach this stub and retain it for his record.			
Form C M 1		AMOUNT	

SIMPLIFIED MILK TICKET
USED BY LAKE ERIE
& WESTERN

The new form has already been adopted by several steam railroad lines and is being carefully studied by the representatives of many others.

The points of origin and destination are filled in with pen and ink or by rubber stamp. In cases where the volume of shipments require it, a printed form can be used. The going portion of the ticket is detached by the train baggageman handling the shipment into its destination and is forwarded to the auditor. The return coupon remains attached to the container and is authority for the train baggageman to carry it to the point of origin. Here the agent detaches the coupon and forwards it to the auditor, thus completing the office record of the movement.

The new form has already been adopted by several steam railroad lines and is being carefully studied by the representatives of many others.

Safety Code for Building Construction

The United States Bureau of Standards has in preparation a set of safety and sanitary requirements for federal industrial establishments which should prove helpful to electric railway men. These have been prepared by the safety engineers of the United States arsenals and navy yards. The code will contain sections on ventilation; heating and lighting; doors and windows; stairs and ladders; floors and floor openings; railings, platforms, runways and tunnels; cranes and elevators; roofs, skylights and elevated tanks; railroad tracks and clearances; drydocks, and general matters. The rules will occupy a pamphlet of slightly more than 100 pages and should be available soon.

Saving that "Extra Shovelful of Coal" by Increased Coasting

The Writer Describes the Experiences and Results
Obtained by the Use of Coasting Recorders in Denver

By HARRY C. KENDALL

Formerly Efficiency and Traffic Engineer, Denver (Col.) Tramway

THE theory that the amount of coasting obtained is a relative measure of the saving in power and brakeshoe wear that can be expected and indirectly brings about other economies in car operation is well known.

In the ELECTRIC RAILWAY JOURNAL for Jan. 29, 1916, page 215, it is stated that the Interborough Rapid Transit Company, made annual savings in fuel, water and brakeshoes through coasting as follows:

Coal and water—subway—16.8 per cent.....	\$174,000
elevated—10.4 per cent.....	67,000
Brake shoes—subway.....	36,000
elevated.....	16,000
	\$293,000

On the Denver Tramway System the absence of complete records of power used for car heating and auxiliaries makes it impossible to calculate the exact saving in power effected by the use of coasting recorders, but a most conservative estimate of the annual saving in coal is more than \$15,000. The annual saving in brakeshoes averages more than \$1,500. The annual expense of the follow-up system, inspection and maintenance is about \$4,000, which leaves a net annual saving of more than \$12,500, sufficient to amortize the investment in about two years.

With the present increased cost of fuel and brakeshoes the opportunity for savings is greatly increased. It is the purpose of this article to relate some of the Tramway Company's experiences with coasting in the hope that they may be of value to other street railways.

COASTING PRODUCED QUICK RESULTS IN POWER SAVING

Coasting recorders were installed on the Denver Tramway System in December, 1912, at which time the average coasting was about 10 per cent. In 1913 the coasting per cent jumped to 28, and the total kilowatt-hours per car-mile dropped from 3.06 for 1912 to 2.88 for 1913, in spite of increased use of power for heating and auxiliaries. The cost of brakeshoes dropped from \$5,255 to \$3,880.

In 1914 the increase in coasting was only slight, namely to 29.35 per cent and, although the power used for purposes other than traction was still further increased the total power consumption was reduced to 2.89 kw.-hr. per car-mile. Brakeshoe this year cost \$3,720.

In the "spring drive" of 1915 the coasting was driven up rapidly, reaching a maximum of 42 per cent in August. The average for the year was 39 per cent and the power consumption was reduced to 2.68 kw.-hr. per car-mile. Brakeshoes cost only \$3,230 that year.

In the latter part of 1915 it was decided to make a thorough investigation of the whole matter for the purpose of convincing some of the doubters that the claims made for coasting were well founded. In the meantime the system in effect, with respect to coasting averages, was suspended. A committee of four motormen, three of whom felt strongly that the existing basis was unsatisfactory, was appointed to investigate the coasting problem. The Railway Improvement Company co-operated heartily, sending two engineers to assist us, and we went into the question with a determination to get all the facts and to put our coasting on a basis that would command the loyal support of every trainman. Every question asked by the committee was openly investigated and frankly answered. For example, certain members of the committee questioned whether coasting percentage is a direct and reliable indication of power economy. In answering this question it was first explained that theory indicated three ways of saving power with a given equipment on a given schedule:

1. Increasing the rate of acceleration.
2. Increasing the rate of braking, particularly at the lower speeds.
3. Making fewer or shorter stops.

Further, it was claimed that if 10 per cent of power were saved in any one of these ways an increase of approximately ten points in coasting percentage would result. Consequently it appeared clear that if power were saved by any combination of the three, it would be directly reflected by coasting percentage.

To prove whether practice bore out theory, we made a number of tests on a car equipped with a watt-hour meter and coasting clocks. The tests were planned also to clear up another point. Some of the trainmen believed that the coasting recorder should be connected so that it would not stop when the brakes were applied. Consequently, the tests were arranged to prove two things: (1) That per cent coasting does give a direct indication of power economy. (2) That per cent coasting-plus-braking does not give a direct indication of power economy.

In other words, two trips, one efficient and one inefficient, were laid out as indicated in the speed-time graphs, Fig. 1 on page 52. The results of the tests are shown in Table I on page 53.

COMPREHENSIVE TEST PROGRAM LAID OUT

It will be noted that in both these tests the increase in coasting percentage is very nearly equal to the per cent decrease in power, whereas, the increase in coast-

ing-plus-braking bears no relation to the decrease in power.

These tests, together with statistics of power consumption and coasting for the system, disposed of these two mooted questions, and incidentally established some confidence in the practicality of speed-time curves and office calculations, as the results of the tests had been accurately forecasted.

COMMITTEE CONVINCED ITSELF AS TO THE VALUE OF COASTING

In this same spirit of "show me," every question raised was investigated, with the result that the members of the committee absolutely convinced themselves and made a unanimous report strongly recommending coasting as a basis of efficiency rating, pointing out remedies for the few really objectionable features in our old method of application.

An abstract of some of the most important points

There was an impression among some of the trainmen, that in order to obtain a high coasting record it is necessary to operate the car roughly. While it is true that rapid acceleration and braking, if not done carefully and skillfully, undoubtedly result in rough handling of the car, this is not necessary. Indeed, it was found that "high coasters," as a rule, operate their cars smoothly. The committee emphasized also that the conductor has it in his power greatly to increase the coasting percentage with resultant reduction in power consumption, or greatly to increase the average speed, by giving the starting signal promptly and the stop signal as early as possible.

Since high coasting means low power consumption, and since a very considerable part of the expense of maintenance of electric equipment of cars is due to the heating of the motors, it is logical to expect that an increase in coasting means a decrease in car maintenance. As a matter of fact, as shown by Table III,

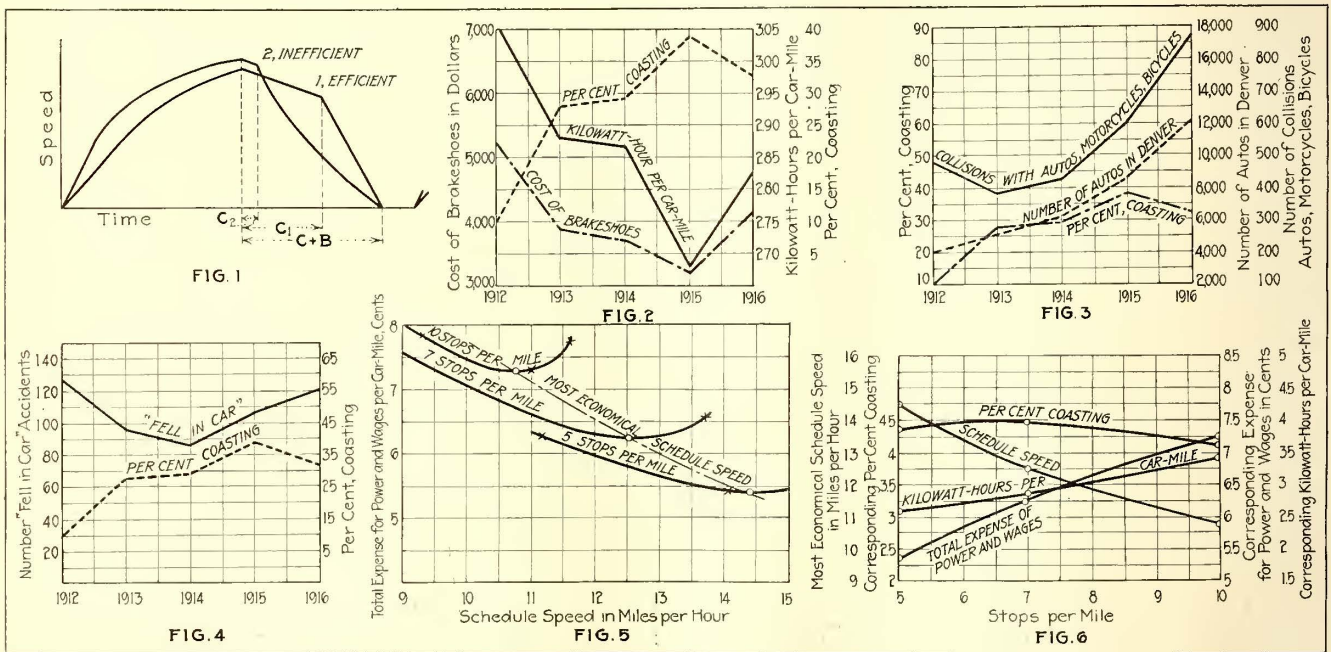


Fig. 1—Coasting-plus-braking is not a correct measure of power economy.

Fig. 2—Power consumption and cost of brakeshoes decrease as coasting increases.

Fig. 3—Relative number of collisions decreases as coasting increases.

Fig. 4—Accidents in the car bear relation to the per cent coasting.

Fig. 5—Graphical determination of most economical schedule speed.

Fig. 6—Graphs of best coasting with variation in schedule speed, power and cost.

GRAPHS SHOWING HOW INCREASED COASTING AFFECTS OPERATING RESULTS

covered by the report may be of general interest. In the first place our statistics of power consumption and of coal used for the past five years, as well as special tests which the committee made, prove conclusively that the power required to run the cars decreases almost directly as the coasting percentage increases. Table II and Fig 2. show that the power consumption in kilowatt-hours per car-mile decreased each year that the coasting increased, and, for the year 1916, when the coasting percentage decreased 6.57 points the power increased 5.90 per cent.

A comparison for three months of 1916 with the same three months of 1915 follows:

	Per Cent. Decrease in Coasting	Per Cent. Increase in Power
October	11.23	13.2
November	10.59	14.4
December	10.55	11.1

the cost of maintenance of equipment during the past six years was the lowest the year that coasting was the highest.

HOW ENERGY IS SAVED IN CAR OPERATION

The committee also recommended that in approaching special work or curves the car be operated in the same general way as when approaching stops, that is, by coasting as far as practicable, then braking rapidly but releasing the brakes just before reaching the curve or special work. The coasting that saves power is coasting to stops and necessary slow-downs. Coasting down to low speed when slow-downs are unnecessary wastes time and is only possible where schedules are too slow or loads unusually light.

It appears reasonable, furthermore, that coasting should decrease collisions, as with high coasting the

maximum speed will be less and power will usually be off at street intersections or wherever there is a possibility of a collision. Accident statistics on the Denver Tramway for the past five years, as shown in Table IV and Fig. 3 indicate that the relative number of collisions decreases as coasting increases. The statistics show that in general the number of persons falling in cars has decreased as the coasting increased. See Table V and Fig. 4.

The committee felt that full value of the coasting clocks can be obtained only by publishing the records of percentages, by divisions, lines and individuals, recommending that, in publishing the individual records, some system be devised to make allowance for

In accordance with the committee's recommendations meetings were held which all trainmen were expected to attend, and these men were allowed time for this attendance. At these meetings the committee members explained in clear and convincing talks the results of their investigations. The effect was immediate; the coasting percentage being increased two points the following week. "Bogie setters" were elected as recommended by the committee, and these men have established bogies for each kind of run on every line.

A coasting instructor was also appointed for each division. These instructors are virtually captains of the division teams, among which teams there is keen rivalry. Coasting averages of the four divisions are

TABLE I—TEST RESULTS SHOWING RELATION BETWEEN PER CENT COASTING AND POWER SAVING

	Inefficient Operation	Efficient Operation	Inefficient Operation	Efficient Operation
Running time, minutes.....	52.75	54.00	54.80	55.00
Coasting time, minutes.....	3.05	11.80	3.00	12.20
Coasting and braking time, minutes.....	18.30	22.30	21.75	21.80
Total number of stops.....	60.00	60.00	60.00	60.00
Total duration of stops, minutes.....	5.37	5.45	5.93	5.25
Total kilowatt-hours.....	32.70	26.6	29.70	25.50
Stops per mile.....	6.10	6.10	6.10	6.10
Average duration of stop, seconds.....	5.40	5.50	5.90	5.30
Average speed, miles per hour.....	11.20	10.90	10.80	10.75
Per cent. coasting.....	5.80	21.80	5.50	22.20
Per cent. coasting and braking.....	34.70	41.30	39.60	39.60
Increase in per cent coasting.....	.....	16.00	.....	16.70
Increase in per cent. coasting and braking.....	.....	6.60	.....	.....
Per cent saving in power.....	.....	18.90	.....	14.50

TABLE II—EFFECT OF COASTING ON POWER CONSUMPTION AND BRAKESHOE COST

Year	Car-Miles	Kilowatt-Hours	Average Weight of Car, Tons	Kw.-hr. per Car-Mile			Coasting, Per Cent	Cost of Brakeshoes
				Actual	For 16.72 Ton Car	Per Ton Car		
1912	12,247,087	37,450,220	16.72	3.06	3.06	10.00	\$5,255	
1913	12,231,533	35,126,800	16.70	2.87	2.88	28.00	3,880	
1914	12,112,135	34,863,037	16.79	2.88	2.87	29.35	3,720	
1915	11,899,536	32,212,000	16.93	2.71	2.68	39.00	3,230	
1916	12,196,217	34,946,100	16.93	2.87	2.83	32.93	4,170	

TABLE III—MAINTENANCE OF EQUIPMENT, ACCOUNTS NOS. 30, 32 AND 33

Year	Cost per Car Mile, Cents	Per Cent. Coasting
1911	*1.09	about 10.00
1912	*1.03	about 10.00
1913	1.10	28.00
1914	1.13	29.35
1915	0.84	39.00
1916	0.88	32.93

*Maintenance costs low in 1911 and 1912 on account of new cars bought in 1909 and 1910, and parts of old trucks used for repairs the following two years.

the inequality of the various runs, as regards possible coasting. It also emphasized the importance of careful attention to brakes, controllers and air valves.

BOGIES ESTABLISHED BY THE MEN THEMSELVES

Finally the committee recommended that two motor-men from each division be elected by the trainmen, from a number designated by the division superintendents, to establish coasting "bogies" or standards for each run, the candidates to have the following qualifications: (1) Creditable accident record; (2) ability to maintain his schedule; (3) ability to operate efficiently and to make a good coasting record; (4) personality necessary to accomplish results in instructing others. Further it was recommended that, after the bogies have been established, one of the eight men be appointed to continue the work of modifying the bogies to meet changing conditions and to act as coasting instructor.

TABLES IVa AND IVb—EFFECT OF COASTING ON ACCIDENTS (Collisions with Automobiles, Motorcycles, Bicycles)

Year	Coasting, Per Cent	No. of Collis. Autos, Bicy., Motorcycles	No. Autos in Denver	1916		Collisions Autos, Bicy., Motorcycles
				Coasting, Per Cent	Collisions	
1912	10.00	467	4,000	January.....	36.10	61
1913	28.00	390	4,968	February.....	37.33	38
1914	29.35	436	6,120	March.....	37.28	48
1915	39.00	596	8,575	April.....	36.42	65
1916	32.93	877	12,200	May.....	35.18	55
				June.....	33.75	53
				July.....	32.02	72
				August.....	31.31	97
				September.....	30.14	91
				October.....	29.92	73
				November.....	29.36	107
				December.....	26.35	117

TABLES Va AND Vb—EFFECT OF COASTING ON ACCIDENTS ("Fell in Car")

Year	Coasting Per Cent.	No. Fell in Car	1916		No. Fell in Car
			Coasting, Per Cent	No. Fell in Car	
1912	10.00	126	January.....	36.10	10
1913	28.00	94	February.....	37.33	13
1914	29.35	87	March.....	37.28	8
1915	39.00	108	April.....	36.42	10
1916	32.93	119	May.....	35.18	12
			June.....	33.75	18
			July.....	32.02	11
			August.....	31.31	7
			September.....	30.14	11
			October.....	29.92	8
			November.....	29.36	10
			December.....	26.35	11

TABLE VI—DATA FROM SPEED-TIME CURVE Single Car (23 Tons) Level Track—10 Stops per Mile—3-Sec. Stops

Kw.-Hr. per Stop	Kw.-Hr. per Mile	Duration of Run, Min.	Schedule Speed, M.P.H.	Wages per Mile at 30 Cents per Hour	Cost per Mile @ 1 Cent	Total Expense	Per Cent Coasting
0.263	2.63	38.8	9.3	6.47	1.35	7.82	62.5
0.37	3.7	32.7	5.45	5.65	1.85	7.30	32.8
0.52	5.2	31.	11.6	5.17	2.6	7.77	.....
0.34	3.4	33.4	10.75	5.58	1.7	7.28	41.2

shown graphically every day on a big chart at division headquarters.

We also put into effect a very complete follow-up system, through which effort is concentrated on the "low" men. Personal instruction is supplemented by special letters to the trainmen explaining the "why" and the "how" of coasting and encouraging them to greater effort. Concurrently with this work, and through the co-operation of the University of Colorado, two senior students calculated the most economical speed, per cent coasting, etc., for one of the standard motor cars, with and without trailer, on various grades and for various numbers of stops per mile.

The method of calculation was practically that described by C. C. Chappelle in the ELECTRIC RAILWAY JOURNAL of Jan. 15, 1916, and consisted in determining for what speed the cost of platform labor plus power is a minimum, under the various conditions, and then calculating the per cent coasting, etc., corresponding to

this speed. Table VI and Figs. 5 and 6, illustrate the method. Referring to Fig. 6, it will be noted that for runs of widely different length, and for which the most economical schedule speeds and power consumption vary through wide limits, the most economical coasting percentage varies but little.

The work along these lines has been well worth while. In the first place, by giving the trainmen an opportunity to convince themselves that coasting is a correct basis for efficiency rating, we secured their hearty co-operation. The result is that we are now getting a satisfactory percentage of coasting and excellent economy considering the large number of new motormen the war has obliged us to take on; and we are getting this with enthusiasm. In the second place we have convinced ourselves that while the maintenance of bogies and the theoretical calculation of the most economical speed and per cent coasting are desirable, they are by no means essential to the satisfactory operation of the coasting recorder system. The reason for this is that there is very little danger even with the present high cost of fuel, that the actual schedule speed will be too high for maximum economy, especially when we give due consideration to the intangible value of high speed. With the schedule speed set as high as can be made with safety and reliability, there is necessarily a margin of time. This margin can be wasted by inefficient operation or it can be taken up in coasting, thus giving the maximum economy. It is remarkable how uniform this margin will run on any schedule that is reasonably "tight." A "good coaster" will average 35 per cent on a run that is so fast that green men have difficulty in making the time.

The coasting recorder simply tells the motorman and the manager how this margin, which is a necessary factor in electric railway operation, is being used. How it is used makes a difference of from 10 per cent to 20 per cent in the coal bill.

Something for the Hun to Think About

THE organization of five new regiments and nineteen battalions of railway engineers, to be used in addition to the regiments already working in France, is being completed by the staff of the Director General of Military Railways, Samuel M. Felton. The work has been done in conjunction with the Engineer Corps. When the new forces are put on duty there will be 50,000 Americans engaged in railroad construction and operation in France. A total of \$160,000,000 has been spent on railway materials alone, this sum not including supplies for the Engineer Corps proper.

Early in 1917 the Chief of Engineers decided to organize a railway operating regiment. This regiment formed the nucleus of the present railway organization. While it was being formed the United States entered the war. One of the first requests transmitted to this government by the French mission was for assistance in strengthening the French railway systems to meet the increasing war train. This request was made in April, 1917, and early in May Mr. Felton was called to Washington to organize nine railway regiments.

The \$160,000,000 used for railway supplies has gone for such items as 1727 engines, 22,630 freight cars, and 359,000 tons of steel rails.

Do Not Neglect the Return Circuit

H. T. Bell at Pacific Railway Club Meeting Said That More Attention Should Be Paid to the Track Return in the Interest of Economy

AT THE "Electric Railway Night" meeting of the Pacific Railway Club held on June 13 Herbert T. Bell, electrical engineer San Francisco-Oakland Terminal Railways, put in a powerful plea for more careful design and maintenance of the return circuit, pointing out that it is illogical to concentrate attention on the overhead altogether and neglect the return circuit.

Mr. Bell devoted his paper largely to a discussion of types of bonds and methods of installing and maintaining them. Among other good things he said that no bond can have an appreciable life on a mechanically poor rail joint. The details are to be settled as a compromise of conflicting requirements. For example, on comparatively poor joints, the conductor joining the terminals should be long and flexible. From an electrical standpoint, as well as an economic one, the conductor should be as short as possible. With respect to corrosion, the conductor should be a circular solid piece of a non-corrosive metal (which is not flexible but presents the least area to corrosion). In its electrical characteristics the metal should have a low coefficient of resistance, while from the economic standpoint it should be inexpensive.

Mr. Bell mentioned some general precautions and practices in connection with plug terminal bonds. In installing these only accurately ground drills should be used, and these should be entered at right angles to the rail web and should produce a smooth finish in the hole. Where rails are furnished with the bond holes punched or drilled, these holes should be small enough so that they can be reamed, thus exposing entirely clean metal when the hole is of its proper size. The bonds must not be installed in other than freshly drilled or reamed holes, and no oil should be used in drilling because oil is an insulator. A solution of salt and water is a good lubricant for drilling. Tinning, soldering or amalgamating the contact surfaces improves the union and decreases the contact resistance by an average of from 15 to 18 per cent. When terminals are compressed, care should be taken to see that the compressor is applied at the center of the stud and that its axis is at right angles to the web of the rail. Where bonds are applied under rail joint plates, care in installing them may produce big savings either in preventing the losses which follow the use of poor bonds or in saving the expense of removing and replacing paving, spikes, bolts, and angle bars for the purpose of renewing bonds. The resistance of a well-bonded joint should not exceed 0.0001 ohm.

In conclusion, Mr. Bell said: "The grounded side of the distribution system must be designed and maintained with the same care, using the power house as the apex, as is the insulated portion of that same distribution, to gain the most efficient and economical results."

The United States Fuel Administration has inaugurated a plan to reduce waste of coal in power plants by appointing a number of district representatives who will make surveys of the power situation in their respective territories. The aim is to save 20,000,000 tons of coal by eliminating wasteful practices.

Electric Carriers Answer the Call

San Francisco Company Loads Ship Workers with Amazing Speed—Charleston Line Is Expending \$300,000 to Aid the Government—Houston Railway Is Carrying Aviators and Others

THE ways in which electric railways are serving the nation are many, in spite of the handicaps imposed by limited resources and a decreasing earning power. This journal has in preceding issues [June 1 and June 22] described the war work being carried on in Atlantic Coast and Southern cities, and this week it is adding the following series of articles to show the railway activities in government service at various other points.

Charleston Is Spending \$300,000

Sixteen Center-Entrance Multiple-Unit Type Cars Ordered for Navy Yard Service—Double Track Installed, and Automatic Substations Completed

CHARLESTON, S. C., is a city whose population has increased considerably since the opening of the war. The Navy Yard personnel has grown from 1500 to 4500. A cantonment for training sailors from 3500 to 6000 at a time has been erected. Congress has authorized a base hospital and another drydock, while the lumber mills, fertilizer works and other industries are now employing more than 5000 people.

cars. It was recognized, however, that the use of old cars singly or in pairs, particularly for the heavy service to the Navy Yard, could only be considered as temporary.

During the last two years the company had made an important improvement in track capacity by adding a 60-lb. T-rail second track $1\frac{3}{4}$ miles long between State Road-Clement's Ferry and the Navy Yard terminal. This made it possible to consider the operation of high-speed trains, the main item covered by the company's appropriation for betterments.

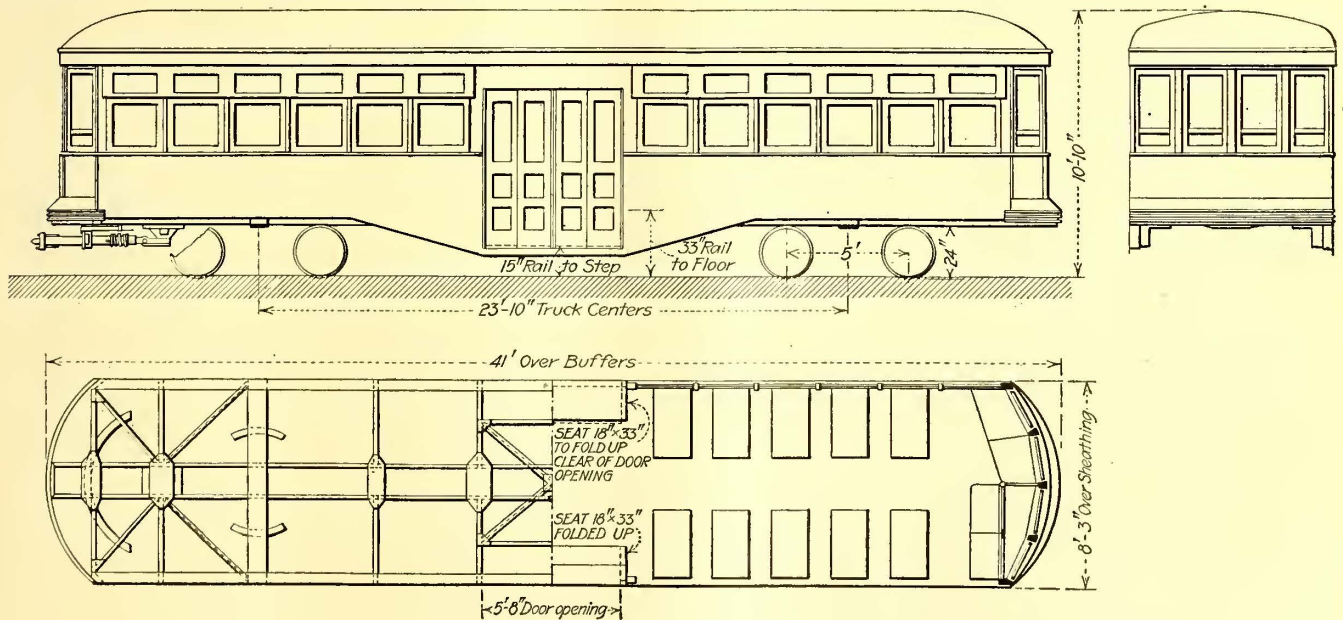
This appropriation, amounting to \$300,000, includes the following:

Sixteen double-track center-entrance cars with multiple-unit control to be run to the Navy Yard in trains of as many as four cars.

Ten one-man safety cars for city service.

Seven-track twenty-one-car storage shed (180 ft. x 70 ft.) of slow-burning wood to be constructed adjacent to the present carhouse. This will also contain the carpentry shop, the paint shop, the storeroom, the dressing room for shopmen and the master mechanic's office.

An automatic substation located $1\frac{1}{2}$ miles from the Navy Yard. It has a General Electric 500-kw. 60-cycle, 900-r.p.m. rotary converter, outdoor transformers, Condit time-limit relay, Bristol graphic recorder and Weston ammeter. This substation was opened on May 11.



CHARLESTON CENTER-ENTRANCE CAR; SIDE ELEVATIONS, PLANS AND BOTTOM FRAMING

In sum, it is estimated that from 25,000 to 30,000 people have been added to Charleston's population.

When the first accessions began a year ago, the company met them by purchasing six second-hand cars. During the last winter it also leased one motor and five trail cars from the Charleston-Isle of Palms Company, but as these had to be returned in May their place was taken by the company's own ten-bench open

At present cars are run past the two gateways of the Navy Yard, and passengers pay their fares after boarding. About 4000 to 5000 people are handled in one hour, the biggest single load being the release of 700 white women at 6.35 p.m. and 700 men at 6.45 p.m. The employees begin to leave work at 4.15 p.m., and stop at 7.10 p.m. Separate cars are furnished for all white women except stragglers; also for white and

for colored men as far as practicable. The cars are loaded heavily, and the passengers take all kinds of chances in their hurry to get away. The women on their cars are not much better than the men, although they do not climb to the roofs or stand on the bumpers.

If the company can secure permission to use some government ground at the main or upper gate for a prepayment area, loading conditions and fare collection will be greatly improved. Then the addition of the train service with air-operated car doors will produce absolutely safe boarding, riding and alighting conditions.

Train operation with one prepayment area for all Navy Yard passengers will also relieve the company's acute shortage of platform personnel. At this time twenty-five to thirty office and shop employees are used to help out in the morning, and half that number in the evening. This is especially hard on the car maintenance department, because the men do not return until 8.30 or 9 a. m. This loss of time is of genuine concern in these days.

That there is more patriotism than profit in this service may be judged from the fact that for 5 cents one may ride the 7 miles from the Navy Yard to the Battery (the downtown tip of Charleston) during the peak hours, 6 a. m. to 8.30 a. m. and 4 p. m. to 6.30 p. m. The normal 5 cent ride is between North Charleston and the Navy Yard, 2 miles. The inadequate 5-cent fare to the Navy Yard is a relic of the days when special inducements had to be offered to the government to induce it to continue such a yard in Charleston!

HOW CHARLESTON WILL GET MODERN TRAIN SERVICE

In addition to equipping six of its present steel vestibuled cars with Westinghouse HLD control for train operation, the company expects to receive after Aug. 1 six center-entrance motor cars and ten trailers, now being built by the Cincinnati Car Company. These are to be operated for Navy Yard and other heavy services in groups of as many as four cars. Progress in the art of car building and equipment manufacture is indicated by the fact that these fifty-three passenger cars will weigh but 35,000 lb., although they will carry four motors, multiple-unit control and draft rigging. The best car in use in Charleston to-day, seating only forty-one passengers, weighs 36,000 lb., although it has only two motors and type K control. The new cars will weigh 660 lb. per passenger; the preceding cars purchased weigh 878 lb. per passenger.

Center-entrance operation with pneumatic door engines and interlocking control was favored to secure maximum seating capacity and to prevent reckless jumping from cars—even by women. The steps are also completely inclosed. The distance from the pavement to the first step is 15 in., and above this step are two 9-in. risers. No ramps are used, and the elimination of these is expected to make floor maintenance easier.

All of these new cars will be 41 ft. over all, 37 ft. over the body corner posts, 8 ft. 3 in. wide over the sheathing, 10 ft. 10 in. high from rail to top of roof. The seats will be 35 in. wide; aisle, 23 in. wide; the distance between truck centers, 23 ft. 10 in.; the truck wheelbase, 5 ft.; the wheel diameter, 24 in. The radius

on the inner rail of the shortest curve on which these cars will run is 35 ft.

The underframe is of angle side-sills, channel center-sills, channel diagonals, buffer bands reinforced with Rico anti-climbers, body bolsters of trussed girder type with 1-in. x 9 in. top and bottom plates and gray iron fillers. The body framing has all side posts formed of T-bars extending from side sill to side sill. The door framing for the center-entrance is formed of steel angles in one continuous piece from sill and over the door opening. The sides below the window sills are of No. 12 gage sheet steel in one width from side sill to window sill, being pressed on the top to form the belt rail and window sill. The letterboard is also of No. 12 gage sheet steel. The vestibules are sheathed on the outside below the windows with No. 16 sheet steel in three sections, so made that they can be removed without disturbing vestibules or posts. The posts are ash. No doors are used, the motorman being able to do any necessary switching by leaning out of the vestibule.

The arch roof is covered with poplar board and painted canvas. The interior finish is mahogany. The wainscoting from window sill to seat angle is $\frac{3}{16}$ -in. Agasote with a $\frac{3}{8}$ -in. air space between the Agasote and the steel side sheathing. The finish below the seat angles is formed of pressed sheet iron to avoid a dirt pocket at the floor.

The equipment schedule for the new cars covers the following:

<i>Curtains</i> —Pantastote with Curtain Supply Company's ring fixtures and Rex all-metal rollers.	<i>Couplers</i> —Tomlinson Type A, Form 8.
<i>Destination signs</i> —Keystone.	<i>Air Brakes</i> —Westinghouse AMM, complete on motor cars; in part on trailers.
<i>Seats</i> —Hale & Kilburn, No. 300 A.	<i>Governor synchronizer system</i> —Westinghouse.
<i>Motorman's portable folding seat</i> —Keystone.	<i>Signal system</i> —Westinghouse No. 8-T, electro-pneumatic.
<i>Door engines</i> —National Pneumatic to control four-leaf folding doors arranged to swing outward. Doors on motorman's right-hand side may also be operated by him.	<i>Motors</i> —Westinghouse No. 514.
<i>Registers</i> —International, R5.	<i>Control</i> —Westinghouse HLD.
<i>Buzzers</i> —Faraday, Keystone.	<i>Trolley bases</i> —Ohio Brass Form 1.
<i>Gongs</i> —Dedenda.	<i>Lighting</i> —One circuit of 94-watt Mazdas for body, and one circuit of 23-watt Mazdas for other purposes. Light wiring run in Duraduct with Flex shadeholders at all outlets for lights. Alba reflectors used on center lights.
<i>Sanders</i> —O-B sand traps and National Type C sander valves.	<i>Trolley retrievers</i> —O-B No. 11973.
<i>Headlights</i> —Crouse-Hinds SDP 12.	<i>Trucks</i> —Brill No. 77 Cincinnati.
<i>Ventilators</i> —Automatic type ARDM, eight on each side of roof.	<i>Journal Boxes</i> —Symington.
	<i>Motormen's mirrors</i> —Drew.

FIRST SAFETY CARS ALSO DUE IN AUGUST

The company has also ordered from the same car-builder ten Birney-type double-end one-man cars equipped with the combination of the Safety Car Devices Company. The first five, expected in August, are to go on the Broad Street crosstown line, and the second five on the King Street line, which serves the heart of the city. These cars, therefore, are relied upon to do real work. As they weigh but 13,000 lb. compared with 27,000 lb. for present cars of the same capacity (thirty-two passengers), Fuel Administrator Garfield may well be thankful.

Perhaps the chief variation of this car from the Stone & Webster Birney type is that for the same over-all length of 27 ft. 9½ in. the platforms are 3 in. shorter because wider corner posts are used to get increased stiffness. The wheel housing has been elimi-

nated by raising the body 1½ in. The vestibule doors are hinged to the body corner post instead of the vestibule post, thereby preventing the exit of passengers until the door is fully open and the step down.

The car underframe is of steel angles, the body framing being like that of the center-entrance cars above described. The roof is of wood, and the ceiling of ¾-in. Nevasplit headlining. The principal equipment of the new safety cars may be summarized as follows:

- | | |
|--|--|
| <i>Curtains</i> —Pantasote. | <i>Gongs</i> —Dedenda. |
| <i>Ventilators</i> —Utility (eight). | <i>Trolley catcher</i> —Ideal. |
| <i>Trucks</i> —Cincinnati. | <i>Air brakes</i> —Westinghouse. |
| <i>Hand brakes</i> —Pittsburgh drop handle. | <i>Operating devices</i> —Safety Car Devices Company, including National Pneumatic door engines. |
| <i>Heaters</i> —Six Consolidated cross-seat type, with thermostatic control and Duraduct fittings. | <i>Motors</i> —Two Westinghouse 506 A-2, with sleeve bearings. |
| <i>Push-buttons</i> —Faraday, Keystone. | <i>Control</i> —K 10. |
| <i>Signs</i> —Keystone. | <i>Headlights</i> —Golden Glow. |



FRONT-END FARE COLLECTORS OF THE UNITED RAILROADS DASHING TO THE NEXT CARS FOR SHIPBUILDERS

It may be added that there will be only two five-light circuits, the body-lighting circuit consisting of 56-watt units and the other of 23-watt units.

Moving 8300 Shipbuilders in Fifteen Minutes

United Railroads of San Francisco, Through Ample Car Storage and Front-End Collection, Make Quick Work of Heavy Rush Traffic

THE famous Union Iron Works of San Francisco represents the greatest war industry of that city. The works has been accessible for years by means of the old lines of the United Railroads, but with the recent increase of shipbuilders to 8300 or more it was deemed desirable to get the men to and from their homes by shorter, non-transfer routes.

Therefore the railway of its own volition arranged to pay for the construction of a 1-mile line on Army Street to connect with the existing lines over Twentieth Street about ¼ mile from the main gates of the Union

Iron Works. At this writing only one track has been completed, but the cars are fed to the loading district in such a way that this track can be devoted exclusively to handling all rush traffic bound in one direction. The empties are sent back by routes which are more round-about.

The works are located on the bay in South San Francisco, and most of the men live in Daly City, the Mission District and other southwestern sections. Through the Army Street line the great mass of riders enjoy direct service and a saving in time of twenty minutes each way.

Shortly before the main closing time, 4.40 p.m., about seventy-five cars are in line on both tracks at Twentieth Street and moving toward Third Street, which, curiously enough, is at right angles to Twentieth Street. At this intersection from twelve to fifteen front-end fare collectors are spread along to assist in speeding up the loading. As these men are experienced conductors (who have already completed their daily platform stint), they



THE FLOOD GATES ARE OPENED AND SAN FRANCISCO'S SHIPBUILDERS POUR FORTH

are very helpful in directing the traffic. The cars are loaded with such amazing speed that from seventy-five to ninety cars are disposed of in from fifteen to twenty minutes.

As at so many shipyards, a rough element is included among the workers. Some of them try to jump through the car windows, and plenty of them endeavor to ride on the fenders, simply to escape paying a 5-cent fare. Often, too, the platforms are packed, with scarcely a standee inside. This is particularly true on warm evenings in the case of the California-type car in which there is a closed section with bulkheads, doors and longitudinal seats in the center. In short, the service is ample, but it is not used by the passengers to full advantage. Jitney competition is not a factor in the case, as the jitney fare is 10 cents.

Negotiations are now under way with the Emergency Fleet Corporation and the Union Iron Works for the construction of a sheltered prepayment area. This would enable the railway to handle the service more efficiently and would be a boon to the workmen in bad weather. The subject of staggering the hours at this plant is also under consideration.

The Union Iron Works is building another plant at Hunter's Point, several miles south and $3\frac{1}{2}$ miles from existing electric railway routes. Without financial aid, however, the United Railroads could hardly undertake to build such a line for only 4000 to 5000 men traveling one round trip a day. The matter of providing electric railway service for the workers at this new plant is now under negotiation.

Carrying the Boys at Houston

6900-Ft. Extension to Camp Logan—Siding Station at Ellington Field—Aviation Traffic \$10,000 Monthly

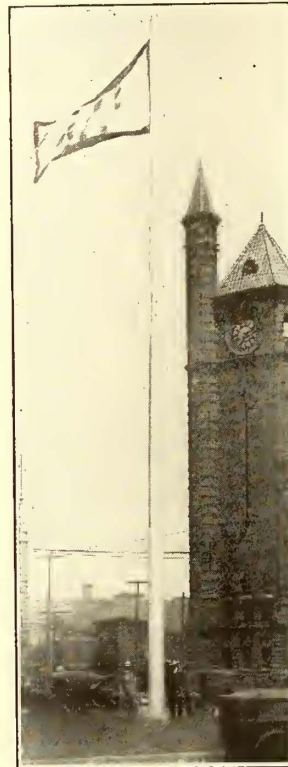
IN ORDER to give service to Camp Logan the Houston (Tex.) Electric Company last year extended its West End line by 6900 ft. of single track and built a prepayment area with ordinary ticket boxes. This work cost about \$60,000 and for a most uncertain traffic. In the first place, the number of soldiers has varied from 35,000 to 4000; in the second place, many soldiers prefer automobile parties when going to town. The increase in electric railway service, therefore, has varied in accordance with the fluctuations in traffic to be handled by the company.

A somewhat better traffic proposition is afforded by the aviation ground known as Ellington Field. This is located within 17 miles of Houston and about a mile from the Galveston-Houston interurban line. To serve this field the company built a siding and station at a cost of about \$17,000.

The aviators, particularly the cadets, have money to spend and are good riders. Many of the men go to Galveston for the week end. Bad weather increases travel, as then the aviators are idle. The monthly increase in gross earnings for passenger traffic at Ellington Field is about \$10,000, in addition to from \$1,200 to \$1,500 for supplying light and power. The additional railway service is provided by increasing the length of trains without change in the usual hourly headway.

While there is some shipbuilding going on along the Houston Channel at Harrisburg, 5 miles from Houston, it has no direct influence on electric railway travel. There are two plants—the Universal Shipbuilding Company and the Midland Bridge Company—building 3500-ton vessels for the Emergency Fleet Corporation. The Universal has a contract for twelve ships and the Midland one for six, totaling \$4,400,000. There are probably less than 3000 employees, and these travel by steam train or automobile. Travel by boat is also possible, but it is too slow.

A Graceful Gift



GEORGE H. CLIFFORD, vice-president and local manager Northern Texas Traction Company, is one of Fort Worth's most public-spirited citizens. As one pictorial proof note the beautiful 75-ft. Western red-cedar pole which his company donated to fly Fort Worth's honor flag for going over the top with the Third Liberty Loan.

The pole has been erected in front of the Texas & Pacific Railway passenger station, so that both the native and the stranger are not left in doubt as to where Fort Worth stands. Looking at this handsome pole, one may say with truth that it was a graceful gift in a double sense.

An earlier similar gift proposed by Mr. Clifford was a 70-ft. pole which now floats

the flag of staff headquarters at Camp Bowie, located not 3 miles from the center of Fort Worth.

Houston War Gardens Win Prizes

TO ENCOURAGE the cultivation of war gardens the Houston (Tex.) Electric Company in February sent a letter to its men asking them to signify by the end of March whether they would care to compete for war garden prizes consisting of one award at \$25, three at \$15 and ten at \$5. Ninety-two of the company's employees entered the competition.

Inspection of the gardens, which began on May 10, required almost four days of the judges' time. The principal points considered were the character of the soil, the care shown in handling the garden, and the ability to diversify and rotate the crops. The winner of the first prize secured particularly good results with beans and potatoes. Of the latter he raised nearly twenty bushels.

Besides taking part in the official competition, the men showed their interest by bringing down specimens of their farm craft to the clubrooms for comparisons of size and quality.

What Is a Fair Return in War Time?

Increase in Rate of Return Is Not Justifiable Because of Decline in Purchasing Power of Money, But Commissions Should Preserve Old Fair Returns—Rate on New Investment Must Be Based on Market Conditions—The Different Rates Can Be Easily Handled

BY JOHN BAUER
Princeton University

OPERATING costs of public utilities have increased tremendously during the war, so that extensive revision of rates has become necessary. In many cases where before the war the margin of earnings above a fair return was narrow, increases have already been granted by the public service commissions. Many other companies are only beginning now to feel the keen pressure of mounting costs and to seek relief. Commissions all over the country will be flooded this year with petitions for higher rates, and extensive advances will have to be allowed.

In every case for increased rates, the question of a fair return on investment will have to be considered. What, during the war, is a fair return? What special adjustments, if any, should be made because of the war? This question has been answered in two extreme ways: (1) That inadequate returns on investment, especially to stockholders, should not be made the occasion for rate advances; and (2) that the return should be increased in proportion to the change in general prices, to compensate the security holders for loss in purchasing power of money received as interest or dividends.

Ideally, public utility investments should be regarded in the nature of loans to the public, and as such should have a fixed return whatever the change in operating conditions. Unfortunately, however, their status has not become clearly defined, so that even before the present emergency both the basis and the rate of return were uncertain quantities, subject to reasonable decision in each case. This indefinite situation continues, and each case will have to be treated under the broad rule of reasonableness.

QUESTION OF A FAIR RETURN IS DIFFICULT

But what is a reasonable return? This question was a baffling one before the war and is particularly so now. Neither of the foregoing views seems satisfactory. A return cannot fairly be shut off even on stock investment; nor can it well be adjusted to the shifting purchasing power of money.

The first view would be short-sighted indeed, especially if we continued to call on private capital for new investment. Many improvements must be made during the war, in many instances because of the war. Then how can the funds be obtained if a sufficient return is not allowed for the purpose? This, of course, is in addition to the general point that in any event past investment for public service should be treated justly. While the consumers should be protected, the security holders are also bearing the increased cost of living, war taxes, etc.,

and should receive due consideration from the public service commissions.

The second view, however, that the return should be adjusted to the changing purchasing power of money, seems altogether unreasonable. Just why should the adjustment be made? It is true, of course, that the rising prices have reduced the real income of the security holders, even if the same returns in terms of dollars are obtained. But the bondholders in all industries have fixed money incomes and have had the same shrinkage in real income as the public utility bondholders—yet there has been no thought of changing the general interest contract. Suppose that the suggested adjustment were made; would the bondholders of the public utilities share in the benefit? If not, then why should the stockholders be treated differently? It is true that they bear more risk than the bondholders; but they are nevertheless protected in their income, besides being shielded from the competition of other companies or individuals. Since any change in the rate would go only to the benefit of the stockholders, would it be reasonable to make any adjustments?

STANDARDS OF FAIRNESS TO BE FOLLOWED

Is it not the sensible view that the investors shall be treated according to the same general standards as before the war, receiving a fair return on the fair value of the property, with the standards of fairness practically unchanged? They would then get the same money return but would sacrifice considerable real income because of the decline in the purchasing power of money. They would thus incur a sufficiently high burden due to the war. No other penalty should reasonably be imposed, but no ground for relief can be urged. The following special points, however, should receive consideration:

1. The general basis of valuation should not be changed from the standards before the war. The unit prices used in an appraisal certainly should not reflect the present abnormal conditions. While new investment will have to be made at present high prices, that can be specially provided for by adding the actual new cost to the rate base.

2. On new investment, the rate of return allowed must be based on market conditions. If additions must be made, and if new capital will cost 8 per cent or more, the rate must be paid and the consumers must bear the cost. But this high rate should not be applied to old investment, made when interest rates were lower and the requirements of the investors were less.

3. A distinction should be made between companies that have been making excessive returns in recent years and those that have been operating on a narrow margin or have not been making a fair return. In the latter cases adjustment in rates to meet increasing costs should be promptly made. But in cases where there have been surplus earnings, there is less reason why immediate rate increases should be allowed, even if a full return on investment is not being earned. The companies are entitled only to a fair average return from year to year. The failure to make a full return in one year does not justify immediate increases in rates. If, say, during the last five years a company has made more than 8 per cent on the investment, there would be good reason for postponing any rate increases even if considerably less than a fair return is earned under present conditions. There would be a sufficient margin in the past earnings to justify a wait for developments during the uncertain present circumstances.

4. When rate increases are allowed because of emergency, the facts should be clearly set forth, and due caution should be given that when conditions again permit, a reduction in rates will be ordered. Commissions ought to keep unusually close track of operating and financial conditions; they should be ready to permit increases in rates promptly if they are needed, but they should be equally prepared to order reductions when they are again fairly justified.

DIFFERENT RATES ON OLD AND NEW INVESTMENTS WILL DO NO HARM

The second point made above raises the question as to whether or not it is injurious to have different rates of return for old and new investments. Would the credit of the company suffer from the rate of return on the old investment not being increased to meet the higher rate now prevailing for new capital? One of the chief factors in the size of the rate of return is the certainty of the return. The greater the risk, the higher the rate of return; the lower the risk, the less the rate of return. Certainty means that the contemplated return will actually be paid. If the entire prior investment obtains the return that was contemplated or fairly expected as the successive security issues were made, all the contracts, actual or implied, will have been kept, and the company's credit to that extent is good. With a new issue of securities the chief consideration is that the promised or reasonably implied interest will be paid. If there is practical certainty that it will be paid, the company can get capital funds at rates representing good credit, even though the rate of return on past or existing investment is much less than must be paid for the new capital.

Another pertinent question is this—is it practicable for a utility to have different rates of return on its old and new investments? If the property has been previously appraised for rate purposes, so that the past investment entitled to a return is established, the payment of a higher rate of return on the new investment can be easily managed. If bonds are issued, they will have to be sold at a discount, and the amortization of the discount during the life of the bonds should be included in the return. The bondholders will get the high return which they now expect, if they receive, say, 5 per cent

on the par value of the bonds purchased at a discount, and the company will be able to meet its obligations if it receives in its return the 5 per cent interest and the amortization of the discount. In other words, these requirements for the new investment are simply added to the return required on the previously existing investment.

The matter is more difficult to handle if funds are raised through the issuance of capital stock, because this cannot be sold below par unless special legal provisions have been made. But the bulk of recent public utility investments has been made through bonds, and this is probably the most satisfactory method of financing semi-public securities and should be used under the circumstances here discussed. The actually necessary interest burden for new capital would then be placed upon the public, and a fair return according to former conditions would be paid on the previous investment.

If the past investment has not been determined and the fair return is uncertain, then the problem of maintaining credit is a more difficult one, unless the proposed issues can be given preferential rights over existing securities and their return be practically guaranteed. If the new issues simply take equal place with their kind of previously existing capitalization, it is possible that the contemplated return may not be obtained. Then, before the company can increase its rates to maintain its return on investment, a valuation must be made to determine a fair return; otherwise, only such rate increases can be allowed as are obviously necessary to prevent insolvency.

Each case of uncertain past investment, however, must be handled according to its own facts. In most instances, perhaps, although the total investment may be indefinite, the bonds outstanding are clearly well under the fair value of the property, so that the new bonds may be issued with practical assurance of interest payment. In such cases, fixed charges can be maintained through rate increases without a valuation of the property. But there are many cases where the bonds outstanding do not represent fair investment, or at least where there is uncertainty. Then the only way good credit can be established is to determine first the existing investment so that the necessary return can be ascertained. After that the interest on new securities can be easily managed.

RATE INCREASES MUST BE BASED ON FACTS

But all this leads to a question slightly touched upon before the proper valuation procedure in war time. No difficulty arises in this connection if the company has been under fairly active commission control. In such a case the investment has probably been definitely fixed as of some past date, so that the problem of determining a fair return is merely to add the property installed since the appraisal and subtract the withdrawals. This work and a statistical analysis of the financial facts with a moderately competent force would not require more than two or three weeks for the establishment of fair rates.

Expedition is difficult, however, if the company's property has not been previously appraised, and unfortunately, the country over, such companies probably predominate. Every public service property, subject to rate control, should have been appraised some time dur-

ing the last ten or fifteen years and the investment entitled to a return definitely fixed. Then rate control would have been practically an automatic matter, subject merely to accounting supervision. Yet no systematic policy has been carried out, and the utilities are in a state of indefiniteness for which they have a large share of responsibility. When now they ask for increases, therefore, they should not expect the commissions to proceed without facts. Even with maximum expedition, facts must be considered.

There are, of course, cases where advances can properly be allowed without direct reference to valuation. If a company is not making operating expenses, then ordinarily relief may be safely granted to the extent of the deficiency. Usually, also, if a company is not making interest, rentals and other fixed charges, and is in danger of insolvency, rate advances should be allowed. But even in these cases there must be some regard for valuation. For example, the returns that have been made in recent years must be examined, which involves valuation. The question arises whether large charges have been and are being made for amortization and other reserves, which might be safely discontinued for a time or whose funds might be used to meet fixed charges; but the reasonableness of such adjustments would depend upon the returns earned and therefore involves valuation. Moreover, fixed charges have no necessary validity for rate purposes. They may represent interest on overcapitalization in bonds issued in heedless consolidations, or rent payments on contracts that can find no support in a rational public policy; these questions involve valuation.

It seems, therefore, that an unappraised property must be content with such adjustments as are obviously necessary, or go through a formal rate procedure to determine the investment and the reasonable return. If it tries to maintain its pre-war income, it seeks to assume the reasonableness of that income, and the commission simply cannot accept such assumption without a fairly definite basis or judgment, which means valuation. Of course, the obviously necessary increases may be allowed, and the more equitable determination may be deferred until the essential facts have been ascertained.

The extent of the delay in securing a formal valuation and its expenses will depend largely upon the attitude of the companies. If they are willing to adopt a reasonable basis of valuation and use short-cut methods of appraisal, they will obtain substantial justice at moderate expenditure of time and money. If, however, they fight for the highest possible valuation, insist on reproduction cost at war prices, dispute the rational treatment of depreciation, claim unjustifiable overhead charges and absurd going value, and make inventories with pinpoint minuteness, they will naturally roll up huge expenses and cause intolerable delay in time—all to no clear advantage to themselves.

Much talk is going on about emergency increases for the period of the war. There should be no mistake about this matter. If rate increases are necessary now because of high costs, they will continue to be so for the same reason. Not only will there be no decrease in costs during the war, but there will probably be further increases, and high costs will remain indefinitely after the war. If this view is correct, there is all the more reason, except for real emergency cases to avoid in-

solveny, why the fundamental factors controlling a rate proceeding should be adequately regarded even at the present critical time.

In general, therefore, the only satisfactory way out of the difficulty is for the commissions to grant emergency relief where clearly necessary, and then proceed with quick appraisals of the properties, following a reasonable general basis of valuation and using rational short cuts in the inventories and the computations. Without obstructionist tactics and with both the commissions and the companies eager to have the work completed, the work of valuing the utilities can be greatly expedited.

British Relief Recommended

Committee of House of Commons Favors Temporary Modification of Statutory Limitations on Rates

The select committee, recently appointed by the House of Commons, to consider the temporary modification of statutory requirements with regard to British tramway fares has issued a report recommending such relief. Previous reference to this committee was made in the issue of the *ELECTRIC RAILWAY JOURNAL* for June 1, page 1057.

Evidence tendered by the Tramways & Light Railways Association and the Municipal Tramways Association showed that all tramway and light railway undertakings are injuriously affected by increased working expenses due to the war, wages having risen from 60 to 100 per cent and cost of materials from 100 to 200 per cent. In addition, the increased cost of fuel, and, consequently, of power, coupled with restrictions imposed on supply, should be taken into consideration.

According to the committee's report, the larger revenue earned by many tramways does not compensate for the constantly advancing costs of operation, although in most of the large towns, where the tramway systems are generally owned by the municipalities, there is still a margin, since the fares charged are in most cases lower than the statutory maximum. Some possibility of relief, the committee feels, should be afforded to those undertakings which cannot increase their revenue. Although in the case of municipalities deficits can be made good out of the rates, the passenger should not be carried at a loss.

The committee therefore recommends that the Board of Trade should be empowered by general legislation to permit the temporary modification of statutory rate requirements in the case of undertakings whose financial circumstances are proved to the satisfaction of the board to have been injuriously affected by causes arising out of the war, the word "temporary" covering a period limited to the duration of the war and two years after its termination.

Because of narrow streets and increased danger from automobiles sweeping conductors off of running boards, the Portland (Ore.) Railway, Light & Power Company has cut an aisle through fifty-seven open cars to be used only to facilitate safer fare collection by the company.

Seven-Cent Minimum Fare Allowed Middlesex & Boston Unit Increase Intended for Quick Relief—Commission Suggests Change Later to Encourage Short-Haul Rider

AN INCREASE in fare to 7 cents has just been allowed to one of the pioneer 6-cent electric railway lines in the country, namely to the Middlesex & Boston Street Railway, Newtonville, Mass., by the Massachusetts Public Service Commission. In sanctioning the 7-cent minimum rate the commission says it is far from convinced that the tariff plan is superior to the zone method adhered to by many of the other large companies of the State. The board feels that the institution of a higher minimum rate may discourage short-haul travel, but it will give the company a chance to show what the flat increase may effect in additional revenue.

The commission believes that the company should be permitted:

1. To make the unit fare 7 cents on all lines where it is now 6 cents, which will give the company a substantial increase in rate where the traffic is heaviest.
2. To abolish the present tickets, sold at the rate of twenty for \$1.20 on most of the lines where the cash fare is 7 cents.
3. To charge 1 cent additional in transferring from a line with a 7-cent fare to one with an 8-cent fare.
4. To continue the present 8-cent rate on the unprofitable lines where it is now charged.

The Middlesex & Boston Street Railway differs from nearly all the other larger companies as to the best method of raising fares. The general view in Massachusetts seems to be that it is desirable to try to hold short-haul business by keeping the minimum fare relatively low. The Middlesex & Boston company strongly adheres to the principal of a progressive marking-up of fare units, regardless of the effect on short-haul traffic. In commenting upon this situation the commission says in part:

"In the Bay State rate case, it was held that the company must satisfy the commission that there is at least a reasonable prospect that the change in fares desired will result in an increase in revenue. There is great practical difficulty, however, in applying this rule. Where a need for additional revenue has been demonstrated, the commission would not be justified in refusing to allow a company to adopt a certain method of securing this revenue merely because of a difference of opinion in regard to the probable results. There must be evidence sufficiently clear to convince reasonable men that the method ought in both the company's and the public's interest to be set aside.

"Up to the present time, unfortunately, the evidence in regard to the effect of increases in fares is not entirely clear. While the experience of practically all the companies which have raised rates has been disappointing, general conditions have been so abnormal that it is difficult to draw positive conclusions. In several cases companies have gained very little apparent benefit from the increase, but in every such instance they have been strong in the belief that results would have been worse if the increase had not been made. The falling off in traffic has been ascribed only in part to the higher fares, and such factors as increased use of automobiles,

weather conditions, the departure of young men for war service and the thrift campaign are also held responsible. In the present instance these other factors have, without doubt, played a large part in the poor showing of the last eight months, and this is especially true of the unusually severe winter weather in January, February and March. The Boston & Worcester Street Railway, which operates in part through the same territory and has a mileage zone system with a minimum fare of 6 cents, has made no better showing than the Middlesex & Boston Street Railway.

"The commission is inclined to the opinion that the proposed fares do not represent a well-considered plan for the raising of additional revenue. At the same time, the commission is satisfied that there is at least a reasonable prospect that this schedule, taken as a whole, will result in some increase in revenue and it cannot, therefore, be disallowed in its entirety.

"We are not satisfied that the 1-cent transfer charge ought in all cases to be permitted. In transferring from a line with a lower to one with a higher fare such a charge is reasonable, but where the lines are of similar character and the rate is the same there seems no adequate justification for requiring a passenger to submit to the inconvenience of changing cars and pay an extra charge as well. In cities which have a clearly marked traffic center, it may be a fair assumption that most passengers who transfer at this point secure in this way a ride longer than the average, but no evidence was offered that this is the case with the transfer passengers of the Middlesex & Boston Street Railway.

"The demands of labor have made the situation critical and the company needs quick relief. It would not be wise or fair, under present conditions, to delay this relief until the study of traffic conditions could be made which would be necessary to determine whether or not it is possible to devise a system of fares better adapted than the one now proposed to hold the short-haul rider and encourage the movement of traffic."

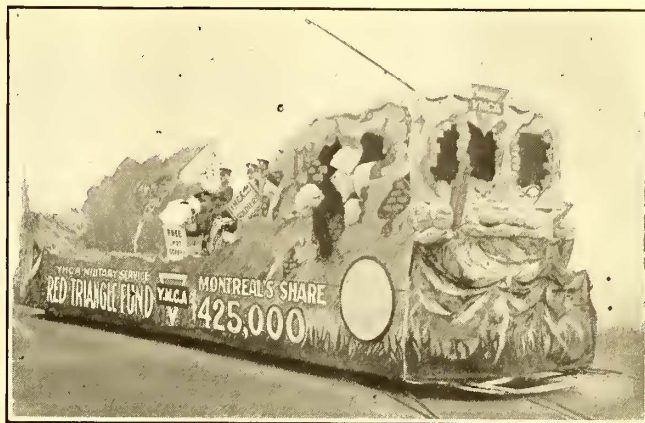
Class Compartments May Be Abolished in Manila

THE cars of the Manila Electric Railroad & Light Corporation are still divided into first-class and second-class sections with different rates of fare, but there may be only one class if suggestions made by C. N. Duffy, vice-president of the company, at a recent hearing before the Public Utility Commission are carried out. The division between first and second class is made now only by a rope barrier stretched across the car, so that on a double-end car the seats which are first class on the outbound trip are second class on the inbound trip and vice versa.

The statement by Mr. Duffy was made during a hearing before the commission on the subject of the desirability of an order limiting the number of passengers on the cars. Mr. Duffy argued against such an order and suggested in its place the abolition of the class-division mentioned, a change in the fare so that the rate will be 8 centavos with 1 centavo extra for a transfer, with the fare for children at 5 centavos, including the right to transfer, and that the present practice of selling tickets be abolished.



RED CROSS FLOAT AT DALLAS



Y. M. C. A. FLOAT IN MONTREAL

Car Floats Help Bonds and Red Cross Campaigns

Flat Cars Converted Into Patriotic Floats Symbolizing Present-Day War Need Lent Effective Aid in Recent Campaigns

THE ordinary flat car on an electric railway furnished the ideal basis for a parade float. As compared with the float drawn by horses it is far superior, being limited in neither size nor speed. It can be used, of course, only on streets with tracks, but this is not a hampering condition in most cases, because the principal streets usually have tracks.

During the recent Liberty Loan and Red Cross campaigns several electric railway companies operated floats of this character and views of a few of them are published as supplementary to those which have appeared in prior issues.

The first view shows a work car of the Dallas Railway used as one of the features of the Red Cross drive in Dallas on May 18 and carrying suitable sayings and decorations. It was escorted by Red Cross nurses and Uncle Sam's own soldiers, and was followed by a car carrying the Camp Dick cadet band of forty-two pieces. These cars paraded all Saturday afternoon and night and made a great hit. The car was furnished through the efforts of H. B. Fisher, assistant to the manager.

The second illustration represents "Fort Liberty," built by the Manila Electric Railroad & Light Corporation and used during the last Liberty Loan campaign in that city. The foundation was one of the company's double-truck flat cars equipped with motors and it was built up to represent a masonry fort, equipped with cannon and machine guns. The fort was outlined in incandescent lamps and carried a representation of the Statue of Liberty and the words "Fight or Buy Bonds." A third view illustrates a float used during the Y. M. C. A. campaign for funds in Montreal. The flat car in this case was one having an

operating cab at one end, and this cab was utilized to form a representation of a Y. M. C. A. hut, while the "trenches" were constructed of sand bags. Altogether the float was very realistic, and as it carried a bugle band it attracted great attention.

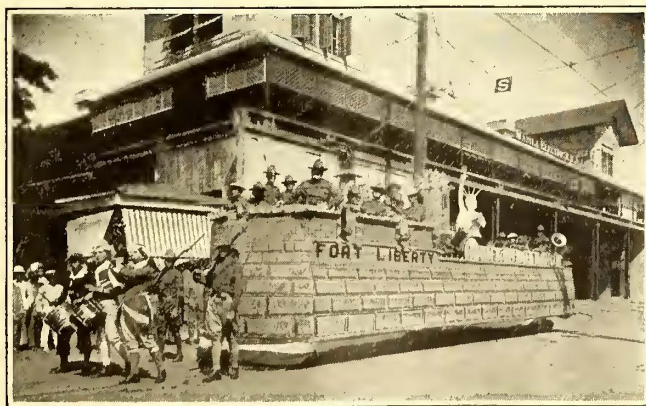
The Mahoning & Shenango Railway was another company to build an electric railway float for the last Red Cross Campaign.

Public Good-Will Is an Asset

EVENTS of the last year, according to a recent statement issued by H. L. Doherty & Company, New York, N. Y., have proved to managers of public utility corporations the great value of public good-will. An analysis of the rate situation existing throughout the United States shows that in almost every instance where there has been concerted opposition by the public to a proposed advance, the utility has not enjoyed good relations with the public served.

In communities where the utility has taken the attitude that it is much more of a necessity to the public than the public is to it, great difficulty has been encountered in securing any adequate revisions of rate schedules. On the other hand, where a utility has recognized that the relations between it and its public are reciprocal, the utility has had fairly smooth progress in securing adjustments to meet the increased cost of operation.

Wherever utility managers have been vitally interested and personal factors in the growth and the prosperity of the communities served, they have encountered no great amount of opposition in advancing rates to a living level. The public generally now realizes that rates for utility service must be advanced and, where adequate service has been furnished and proper consideration given to the needs of the community, the public is not adverse to giving a proper rate. Recently, it is related, a delegation from a city in which a



FLOAT TO REPRESENT MASONRY FORT, USED DURING LAST LIBERTY LOAN CAMPAIGN IN MANILA

Cities Service Company lighting subsidiary operates, visited the general office of the company. In this delegation were the Mayor, the city attorney, members of the City Council, the editor of the principal newspaper and other public officials. They came to ask whether the Cities Service organization could not formulate some plan by which it could take over operation of the electric railway system in that city. The Mayor said that the lighting company did not ask enough of the city, and other city officials said that they stood ready to grant any proper demands. In so far as the electric railway was concerned, the first consideration was Cities Service operation, with all other matters coming second.

Loading Platforms and Front-End Collectors in Washington

Report Recently Issued by Mr. Beeler Describes the Results from Improvements Introduced Earlier in Year

THE eighth section of Mr. Beeler's report on Washington traffic conditions dated May 23 has recently been made public. It is quite brief and, in general, summarizes the results secured through the adoption of some of the previous recommendations, principally those on reduction of stops, double berthing, loading platforms and front-end fare collection and recommends the extension of these practices at certain points. The

accompanying diagram shows clearly the effect on speed and track capacity of the methods adopted for relief on the Fifteenth Street throat, where the capacity of track was increased from 132 cars to 180 cars per hour between the two

dates given on the chart. Mr. Beeler thinks further improvement possible as the trainmen become more used to the new methods and use the double berths more effectively and as the movements of the cars are better co-ordinated with the signals of the traffic police and the front-end collectors.

MORE LOADING PLATFORMS NEEDED

The report recommends more loading platforms, notably on Pennsylvania Avenue, and says that those installed have proved a distinct help in insuring the safety and comfort of passengers as well as of speeding up the movement of cars by permitting easier and more rapid ingress and egress. They not only concentrate those desiring to board in an absolutely safe zone right at the point where the car will stop, but they are also a great aid to the front-end collector, who is enabled to devote his entire time to car patrons, as he can operate in safety.

Experience in Washington has demonstrated the advisability of placing platforms opposite each other wherever practicable. A form of concentrated safety zone is thus established. The inspector or front-end collector on one platform has an opportunity to observe conditions existing on the other. The cross travel between platforms and curbs is concentrated so that automobile drivers have less difficulty in watching pedestrian movement, as the two platforms are passed simultaneously instead of singly. Street cars are also passing each other slowly. As passengers pass to and from either side of the street, a clear view of both roadways is a great advantage.

Although protected by red lights after dark, several times since the platforms have been installed careless automobile drivers have tried to run over them. To enhance their visibility and improve their appearance generally, the report says that the risers should be kept well painted, either a light gray or a buff. The dimensions of those now in use are 6 ft. wide, 96 ft. long and 9 in. high.

Mr. Beeler recommends loading platforms at all car stops where the number of passengers handled is such that standing time at stops can be reduced materially and where the platforms as a safety measure are desirable. He also recommends double berthing at all stopping places on paved streets in the District of Columbia except where the second car will block an intersecting street. This does not mean that the second berth will be in constant use, as when the cars are properly spaced there will be no occasion for stopping in the second berth, but during the rush hours and at times of unusual conditions, the service can be materially speeded up if this plan is adopted.

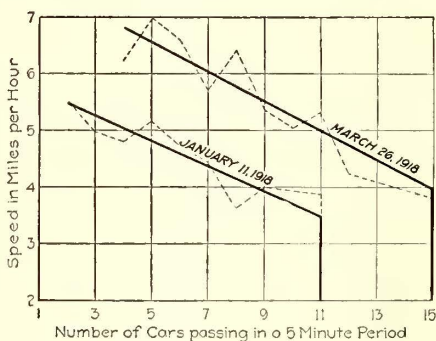
FRONT-END COLLECTION

The advantages of front-end collection are mentioned as being (1) decrease in loading time because passengers get on the cars simultaneously, and (2) more even loading of the cars. The front-end collector is of distinct advantage to patrons because he can sell tickets and make change before the cars arrive, as well as collect fares. The report points out that one front-end collector can often cover two points where the rush periods of the two do not coincide.

Texas Employees Form Mutual Aid Society

Employees of the Galveston (Tex.) Electric Company have organized a mutual benefit association the object of which is to extend financial aid to members who may become ill or meet with financial reverses through any cause. The organization has 166 members and has been granted a charter by the Secretary of State at Austin.

All funds of the association will be obtained through the payment of dues of \$1 a month by each member and the company has agreed to pay \$1 a month for each member. This gives the association an income of \$332 each month. Under the plan of extending aid, any member who becomes ill or suffers an accident will be paid \$2 a day after the fifth day for a period of 120 days and \$1 a day thereafter for a period of 60 days, making \$300 as the maximum benefit. In case of death the beneficiary will receive \$1,000.



SPEED AND TRACK CAPACITY AT FIFTEENTH STREET THROAT BEFORE AND AFTER CHANGES WERE MADE

Getting the Zone System Started at Providence

Initial Difficulties in Fare Collection Have Been Overcome, and Zone System Is Now In Full and Satisfactory Operation on the Rhode Island Company Property

THE zone system of fare collection has been in operation on the property of the Rhode Island Company since the first week of May. The decision to use this system was reached after long discussion in the Legislature, and there was up to the last a very strong sentiment in favor of a flat increase in fare from 5 cents to 6 cents. While early in the controversy the company would have been glad to have this flat increase as a temporary expedient, toward the end of the discussion it strongly advocated the zone system as a more general solution of its difficulties, the time when a flat increase of 20 per cent in fare would have been effective having gone by. The company realized that there would be difficulties to face in the matter of fare collection, but it was thought that these had better be faced at the start and overcome once for all rather than temporizing with the simpler but less comprehensive expedient. The story of the development of the present plan has been traced from week to week in the columns of the ELECTRIC RAILWAY JOURNAL and need not be repeated here.

The purpose of the present article is to state briefly what has occurred since the zone plan went into effect on May 5. There are two aspects of the fare collection situation in Rhode Island, namely, the urban and the interurban. In the cities the Rhode Island Company has used and will continue to use the Rooke register, while between cities a ticket system is employed. The registers originally contained two counters, one for nickels and one for dimes. The manufacturers have now rearranged the registers to indicate nickels, 2-cent metal tickets or tokens, and dimes. Fortunately it was possible to do this with very little difficulty. The registers, are used for collecting 5, 7 and 9-cent fares. The construction is such that the nickels register on their own counters only, the metal tickets register on their own and the 5-cent counters, while the dimes register on their own counters only.

The metal tickets are not sold to the passengers but are handed to them in the 2-cent zones and immediately deposited in the register. It has not been found expedient so far to sell the tickets in quantities, and it is doubtful if this will be done later. On boarding the car the passenger deposits a nickel in the register, and the conductor goes through the car in each 2-cent zone collecting a fare from each passenger who has boarded the car in another zone. At first a twelve-sided ticket was used, with the idea of making it distinguishable from a

coin by sense of touch. This form proved unsatisfactory in the register, however, on account of the inequality in diameter. The present form of metal ticket, full size, is shown in an accompanying illustration.

On the face of the metal ticket is this legend: "Two-Cent Zone Fare Tickets, the R. I. Co.," and on the re-

JAN.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FEB.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
MAR.	THE RHODE ISLAND COMPANY Providence—Buttongoods via Broad St. Line PASSENGER'S RECEIPT Passenger's receipt for fare paid. Passengers will please observe that the stations from and to which they pay are properly indicated by conductor's punch. Good only for use of passenger to whom issued and on date punched.															
APRIL																
MAY																
JUNE																
JULY																
AUG.																
SEPT.	Buttongoods Station	Oakland Beach	Warwick Station	Longwood	Conduit	Horsie	Lake wood	Gov. Warwick & Waite Aves.	City Line	TRANSFER	FROM PROVIDENCE					
OCT.																
NOV.																
DEC.																

FIG. 1

JAN.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FEB.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
MAR.	THE RHODE ISLAND COMPANY THIS TICKET IS EVIDENCE OF PAYMENT OF A 7 CENT FARE Between Providence and Warwick and Waite Aves. IN EITHER DIRECTION Good only for use of passenger to whom issued and on date punched. Conductors must detach this slip from paid in presence of passenger paying fare. If Providence fare is paid with a transfer, conductor must punch in the following square in order to make proper accounting.															
APRIL																
MAY																
JUNE																
JULY																
AUG.																
SEPT.	Serial No. 65	PROV. TRANSFER	FROM													
OCT.																
NOV.																
DEC.																

FIG. 2

Fig. 1—Passengers' part of duplex ticket first used in collecting zone fares by the Rhode Island Company. Fig. 2—Form of ticket now used on Rhode Island Company's interurban lines, replacing that shown in Fig. 1.

PAST AND PRESENT ZONE-FARE TICKETS, RHODE ISLAND COMPANY

verse is "Good Only for Continuous Ride After Five-Cent Fare Has Been Paid."

PAPER TICKETS USED ON THE INTERURBANS

When the zone system was first inaugurated a duplex form of ticket was used on the interurban lines, as shown in Fig. 2. The conductor punched the fare paid and the passenger retained one part of the ticket as a receipt, the other being the auditor's check. It was found almost immediately that this form of ticket was unsuitable for the local conditions for two reasons. In the first place, its use required too much of the conductor's time in punching and in detaching the passenger's sections. In addition, at the end of the run a half hour or more of the conductor's time was consumed in balancing his accounts so as to turn in the proper amount of cash.

Accordingly the duplex ticket was abandoned, except for passengers riding between intermediate points only,

and a new ticket of the form shown in Fig. 2 was adopted. In this form a distinctive color is used for each zone and the amount of the fare is printed



FIG. 3—METAL TOKEN USED IN TWO-CENT FARE ZONE

plainly on the face of the ticket and on the stub. The tickets and stubs are serially numbered. All that the conductor has to do is to punch the dates on a number of tickets in advance, and when a passenger tenders a transfer as part payment of fare the conductor punches a hole in a space provided for this purpose. At the end of the run he simply has to subtract the serial numbers of

Paying Fares by the Zone System

PAYING FARES BY THE ZONE SYSTEM

THE new zone rates have been in effect a few days now and the system is beginning to work pretty smoothly. A big task has been imposed upon the employees of the Company in making clear to passengers all the rules and regulations governing the new order of things. We ask the indulgence of the riding public while they and we are becoming familiar with the zone plan.

On the urban lines, that is in the zones where the fare is either 5, 7, or 9 cents, the automatic register is used as in the past. The 5 cent fare is collected to the end of the 5 cent fare zone. After passing that limit, the remaining fare, either 2 or 4 cents, is collected through the automatic register, metal tickets valued at 2 cents each being used for this purpose. The new register contains a dial and counter which segregates the metal ticket from the nickel.

On suburban lines, a Duplex ticket system is in use, the ticket being similar to that used on steam trains when passengers pay a cash fare. Passengers pay their fare from point of boarding car to destination, and conductors issue a Duplex ticket to them, showing between what points fare has been paid.

Paying Fares by the Zone System

direction of Providence, where the city limits of Pawtucket and Providence shall continue as the transfer limit between the cities.

The single 5 cent fare and transfer limits on the several street car lines entering and leaving this zone are indicated below:

Line	Fare and Transfer Limit
1. Pawtucket-Hope St.	At Pawtucket city line, on Hope St.
2. Providence line	At Pawtucket city line, on North Main St.
3. Smithfield Ave.	At Pawtucket city line, on Smithfield Ave.
4. Mineral Spring Ave.	At Pawtucket city line, on Mineral Spring Ave.
5. Prospect Hill	At Prospect Hill end of route.
6. John St.	At Town Hall, Valley Falls, Cumberland.
7. Broad St.	At Town Hall, Valley Falls, Cumberland.
8. North Attleboro	At State line, on Broadway, Pawtucket.
9. Benefit St.	At end of line at intersection of Central Ave.
10. Attleboro	At State line, Central Ave., Pawtucket.
11. Pawtucket-E. Providence	At Pawtucket-East Providence Line.

3. Woonsocket Single 5 Cent Fare and Transfer Zone

The Woonsocket Single 5 Cent Fare and Transfer Zone shall include the area in the State of Rhode Island within a radius of approximately two miles from Main Street turnout, Woonsocket, as a centre. The single 5 cent fare and transfer limits on the several street car lines entering and leaving this zone are indicated below:

Line	Local Fare and Transfer Limit
1. Pascoag	At Branch River Bridge.
2. Woonsocket	At State line Woonsocket.
3. Milford Attleboro and Woonsocket	At State line Woonsocket.
4. Providence	One-half mile south of city line of Woonsocket, upon bridge right of way.
5. Manville	At Junction of Cumberland and Mendon Roads.

FIG. 4—SAMPLE PAGES FROM BOOKLET ENTITLED "PAYING FARES BY THE ZONE SYSTEM," ISSUED BY THE RHODE ISLAND COMPANY

the stubs at the beginning and end of the run, multiply this by the rate of fare and subtract 5 cents for each transfer, to give him his total. The maximum number of pads required on any one route is eight and the conductors readily handle this number. The amount of time now required for accounting purposes by the conductors is negligible. In deciding upon the methods of fare collection the company has had in mind that these must be such as to be easily understood by the employees and the public, there must be a minimum of clerical labor, particularly for the conductors, and the system must not lend itself to intentional or unintentional mistakes. The plan now in use seems to meet

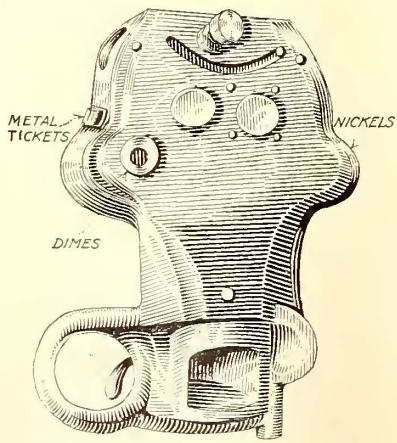


FIG. 5—FARE REGISTER REMODELED FOR USE IN ZONE FARE COLLECTION

the requirements in these particulars, but may be improved still, as more experience is had with the system.

An element of very great importance in an innovation of this kind is the attitude of the public, and the intelligence with which the public co-operates with the company management in putting the new scheme in operation. In this case there had been so much agitation in regard to an increase in fares for the Rhode Island Company that the public was on the *qui vive* and was very curious to see how the company was going to handle the rather difficult situation. The whole matter was explained in advance by means of newspaper advertising, but it was not found necessary to continue this very long. A booklet was prepared, however, with the title "Paying Fares by the Zone System for distribution through the "take one" boxes in the cars. Sample pages from the booklet are reproduced in Fig. 4. The booklet contains diagrams similar to those reproduced on page 572 of the issue of the ELECTRIC RAILWAY JOURNAL for March 23, 1918.

Zone Postal Law Condemned

Charles E. Hughes Calls It "Unjust to Publisher and Unjust to Public"

ALTHOUGH Congress has yet declined to change the provisions of the second-class postal law requiring zone rates for periodicals, the publishers still believe they can prove the destructive and iniquitous nature of the law. The position of this paper remains, as it has been, utterly opposed to the plan. Following is a letter recently received by the Publishers' Advisory Board from Hon. Charles E. Hughes, who was the head of the Hughes Postal Commission which made the latest investigation of the Postal Department of the country.

In answer to your letter, I beg to say: I prefer not to accept a retainer to appear before legislative committees upon matters of general policy, as in such matters, if I have anything to say, I desire to speak only as a citizen.

I have no hesitation in saying that I regard the zone system of postal rates for newspapers and periodicals, coming under the definition of second-class mail matter, as ill advised. The Commission on Second-Class Mail Matter (appointed in 1911), of which I was a member, considered this question and reported unanimously against the zone system. We said in that report:

The policy of zone rates was pursued in the earlier history of our post office and has been given up in favor of a uniform rate in view of the larger interest of the nation as a whole. It would seem to the commission to be entirely impracticable to attempt to establish a system of zone rates for second-class matter. * * *

Progress in the post office, with respect both to economy in administration and to public convenience, leads away from a variety of differential charges to uniform rates and broad classifications.

In my judgment the zone system for second-class mail matter is unjust to the publisher and unjust to the public. It not only imposes upon the publisher the additional rates upon a sectional basis, but it makes necessary the added expense for the necessary zone classifications at a time when every economy in production and distribution is most important. It introduces a complicated postal system to the inconvenience of the publisher and public when there should be a constant effort towards greater simplicity. There is no more reason for a zone system of rates for newspapers and magazines than for letters.

Newspapers and magazines are admitted to the second-class postal rates on the well-established policy of encouraging the dissemination of intelligence, but a zone system is a barrier to this dissemination. If it is important that newspapers and magazines should be circulated, it is equally important that there should not be sectional divisions to impede their general circulation through the entire country.

We are proud at this moment of our united purpose, but if we are to continue as a people to cherish united purposes and to maintain our essential unity as a nation, we must foster the influences that promote unity. The greatest of

these influences, perhaps, is the spread of intelligence diffused by newspapers and periodical literature. Abuses in connection with second-class mail matter will not be cured by a zone system of rates. That will hurt the good no less than the bad, and perhaps some of the best sort of periodical literature will be hit the hardest.

We do not wish to promote sectionalism, and "one country" means that in our correspondence and in the diffusion of necessary intelligence we should have a uniform postal rate for the entire country. The widest and freest interchange is the soundest public policy.

I hope that Congress will repeal the provision for the zone system which is decidedly a looking-backward and walking-backward measure.

Readers of this paper can aid in the repeal of this law by writing to the Congressmen and Senators from their State urging prompt action.

Never Spend a Penny

How Northern Ohio Traction Employees Have Put the Copper Coin to Work for Uncle Sam

BY E. BURT FENTON

Publicity Agent Northern Ohio Traction & Light Company,
Akron, Ohio

LAST autumn, after war taxes became attached to almost everything, a vast number of copper pennies began changing hands. On many things—railway fares, tobacco, moving picture tickets and the like—the tax came in "odd" amounts. Even the Sunday newspapers jumped to 7 and 8 cents. The masculine pocket began to fill up with copper coins, and it became an effort to get rid of them.

Along in January, when the Thrift Stamp and its big brother, the War Savings Stamp, were not so well known as they are now, the writer had occasion to wait several hours at a junction railway station. In the effort to "kill" time, he followed the usual routine. He weighed himself on two or three different penny-in-the-slot scales, dropped into a cigar store and bought some tobacco he didn't need at the moment, and looked about for whatever other penny-spending diversion the small town might offer.

A War-Savings Stamp sign attracted attention and started a train of thought. Uncle Sam was appealing for small amounts of money—a quarter at a time. He was offering a fairly attractive inducement to his nephews and nieces for the use of their small change. Why not lend him the pennies we had been throwing away? They wouldn't amount to much, to be sure, but every billboard was fairly shrieking that "every little helps."

Right there the writer organized himself into a never-spend-a-penny club with a membership of one. And he got the surprise of his life. Within thirty-six hours there were enough pennies for one Thrift Stamp. Another twenty-four, another stamp. Thirty-six more, still another. In an incredibly short time a card was filled. Then another. As this is written, there are four of them, with a starter on the fifth.

Each day fifteen to twenty pennies are dropped into the special pocket reserved for the change from ordinary small expenditures. Instead of being wasted, as of old, they are put to work for what they are worth to Uncle Sam. They do not represent a single sacrifice. They are the financial "slack" of the ordinary man, taken up and made useful—to Uncle Sam? Partly. But to a greater extent to the owner.

Naturally, when we saw how the never-spend-a-penny scheme was going, we talked to our friends about it. They caught the "bug" and began doing likewise. All were surprised to find out in this manner how much money they had been throwing away without being aware of it. Every day at luncheon there was a general "counting up," and some competition developed to see who could buy the most Thrift Stamps in a given time.

In April it occurred to the "penny-pinchers," as they called themselves, that it would be a good thing to spread the idea through the entire N. O. T. & L. organization. Permission was readily obtained, and the Never-Spend-a-Penny Club was authorized. Pledge cards, such as shown in the accompanying illustration, were distributed among the 2500 employees of the various departments. There were no dues, no initiation fees, no officers and no red tape. The employee who wanted to be identified with the movement simply signed his pledge and received his certificate—and then proceeded to save his pennies. At present more than 1000 officers and employees have signed pledge cards, and nearly all are growing enthusiastic as they see how rapidly they accumulate stamps.

It is not intended that the never-spend-a-penny movement shall do away with other war-savings work.

THE N. O. T. & L. CO.	
NEVER-SPEND-A-PENNY CLUB	
MEMBERSHIP PLEDGE	
No. _____	1918.
The undersigned hereby agrees to become a member of the N. O. T. & L. NEVER-SPEND-A-PENNY CLUB, and pledges himself (or herself) to observe the following covenants.	
1. To save all pennies (one cent pieces) I receive in change for purchases of all sorts and kinds for the period of one year from date.	
2. To invest the pennies so saved in War Thrift Stamps each time the accumulation amounts to Twenty-five cents.	
3. To turn these War Thrift Stamps into War Savings Stamps (of \$5.00 each) as soon as Thrift Cards are filled.	
Occupation _____	Name _____
Department _____	Address _____
Name Published in Traction Bulletin _____	

MEMBER'S CARD OF NEVER-SPEND-A-PENNY CLUB

In fact, the majority of the officers, department heads and employees are regularly investing each week from 50 cents up in "real" money in Thrift Stamps, and practically all are owners of Liberty Bonds. In many instances they are literally "giving till it hurts"—but nobody counts the penny savings as a "hurt." It is more like finding money and is so regarded. Nor is anyone pluming himself on the patriotism involved in these particular savings. As a shop foreman expressed it:

"I guess I'm patriotic, all right, but I don't see how I can throw bouquets at myself and wrap up in a flag when I get 99 per cent of the good of the system and Uncle Sam the other one. When I want to show my patriotism, I'll buy some more Liberty Bonds I can't afford and cut out a few meals to pay for them."

It is too early to give an accurate estimate of the aggregate of the never-spend-a-penny savings of the organization, but "Old Figgers" of the accounting department, using a conservative guess as a basis, says it will amount to between \$1,500 and \$2,000 per month for the present membership. And there are several back townships yet to be heard from.

LETTER TO THE EDITORS

Decrease in the Efficiency of Common Labor

FIRST NATIONAL BANK BUILDING

CINCINNATI, OHIO, July 1, 1918.

To the Editors:

In the constantly rising cost of construction, the contractor is always in touch with the market price of material and the wages of labor, but there is another hidden factor which must now be taken into account, and that is the efficiency of the available labor. This I have attempted to analyze into usable form.

In my occupation I am concerned primarily with the cost of the new construction of a public utility company operating gas properties, and of course, an addition to the gas distribution system means trenching or excavation by the utilization of common labor with pick and shovel. It seems logical that any condition of the quality of labor which is experienced in our trenching work would be reflected in any contracting which involves excavation, deep or shallow (and probably other lines), but I confine my conclusions to excavation.

During 1917 I noticed that the men doing the digging seemed somewhat older than formerly. I asked the foreman about it and he replied that the labor was not so good as he had previously had, but they were the best men he could get. Now, it is manifestly impossible for any public utility, or contractor, with whom I have any acquaintance, to pay such wages as are offered in munition plants or other industries making big profits. They therefore suffer in the competition and must content themselves with what they can get.

Construction which is not essential to the prosecution of the war has been reduced to a minimum, but considerable municipal and private work involving excavation must be done nevertheless, and it is for contractors contemplating figuring on this work that these deductions are intended.

Let us consider the general condition of the labor market since 1910, and compare it with figures from my experience. From 1910 to 1914 inclusive, times were not especially thriving and there was plenty of good labor. In 1915 war work for the Allies started and labor became in demand. Profits and the volume of business mounted, needing more men, and wages rose. With the rise in wages, however, the munitions manufacturers were still able to attract efficient labor for their money. The increasing cost of living forced men to seek better paying work. This continued throughout 1916, until in 1917 with our entrance into the war came the draft. The drain was then even more intense.

We, as most other public utilities, tried to meet the labor competition by increasing wages some 20 per cent, or more, during that period.

Let us see what we were getting for our money. In making this analysis, I have gone over all of the trenching work we have done since 1910. Knowing the character of the ground in every case, I selected all of the work done in ground of similar nature. Some jobs which presented peculiar conditions I rejected. The remainder I divided into four periods, as follows: 1910 to 1914, 1915, 1916, 1917.

There were plenty of examples of each period to make the average representative. The work in every case consisted of digging a trench 18 in. wide by 24 in. deep for various lengths between 200 and 400 ft., *i. e.*, long enough practically to eliminate the factor of time lost in getting started on small jobs.

The time required to do this trenching was taken from the records. The number of cubic feet of earth that a man can excavate in an hour can properly be considered a measure of his efficiency.

Following is a table of the years, the corresponding number of cubic feet of earth excavated per man per hour, the efficiency in per cent and the time required to remove 5.2 cu.ft. of earth in per cent, as compared to the operation in 1910-1914:

Year	Cubic Feet per Hour	Efficiency, Per Cent.	Hours to Remove 5.2 Cubic Feet
1910-1914	5.2	100	1.00
1915	5.0	96.1	1.04
1916	4.6	88.4	1.13
1917	4.0	76.9	1.30

Now if the efficiency of the labor diminishes at the same rate in 1918 as it did in 1917, we shall have for 1918 an efficiency of 65.4 per cent requiring 1.44 hours to remove 5.2 cu.ft., or what was formerly done in one hour. The increased time required to do a certain piece of work over last year is 11 per cent calculated ($1.44 \div 1.3 = 1.11$).

While we have not done sufficient trenching in 1918 for me to calculate the percentage, from what I have seen of the labor on the work so far this year I would say it bids fair to follow the theoretical probabilities outlined above. The fact is, the men are not so strong and, although willing, they simply cannot keep up the former pace.

In conclusion, I would urge any contractor or company contemplating excavating or similar work this year to study carefully the hours consumed in excavating a unit of material in 1917, then after looking over the labor market, allow a certain amount of additional time to accomplish the same character of work this year. For our own local conditions I would add not less than 15 per cent. In any other locality it may be more or it may be less, but from the common history of the last four years and what our own figures show, I feel safe in affirming there is not a locality in the country where the average efficiency of common labor has not diminished at least 8 per cent, and in some cases as much as 25 per cent.

This is a factor though that requires careful individual study for each locality, but time used in the study will probably be well spent. A. G. DRURY.

Shipbuilding at Tampa

At Tampa, Fla., there is one yard for wooden ships and another for steel. The wooden yard employs 800 men, while the steel yard expects to attain 2500. No extra construction, except a $\frac{1}{2}$ -mile extension was required of the Tampa Electric Company. Extra cars are run morning and evening in accordance with the requirements. Owing to the recent addition of safety cars, fifteen on hand and eight due in a few weeks, there is no shortage of rolling stock.

Balancing Relays in Parallel Feeders by Cross-Connected Reverse-Power Relays

WHILE, in general, transmission and distribution systems can readily be sectionalized by the standard application of overload and reverse-power relays, there are often conditions under which these methods do not suffice. Some of these can be handled readily by a balanced system of relays, two methods of which, the pilot-wire system and the split-conductor system,

protected by these cross-connected relays the current through the cables will still be balanced and, consequently, there is no force tending to operate the relays. On the other hand, if trouble occurs on a cable within the section, the current through the defective cable will be higher than that in the others, and the excess current from its current transformers must, therefore, pass through the relays. While, under this unbalanced condition current will flow through all the relays, the current is in the proper direction to cause the relay to act only in the relays at each end of the defective cables (see direction of arrows in diagram).

Pallet switches connected in the transformer secondary circuit are shown in Fig. 2. These are also connected mechanically to the operating mechanism of the breaker so that when the the breaker opens the current transformers on the feeder controlled will be short-circuited. By this method a cable can be cut out of service without interfering with the electrical balance in the current-transformer circuit.

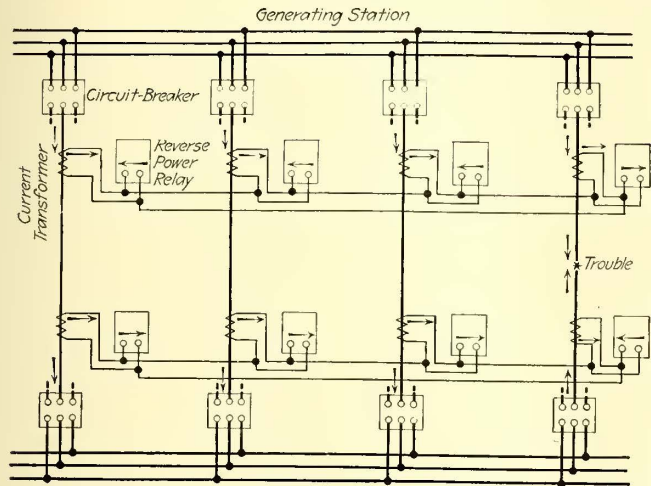


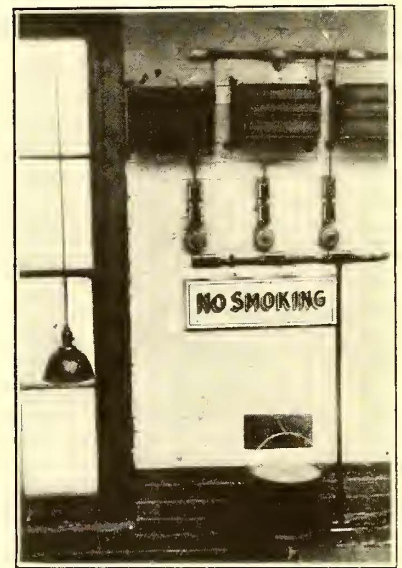
FIG. 1—DIAGRAM OF CROSS-CONNECTED RELAY SYSTEM. ARROWS SHOW DIRECTION OF POWER WITH SHORT-CIRCUIT ON RIGHT FEEDER

have been in use for some time. A later method of balancing relays on parallel feeders is the cross-connection of reverse-power relays.

The schematic diagram in Fig. 1 shows the connections of Westinghouse type CR cross-connected reverse-power relays applied to a system consisting of a generating station and a substation connected by four parallel feeders. To simplify it, the diagram shows one phase only of each of the feeders. A complete diagram of connections for a pair of three-phase feeders (ex-

Convenient Wiring for Battery Charging

AT THE Carew Street carhouse of the Springfield (Mass.) Street Railway, storage batteries used in company automobile ignition service are conveniently charged from the 600-volt trolley supply as shown in the accompanying illustration.



AUTOMOBILE IGNITION BATTERIES CHARGED FROM TROLLEY

A positive lead is tapped from the trolley in the carhouse through a 25-amp. inclosed fuse not shown and carried in conduit to a set of three resistors mounted on the wall. From each rheostat a tap is run through a 6-amp. fuse and snap switch to a horizontal bus carried in conduit and leading to the battery terminals. The return from the battery is brought back through the conduit fitting as shown and carried to ground through the curved duct indicated at the right-hand side of the illustration. Closing each switch permits 4 amp. to flow through the battery, so that a range of from 4 to 12 amp. is obtained at a low pressure of about 6 volts, usually required by a few cells in series.

This method for charging the companies automobile ignition batteries was adopted as the material required for its construction was available from stock and the small amount of charging to be done would not warrant the expense necessary to purchase a motor-generator set, which would cost approximately \$150. Any saving that would be obtained from the use of such a set instead of the above method would not pay for the additional maintenance, interest and depreciation.

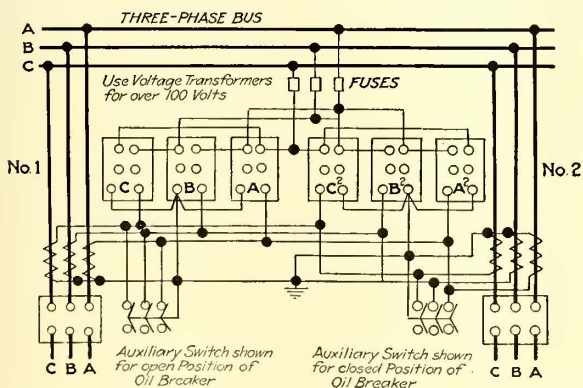


FIG. 2—DIAGRAM OF CROSS-CONNECTED RELAY SYSTEM FOR THREE-PHASE CIRCUIT COMPLETE EXCEPT FOR TRIP CIRCUIT

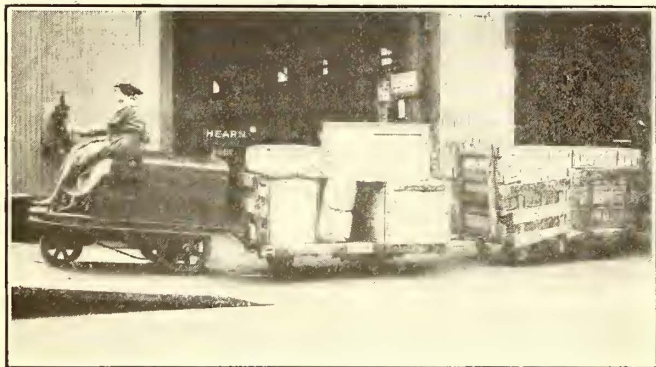
cept that the tripping circuit is omitted) is shown in Fig. 2.

Under normal conditions, the load in each of the cables will be the same and, since the relays have a higher impedance than the current transformers, the current from the latter will circulate through all of them in series without any flowing through the relays. If the trouble occurs at any point outside the section

Electric Tractors for Freight Hauling Helps Solve Shortage-of-Labor Problem

A SYSTEM of handling freight on the piers by means of electric tractors and trains of trucks has recently been inaugurated by the Pennsylvania Railroad, which operate piers Nos. 4, 5, 27, 28, 29, 77 and 78 in the North River, New York City.

This novel method of handling freight has proved



AN ELECTRIC TRACTOR HAULING TWO FREIGHT TRUCKS

very satisfactory and has released several hundred men for other forms of work. Hand trucks were formerly used in transferring this freight to and from the cars.

As the manual labor required in the operation of these tractors is not severe, female employees have been handling them. The girls work eight hours per day and receive the regular compensation formerly paid to men. This is another instance of where labor-saving equipment releases labor, not only through the more efficient handling of the freight to be loaded into and unloaded from the cars, but also by reducing the severity of the work so that women can be made use of. The same scheme might apply in electric railway freight stations.

Track Rails Hardened While in Service

EXTENSIVE renewal of the rails used by electric operating companies is now considered out of the question in view of the great difficulty experienced at the present time due to the shortage of rails and of labor necessary for their installation. With a view of prolonging the life of the track a treatment of rails has recently been devised by C. P. Sandberg which consists of hardening or tempering the head of the surfaces of the rails by heating them and subsequently quenching or cooling them quickly. The process now being applied by the Sandberg Sorbitic Steel Company, Ltd., London, has been tested experimentally on the Leeds Tramways and is now having its first application under regular working conditions on the Corydon Tramways in England.

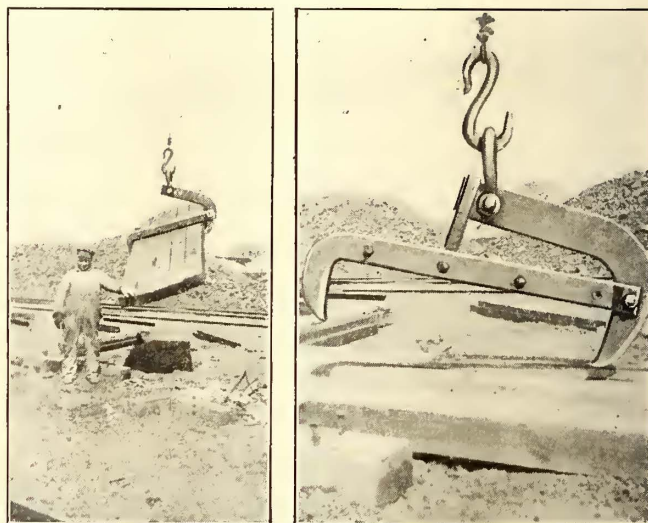
The process consists in causing a flame to travel slowly along the surface of the rail under treatment, this heating being followed by the application of a water jet for quenching or cooling. The work being carried out at Croydon is effected by an oxy-acetylene flame, but other methods of heating may be used if desirable. The apparatus necessary for heating the rails and supplying the water is mounted upon a truck which is arranged to be operated along the track at a certain definite speed by means of a geared hand wheel.

From photo-micrographs which were taken of the Croydon rails it was found that the hardening was carried out on the rails to a depth of about $\frac{1}{4}$ in., diminishing to zero on the outside edge of the rail. If this heat treatment can produce a hard head it is sure to result in a considerable increase in the life of the rails and the wear will be greatly retarded.

Further details of the application of this treatment are given in recent issues of *Engineering*, London, and *Electrical Review*, London.

Saving Man Power on the Tie Pile

THE tie lifting device shown in the accompanying illustrations has been developed at the Harvard yard of the Cleveland (Ohio) Railway, and is designed to carry six ties with the broad side longitudinal. It can be used in loading ties from the storage pile to the work train, or vice versa. One arm is made of twin pieces $\frac{3}{4}$ in. x 6 in., bolted together, $1\frac{1}{2}$ -in. apart, and the second arm is $1\frac{1}{2}$ in. x 8 in., pivoting in the other arm on a $1\frac{1}{2}$ -in. bolt, as indicated in the figures. The arms are made adjustable for width of jaw to accommodate special sizes of ties, and in like manner the point of application of the lifting hook is adjustable to suit the center of gravity of the load. The greatest jaw width is 50 in. and the depth of carrying space is 10 in. A loop made of $\frac{1}{2}$ -in. x 2-in. material is provided to hook the two arms together in a favorable carrying position when no load is being trans-



TIES LIFTED BY DEVICE WHICH REPLACES EIGHT MEN, AND DETAILS OF TIE LIFTING DEVICE SHOWING ADJUSTABLE ARM

ported. One of the accompanying illustrations shows the device lifting five ties of the special size 8 in. x 9 in. x 9 ft.

At Cleveland the tie-lifting device is used in conjunction with a 15-ton Ohio electrically-operated crane. It is stated that ties can be loaded or unloaded at the rate of six ties per minute for the standard size tie, with one man to operate the crane and one man to place the device in position. The cost of using the equipment on a large loading job is estimated at 40 cents per hundred ties as against \$1.20 per hundred for hand loading with a crew of ten men. The tie lifter is said to replace the services of eight men.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

No Peace by Understanding

Mayor of Seattle in Scathing Attack on Puget Sound Company Declares for a Rule or Ruin Policy

Mayor Ole Hanson of Seattle, Wash., in a recent communication to the City Council asks that the Puget Sound Traction, Light & Power Company be required immediately to pay its indebtedness to the city, and to observe its franchise obligations. Mayor Hanson characterizes the present railway service in Seattle as unbearable. In the communication he makes an attack on A. W. Leonard, president of the company, and reiterates his charges that the company is attempting to block the development of hydroelectric power by the city of Seattle.

COMPANY ENTERS DENIAL

Mr. Leonard denies any attempt on the part of the company to block any plan of the city to develop its hydroelectric project. In answering Mayor Hanson's statement that advertisements in the *New York Times* in connection with a recent offering of notes of the company indicated large net earnings, and that the railway in Seattle was not in need of relief, Mr. Leonard said:

"The fact is, the earnings of the Puget Sound Traction, Light & Power Company and subsidiary companies are exactly as stated in the advertisements. This has no bearing on the fact that the railway in Seattle is in a serious financial condition, and that money required for increasing facilities in this branch of the business cannot be secured until net earnings have been improved by an increase of fares, by the reduction of operating expenses or the elimination of franchise burden. Neither can sufficient wages in addition to those now paid be offered to trainmen from the earnings of the railway itself to obtain employees in competition with shipyard wages."

MAYOR JUMPS TO THE ATTACK

In his communication to the Council Mayor Hanson said in part:

"While admitting that his company is earning more money than ever before in its history and while he runs large advertisements throughout the nation bragging about his successful profiteering in the city of Seattle, Mr. Leonard comes to the city officials and asks them for relief. After his company has refused to pay its honest obligations; after it has refused to pay its taxes; after it has refused to give the citizens service; after it has refused to sell 4-cent tickets; after it has refused to pave

its rights-of-way; after it keeps an average of sixty-five cars during the rush-hour periods in its carhouses at all times, all of which are needed to take care of overloads; after it has gone to every court available and been soundly and deservedly thrashed by our excellent legal department, it pleads for mercy. It seems to me that there can be no peace between the city of Seattle and the Puget Sound Traction, Light & Power Company. I, therefore, recommend to the Council that all mediation measures be abandoned; that we ask once more that the company pay its taxes and keep its obligations."

New Cincinnati Ordinance

Sub-committee Appointed to Draft Complete Revision of Electric Railway Franchise

A sub-committee of five members has been named by the Council and Citizens' Advisory Committee on Street Railroads at Cincinnati, Ohio, to draft a complete revision of the street railway franchise. It consists of Director of Street Railroads W. C. Culkins, City Solicitor Saul Zielonka or his first assistant, Dennis Ryan, Councilman Cliff E. Martin, and James A. Wilson and C. H. M. Atkins, members of the Citizens' Advisory Committee, appointed by the Mayor.

FORMER DRAFT AS A BASIS

A tentative draft was made some time ago and this will serve as a foundation for the sub-committee to complete a new revision. It covers everything not affected by the fare question. The idea of appointing a sub-committee originated in the belief that a smaller number of men can work more effectively than the full committees.

Before the draft can be finished, an understanding on the fare question must be secured and to this end all the data possible will be collected for the consideration of the sub-committee. The three plans so far considered are the flat rate, the zone system and the service-at-cost plan. It is said the committee favors the last.

OPEN HEARINGS LATER

When the draft is submitted to the full committee a series of open hearings will be held, at which voters and others may express their opinions freely. Sections will be taken up one at a time and agreements will be reached with the Cincinnati Traction Company, if possible, as the franchise discussion proceeds.

Gross Earnings Tax Upheld

Supreme Court of State of Washington Upholds Franchise Provision Requiring This Tax

In a recent decision, the State Supreme Court at Olympia, Wash., upheld the decision of Judge J. T. Ronald ordering the Puget Sound Traction, Light & Power Company to pay to the city of Seattle the sum of \$64,387, representing the 2 per cent gross earnings tax provided in the franchise.

The decision was signed by six Supreme Court judges. The court holds that the franchise provision for this tax is not in conflict with the constitution of the United States or contrary to the State public service commission law. It also rules that the Public Service Commission has no authority over franchise provisions.

The evidence showed the city made a demand for payment of the 2 per cent for the year 1916. The company made a counter proposal. This the city rejected. The company declared that it had been damaged to the extent of \$70,000 by the city ordinance of 1915, later held void by the Federal Court, requiring the sale of tickets on street cars. The city refused to pay this sum to the company after the ordinance had been declared void. This refusal and the attempt of the city to collect the 2 per cent tax, the company declared, impaired the franchise contract. This was denied by the Supreme Court on the ground that the city is not liable for damages in such cases.

ANOTHER CASE DECIDED

Another decision in favor of the city of Seattle against the Puget Sound Traction, Light & Power Company was recently handed down when Judge Mitchell Gilliam held that the city is entitled to its peremptory writ of mandate in the "second paving case." The paving case was instituted by the city in February, 1917, to compel the company to pave between its tracks on First Avenue South, from Stacy Street to Horton Street. The order for mandamus was held over until after the company's appeal for relief from franchise obligations had been passed on by the Public Service Commission.

Recently the Supreme Court ruled in a Tacoma case that the Public Service Commission has no jurisdiction in such an appeal and cannot grant relief from franchise obligations. On May 23 the commission dismissed the appeal of the company, and on June 14 the city, renewed its efforts to obtain a writ of peremptory mandate. A similar case is pending in the Supreme Court.

Labor for War Industries

Only Those Employing More Than 100 Must Obtain Unskilled Workers from Government

The Department of Labor announced on July 8 that only manufacturers engaged on war contracts and employing more than 100 workers will be required to obtain their unskilled labor through the United States Employment Service of the Department of Labor by the ruling which goes into effect on Aug. 1. So much uncertainty as to the scope of the new labor recruiting policy has been shown in inquiries received by the Department of Labor from employers not engaged in war work that the department announced on July 8 the exceptions under which private recruiting of labor may still be carried on. The announcement follows:

NON-WAR INDUSTRIES AFFECTED INDIRECTLY

"Non-war industries are affected only indirectly. But they are one and all affected indirectly, from the fact that the war industries of the nation are now of paramount importance, demanding sacrifice and co-operation from all employers not engaged in war work in order that they may function with maximum efficiency.

"Non-war industries, therefore, must not offer superior inducements, prevent the transfer of workers urgently needed for war production, or in any way attempt to compete with the government for labor.

"The following five classes of labor need not at the present time be recruited through the United States Employment Service, although, of course, the machinery of the Employment Service is available to all employers needing these classes:

"1. Labor which is not directly or indirectly solicited.

"2. Labor for railroads, (except in so far as the Director General of Railroads has already or may in the future require that recruiting shall be exclusively through the United States Employment Service.)

"3. Farm labor—to be recruited in accordance with existing arrangement with the Department of Agriculture.

"4. Labor for non-war work.

"5. Labor for establishments the maximum force of which (including the additional number recruited) does not exceed 100 employees."

COMMUNITY LABOR BOARD ESTABLISHED

The establishment of community labor boards to have general jurisdiction over the recruiting and the distribution of labor, in co-operation with the United States Employment Service is announced.

These boards will localize in each industrial region the enforcement of the policies of the United States Employment Service. In the mobilization of the army of producers, they will apply the federal policies as the draft boards put into operation the selective

conscription act. In order that the boards may represent adequately their communities employees and employers will each select representatives.

Community labor boards consisting of one representative of employers and one representative of employees with a third representative of the United States Employment Service are being established wherever the industrial situation justifies it.

The members of the boards will be appointed by the state directors of the United States Public Service Reserve. Chambers of Commerce and manufacturers' associations will be asked to nominate industrial management representatives; state and city federations of labor will nominate the labor members, while the third member who will be the presiding officer must in every case be a representative of the United States Employment Service.

The community labor boards will assist in mobilizing the labor of their respective communities, but especially they will decide upon the relative needs of local establishments seeking labor, and where the supply is less than the demand they will prorate the existing reserve.

Short Strike on Norfolk & Bristol

A strike for increased wages took place on the Norfolk & Bristol Street Railway, Foxboro, Mass., from June 20 to 22. In April the company advanced the wages of its employees 2 cents an hour, establishing a scale of 23 to 32 cents depending upon length of service. Recently the employees demanded a sliding scale of 35 to 40 cents an hour. The company offered an advance of 6 cents an hour. The men refused this increase and called a strike. The company made no attempt to operate cars during the period of cessation of work. The men returned to work on June 22. The present scale of wages ranges from 32 to 37 cents an hour, representing an advance of 29.6 per cent over the payroll of last winter. Twenty-eight unformed men are employed by the company.

Ordered to Take Men Back

The State Board of Arbitration, of Minnesota has directed the Twin City Rapid Transit Company, Minneapolis, to reinstate desirable men within thirty days. The men referred to were "locked out" last November for failing to comply with the order that prohibited them from wearing union buttons while on duty. The arbitration order reads:

"Men desiring re-employment to file applications with the company within twenty days.

"As vacancies occur, the company shall re-employ desirable men and in cases of dispute same to be submitted to the State Board of Arbitration for

adjustment, and all desirable men who seek re-employment shall be re-employed, within such reasonable time as the State Board of Arbitration shall determine, at least 100 within thirty days, and the balance at the rate of 100 a month as vacancies occur, and no other trainmen to be employed by the company until the list of desirable men has been exhausted.

"Rate of pay to be based on experience to the extent that men seeking re-employment who have had at least one year's experience with the company will be started at the rate of pay applying to their length of service, with a maximum wage obtaining during the third year of service."

Representative of the trainmen at a preliminary hearing before the board said 975 men were "locked out" by the company last October and asked reinstatement for about 600 who still desired to return. A representative of the railway estimated, however, that not more than 700 men left the employ of the company at that time.

Help Scarce in Kansas City

The problem of labor is being tackled constantly by the Kansas City (Mo.) Railways in new ways. Recently, the company secured the co-operation of the enlisting officers of the Army, Navy, and Marine Corps. Notices were posted in each recruiting station, as follows:

"Positions for Rejected Men. Rejected men may secure employment in agreeable outdoor work as conductor and motormen by making personal application to the superintendent of employment. Kansas City Railways."

British Columbia Men Strike

All the employees who come under the agreement between the British Columbia Electric Railway, Ltd., Vancouver, B. C., and the street and electric railway employees union went on strike on the morning of July 2. The electrical workers also quit, thereby suspending operation on two of the interurban lines, the employees of which come under the agreement with the Brotherhood of Railway Trainmen.

Not a wheel was turned on the system in Vancouver or at Victoria on July 3. The power plants are continuing to provide current for the light and power circuits, but no current is being furnished for the railways.

The railwaymen went out without waiting for the report of the conciliation board. This was expected to be rendered in a day or two. The agreement of the men lapsed on June 30 and they continued to work on July 1, Dominion Day, which is a holiday. The electrical workers, some time ago, refused an offer of arbitration and the government chose an arbitrator for them. This board began its sessions on July 2.

In the meantime, jitneys, which were ruled off at the end of June, are continuing to operate, but have raised their fares to 10 cents.

Labor Hearings in New York

As this issue of the *ELECTRIC RAILWAY JOURNAL* went to press on July 12, hearings were being held at the Federal Building, New York, before the War Labor Board in regard to the labor problems up for settlement on the railway lines of the Public Service Corporation of New Jersey, Newark, and in the cities of Rochester, Buffalo and Schenectady. The indication was that the hearings would be adjourned pending the submission of briefs and the holding of the next Washington hearing on July 22. It was announced that the hearing in regard to the Chicago surface and elevated lines would be held in Chicago on July 13.

Recently developed street railway controversies in the cities of Omaha, Neb., Columbus, Ohio, New Orleans, La., and Buffalo, have been referred by the National War Labor Board to the joint chairmen, William H. Taft and Frank P. Walsh, who, as a section of the board, have charge of all of the electric railway disputes before the board, now twenty-eight in number.

In the Omaha matter, the Omaha Street Railway has so far refused to submit to the board's jurisdiction. In advance of further action, the board has decided to direct the officers of the company to appear in Washington to explain their position.

News Notes

Electricians Tie Up Butte System.—The Butte (Mont.) Electric Railway was tied up on June 24 by a strike of the electrical workers, who quit their posts at the substations and shut off power throughout the city. Motormen and conductors are not on strike and have no grievance.

Increases in Wages in Fort Wayne.—Announcement was made on July 1 by the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., that an increase in wages would be granted to its motormen and conductors on the city lines in Lafayette, Logansport, Peru and Wabash. The new rate will be as follows: First six months, 26 cents an hour; second six months, 27 cents an hour; after the first year, 29 cents an hour; and after the second year, 30 cents an hour. Operators on one-man cars will be paid 3 cents an hour additional.

M. O. Negotiations Again Reported.—At the suggestion of Mayor Marx the Street Railway Commission of Detroit, Mich., will probably enter into negotiations with the Detroit United Railway for the purchase of the property of the company. It is said that the commission hopes to obtain an agreement somewhat similar to that voted down by the people several years

ago by which the city could have purchased the property at its physical valuation, the worth to have been fixed by a condemnation board, and to have paid for it in yearly installments.

Conference With Boston Men Soon.—Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, and Louis A. Frothingham, chairman of the board of trustees of the company, conferred on July 1 with the representatives of the employees in regard to the demands recently presented by the union for an increase in wages to 60 cents an hour for motormen and conductors, and proportionate increases for other classes of employees. Mr. Brush informed the union representatives that owing to the press of business before the board the members would probably not be able to reply to the demands of the union until July 15.

New Orleans Labor Differences Settled.—Committees representing the union and the New Orleans Railway & Light Company, New Orleans, La., on June 26 amicably settled all points in dispute, with one exception. Although no statement has been made by either side as to the terms of the new wage contract, it is known that each side made concessions. The men asked for an increase in wages from 24½ cents to 45 cents an hour. The company offered 31 cents an hour. It is understood that this point was disposed of by both sides agreeing to accept the finding of the War Labor Board with respect to a living wage.

Has Confidence in Commission.—Governor Edge of New Jersey will not call a special session of the New Jersey Legislature to have enacted legislation which will prevent the Board of Public Utilities Commissioners from modifying the terms of utilities contracts and public utilities now regulated by ordinance, as demanded by George L. Record, who assisted in representing the municipalities of the State in opposition to recent petitions for increases in fares of the electric railways. In reply to Mr. Record's letter the Governor said he believed that the commission could be trusted to safeguard the interests of the public and that he would be "culpable were he yield to hysteria" and convene the Legislature.

Franchise Negotiations in Vancouver.—It has been tentatively agreed by the City Council of Vancouver, B. C., and George Kidd, general manager of the British Columbia Electric Railway, to arrange for a two months' extension of the existing franchise that the company holds. This extension is intended primarily to allow sufficient time for the city and company to enter into negotiations which will have as their object the substitution of a reasonable and workable grant for the present antiquated and obsolete franchise agreement. It has been intimated, but by no means authoritatively stated, that under the coming five-year term the railway might be operated under dual control by a joint commission under a service-at-cost arrangement.

New Working Contract in Portland.—The trainmen of the Portland Railway, Light & Power Company, Portland, Ore., have ratified the proposed new contract with the company, with the exception of the increased wage scale provision. It has been agreed by both sides to submit this matter to the National War Labor Board. Both parties have agreed to abide by the decision of the board. Touching working conditions, the contract differs but little from that formerly in effect, but calls for a marked increase in the wage scale. F. T. Griffith, president of the company, has advised the men that the increase could not be granted under the present 6-cent fare. The present wage scale follows: First year, 38 cents; second year, 40 cents; thereafter, 45 cents; the proposed scale follows: First year, 53 cents; second year, 55 cents; thereafter, 60 cents.

Near-Strike on the Pacific Electric.—At noon on July 2 platform men of the Pacific Electric Railway, Los Angeles, Cal., notified Paul Shoup, president of the company, that unless certain demands were granted they would walk out at 7 p. m. of the same day. Mr. Shoup stated that he could not grant the demands and would not treat with the union as such although he would gladly discuss conditions with the men themselves. At 7 p. m. platform men left their cars at the carhouses or terminals and quit. After night sessions held separately by representatives of the union and the company, with mediators, the men were advised by the union to return to work the next morning. This they did. The company allowed them to take their old positions and by mid-forenoon service was fully restored. The differences were to be discussed further on July 10.

Program of Meeting

Central Electric Railway Association

The program has been announced for the meeting of the Central Electric Railway Association to be held at Cedar Point, Ohio, on July 17-18. The executive committee will meet at 10.30 a. m. on July 17. At 2.30 p. m. that day there will be a meeting of the Central Electric Railway Accountants' Association, with a business session and reports of committees. Following this there will be an address by H. O. Bentley, general attorney of the Western Ohio Railway, Lima, Ohio. The meeting of the association on July 18 will convene at 9.30 a. m., with a business session and reports of committees. Following this Britton I. Budd, president of the Metropolitan West Side Elevated Railway, Chicago, Ill., and a member of the War Board of the American Electric Railway Association, will present a paper, "Field of the Interurbans." H. A. Nicholl, general manager of the Union Traction Company of Indiana, Anderson, Ind., will present a paper, "Electric Railways and Their Labor." Both of these will be discussed by members of the association.

Financial and Corporate

Still Going Up

Comment on Interest Return of Kansas City and Boston Financing Just Announced

Announcements made during the past week of large financial operations show how the borrowing rates, particularly for public utilities, as indicated by the return to the investor, are constantly going up. These announcements concern the Kansas City Railways and the West End Street Railway. The first is a short-term operation, while the second is for a long term. Both bear interest at 7 per cent. In the case of Kansas City the return to the investors is 7.75 per cent. The offering terms to the investors in the case of the West End issue have not been announced. A feature that both issues have in their favor is public control agreements. In one case this is lodged with the city and in the other with the State. In other words, the securities are supported by agreements drawn in accordance with the best thought from the standpoint of the companies and the political subdivisions in which the companies operate.

The Kansas City offering is \$7,750,000. It consists of three-year gold notes secured by pledge of the company's first mortgage bonds bearing 6 per cent interest to the extent of more than 30 per cent in excess of the note issue. The first mortgage 5 per cent bonds of the company when offered for subscription about three years ago sold at 98. The *New York Times* commented on this offering as follows:

"What appears to be a record in high yield for an offering of public securities of a reasonably substantial character, at least for recent months, is made by the three-year 7 per cent collateral trust notes of the Kansas City Railway of which Halsey, Stuart & Company, the Continental & Commercial Trust & Savings Bank, and the New England National Bank of Kansas City are offering \$7,750,000 at a price to yield upward of 7.75 per cent. The recent refunding offerings of public utilities, such as the Brooklyn Rapid Transit, New Orleans Railway & Light, and others, have been on a straight 7 per cent basis. The Kansas City Railways, moreover, has already won its fight for a 6-cent fare, which the others have not."

An issue of bonds of the West End Street Railway, Boston, to the amount of \$1,581,000, was authorized by the Public Service Commission on June 6. The bonds are to be issued for the purpose of refunding an equal amount of three-year bonds issued on Aug. 1, 1915, are to be payable in thirty years from date, and will bear interest at a rate not exceeding 7 per cent. Of this latter provision of its order the commission says:

"Since the interest on these bonds, under the provisions of chapter 159 of the special acts of 1915 (the Elevated public control act) will in effect be guaranteed by the Commonwealth for at least ten years, the commission has been in doubt whether an interest rate of 'not exceeding 7 per centum per annum' ought to be approved, as required in the petition. We have been advised, however, by the public trustees who have been appointed to manage and operate the Boston Elevated Railway (the lessee of the West End Street Railway) under the provisions of the aforesaid special act, that they desire such approval, believing that it might be impossible to market the bonds under present conditions if the maximum interest rate were fixed at a lower point."

Paducah Companies Default Interest

Charles K. Wheeler, chairman of the board of the Paducah Traction Company and the Paducah Light & Power Company, the securities of which are owned by the Paducah Traction & Light Company, Paducah, Ky., has announced that interest due on July 1 on the bonds of the Paducah Street Railway and the Paducah City Railway has not been paid. Committees representing the holders of the bonds on which interest is in default have been organized and they have issued a statement urging the bondholders to turn in their securities to these committees so that concerted action may be taken for the bondholders' interests. The Paducah Street Railway has outstanding \$60,500 of first sinking fund 6 per cent bonds and \$98,000 of first mortgage 6 per cent bonds, the Peoples Light, Power & Railway Company has outstanding \$98,500 of first mortgage 6 per cent bonds, the Paducah City Railway has outstanding \$238,000 of consolidated first mortgage 5 per cent bonds, and the Paducah Traction & Light Company has outstanding \$599,000 of first mortgage collateral trust 5 per cent bonds. The Paducah Traction & Light Company has outstanding \$500,000 of 5 per cent cumulative preferred stock and \$1,000,000 of common stock.

Kansas Short Line Sold

The Leavenworth & Topeka Railway, a steam road 46 miles long, has been sold to business men along the line who are required by the court to run the road. The company organized by the purchasers has leased the road to a group which is organizing the Topeka & Eastern Railway, which O. P. Byers, Hutchinson, Kan., will control. The public and, it is said, the owners and operators, expect that the road will ultimately be electrified.

Milwaukee 1917 Returns

During Last Year Operating Increases Absorbed More Than 90 Per Cent of Revenue Gains

The operating revenues of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., for the calendar year 1917 showed a gain of \$1,007,040 or 14.47 per cent as compared with the preceding year. The railway department operating revenues increased \$340,959 or 7.39 per cent. The generally higher costs of materials and labor and the larger reserves for taxes, however, absorbed 90 per cent of the increase in operating revenues.

As a result the gross income showed an increase of \$130,580 or 6.2 per cent. The interest charges rose \$171,968 or 22.6 per cent, and the net income decreased \$41,388 or 3 per cent. After the payment of \$270,000 in preferred dividends as in 1916, and \$1,034,250 in common dividends, as compared to \$1,058,875 in 1916, the 1917 surplus totaled \$1,969, as compared to \$18,732 in 1916. Full details are given in the accompanying statement.

The appropriations for maintenance and depreciation of physical property, in percentages of the operating revenues of the various utilities, were as follows: Railway, 18.81 per cent; electric light and power, 13.72 per cent, and heating, 12 per cent. The balance of these appropriations remaining after providing for maintenance is carried to the credit of depreciation reserve. The appropriations were reduced during 1917 to the percentages shown, pending the authorization by the Wisconsin Railroad Commission of adjustments in rates and service standards which would produce a reasonable return upon the fair measure of the utility capital used in the service of the public.

The expenditure during the year for additions, extensions and betterments to the plants and systems, other than the purchase of property of the Commonwealth Power Company and allied companies referred to in the last year's report, amounted to \$2,328,404. Of this amount \$1,222,493 is chargeable to the railway; \$1,079,605 to the electric utility, and \$26,305 to the heating utility. The value of property replaced or abandoned and charged to the depreciation reserve during 1917 was \$61,048.

REGULATION IS PONDEROUS

In commenting upon some of the problems confronting utilities in these war days, President James D. Mortimer says:

"The city of Milwaukee has shared to a large extent in the increased industrial activity which accompanied the entry of the United States into the war. The large volume of new and profitable business which the various establishments in the city have obtained has made possible the adoption of rates of wages in other industries with which, because of its already serious burdens, the Milwaukee Electric Railway & Light Company has found impossible to compete successfully, though wage increases

of greater magnitude than the present rates of fare justify have been granted. The operating organization has held together very well under all the circumstances.

"The regulation of public utilities as at present practiced is too ponderous and slow to give to the utilities and investors the protection originally intended. Near-bankruptcy has to be shown before relief can be obtained. Regulation is a problem of the future, and so far its conclusions have been predicated on what has happened rather than what is almost certain to occur. The experience of the last several years proves fairly conclusively that the regulation of public utilities in private ownership can remain a permanent part of our economic scheme only if it is made automatic and recognizes the desirability of higher rates of return

Reports from Six Large Roads

Statistics for 1918 Show Increased Traffic Was More Than Counter-balanced by Increased Expenses

In the March 30 issue of the JOURNAL there appeared some electric railway statistics, being a comparison of the returns for the calendar years 1916 and 1917 of a number of companies throughout the country made by the statistical bureau of the American Electric Railway Association. A total of 8437 miles of line was represented in the data given, and an interesting showing was made of the effect of rising costs of supplies and labor on the net revenues.

A study of the annual reports of a few of the larger properties in the

ating ratio indicated an increase of 3.8 per cent in expenses, including taxes and depreciation. The rapid transit lines showed a rise of 8.3 per cent in gross and 1.8 in operating percentage. The fact that only one of the latter companies felt the depressing effects of the full calendar year is brought out strikingly in this more favorable showing.

There was an increase in revenue passengers and total passengers hauled on all the systems referred to. Under this item the difficulty of comparison begins with the absence of figures on free passengers on five properties and the lack of data on transfer passengers on three systems. Whether these companies keep a record of such riders for their own purpose does not appear, but the advisability of making such an estimate must be evident to all operators, because free passengers enter into the cost of service the same as any other class of patrons. It is not likely that any large company has an exact figure on free riders because of the impossibility of counting all persons in uniform or those who present passes which are not recorded on the register. The fact remains, however, that a fairly close estimate is made by those who endeavor to keep such records, and the figures must serve a purpose which makes the effort and cost worth while.

To take the figures as they stand, with due allowance for items which are missing, it is evident that there was an increase of 3.1 per cent in the "total passengers per mile of single track" on surface lines, where the totals ranged from 655,037 to 1,264,694. On rapid transit lines there was a decrease of 7 per cent, the figures ranging from 1,192,064 to 3,261,370. In this connection, as under other items where comparisons are made, it must be kept in mind that three of the systems classed as rapid transit include the statistics of surface lines operated by the same company. No segregation of data has been made in such cases.

SPEED REMAINS PRACTICALLY CONSTANT

Revenue car-miles and revenue car-hours increased in relative proportion on all twelve properties, and as a result the average speed in miles per hour remained practically constant. The student who seeks to get the "average speed" from other properties will find that this item is given on a different basis in different cities, because some operators take the speed as indicated by time-tables, while others arrive at the figure by dividing car-miles by car-hours. Here, too, the person making the comparison must know whether the figure by dividing car-miles by car-hours include all hours paid for, such as lay-over time.

An interesting study of car performance may be made from the figures showing "annual miles operated per car." This is an index of the use of rolling stock. The data at hand show that there was no appreciable change in the average during two years. This

COMPARATIVE INCOME STATEMENT OF MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Operating revenues—railway.....	\$4,953,356	62.2	\$4,612,397	66.2
Operating revenues—light, power and steam heat.....	3,014,835	37.8	2,348,734	33.8
Total operating revenues.....	\$7,968,192	100.0	\$6,961,151	100.0
Railway operating expenses:				
Way and structures.....	\$ 230,748	2.9	\$ 209,985	3.0
Equipment.....	285,601	3.6	200,496	2.9
Traffic, power, transportation.....	2,095,297	26.3	1,704,279	24.6
General.....	131,235	1.6	139,251	2.0
Undistributed.....	288,883	3.6	328,540	4.7
Depreciation (reserve credit).....	401,412	5.1	593,091	8.5
Contingencies (reserve credit).....			1,000	0.0
Taxes (reserve credit).....	346,959	4.3	289,738	4.1
Total railway operating expenses.....	\$3,780,139	47.4	\$3,466,480	49.9
Operating expenses—light, power and steam heat.....	2,058,598	25.8	1,464,844	21.0
Total operating expenses.....	\$5,838,738	73.3	\$4,931,324	70.9
Net operating revenues.....	\$2,129,454	26.7	\$2,029,827	29.1
Non-operating revenues.....	108,127	1.3	77,173	1.1
Gross income.....	\$2,237,581	28.0	\$2,107,000	30.2
Interest charges.....	931,361	11.7	759,393	10.9
Net income.....	\$1,306,200	16.3	\$1,347,607	19.3
Dividends on preferred stock.....	270,000	3.4	270,000	3.8
Dividends on common stock.....	1,034,250	12.9	1,058,875	15.2
Surplus.....	\$ 1,970	0.0	\$ 18,732	0.3

on utility capital with a rising commodity price level."

The scope of activities of the Employees' Mutual Benefit Association has been considerably enlarged and during the summer of 1917 the Employees' Mutual Benefit Association Food League was organized to encourage and assist the members of the association to cultivate practically all of the vacant property of the company within the city limits. Under the direction of a committee food supplies are distributed at cost to the members.

Miscellaneous statistical data of the company follow:

	1917	1916
Receipts per mile of track operated.....	\$27,460	\$25,594
Revenue passengers carried.....	115,626,143	107,528,091
Transfer passengers carried.....	47,232,242	44,655,506
Per cent transfer to revenue passengers.....	40.85	41.54
Receipts per revenue passenger.....	\$0.0425	\$0.0425
Revenue car-hours operated.....	1,862,456	1,772,573
Receipts per revenue car-hour.....	\$2.66	\$2.60
Revenue car-miles operated.....	16,670,189	15,899,284
Receipts per revenue car-mile.....	\$0.2971	\$0.2901

United States brings out some other points of comparison which should have a value to railway men, especially when taken in connection with the more detailed statistics already mentioned. The reports in question are those of six city surface lines and six rapid transit systems, representing a total of about 2300 miles of line. While all these figures have been made public recently it must be kept in mind that only four of the surface line companies and one of the rapid transit roads had their fiscal years ending in December, 1917. The other companies, therefore, did not feel the full effect of twelve months of war conditions. The twelve properties under consideration cannot be identified in this comparison except to say that each represents a gross annual business of \$5,000,000 or more.

GROSS EARNINGS INCREASED MORE ON RAPID TRANSIT THAN ON SURFACE

To consider first the gross earnings of the surface companies, it appears there was an increase of 3 per cent over the preceding year, while the oper-

average last year on surface lines was 36,375, while on rapid transit lines it was 41,840 miles.

"Car-miles per mile of single track operated" is an item which may be taken as an index to the density of service. The surface companies showed an increase of 1.8 per cent with figures ranging from 87,550 to 117,302. The rapid transit systems showed a slight decrease, their extreme figures being 111,759 and 580,093 in the past year.

NET DECREASE PER CAR-MILE AND PER CAR-HOUR

There comes next the story of decreasing net and the struggle against rising costs as told in the items "transportation revenue per car-mile and car-hour" and "expenses per car-mile and car-hour." These in brief follow:

Financial News Notes

Georgia Road Suspends.—Operation has been discontinued by the Clarkesville (Ga.) Railroad.

Florida Road Suspends.—Service has been suspended on the line of the San Jose Traction Company.

Part of Line Suspends.—Operation has been discontinued by the Oak Bluffs (Mass.) Street Railway on its line between Oak Bluffs and Tisbury.

Action on Dividend Put Over.—Henry A. Blair, chairman of the board of the Chicago (Ill.) Railways, says: "The board at its meeting on July 2 did not pass the dividend on Series 1, and the matter may be brought up later. Under present conditions and pending the decision of the War Labor Board at Washington, it was thought best to defer the matter to a future meeting. The company has earned and will pay all its interest obligations due on Aug. 1 as usual."

Car Trust Formed.—The Car Trust Equipment Company, Indianapolis, Ind., has been formed with a capital of \$225,000 by officers of the Indianapolis Traction & Terminal Company to build thirty cars to be used in Terre Haute, Ind., by the Terre Haute Traction & Light Company, controlled by the Terre Haute, Indianapolis & Eastern Traction Company. The incorporators of the company are: Robert I. Todd, president of the Terre Haute, Indianapolis & Eastern Traction Company; John J. Appel, vice-president; and Joseph A. McGowan, secretary-treasurer of that company.

Protective Committee for New Orleans.—A bondholders' protective committee has been formed to look after the interests of all holders of bonds of the New Orleans, Railway & Light Company, New Orleans, La., and its subsidiary companies. The step was taken because the company failed in the payment of the semi-annual installment of interest due on July 1 on its general mortgage 4½ per cent gold bonds and also in the payment in the installment of interest due on that date on the bonds of certain of its subsidiary companies and in view of the uncertain conditions now surrounding the property. The committee, of which R. S. Hecht is chairman, invites the co-operation of all holders of bonds of the companies. Bernard McClosky and Walter B. Spencer are counsel for the committee.

STATISTICS PER CAR-MILE FOR SIX LARGE ROADS

Per Car-Mile	Surface Lines	Rapid Transit
Transportation revenue.....	2.1 per cent increase	6.1 per cent increase
Average for 1917.....	28.4 cents	27.6 cents
Expenses.....	14 per cent increase	9.7 per cent increase
Average for 1917.....	21.4 cents	16.9 cents
Per Car-Hour		
Transportation revenue.....	No change	No change
Average for 1917.....	\$2.56	\$3.38
Expenses.....	4.4 per cent increase	12 per cent increase
Average for 1917.....	\$1.87	\$2.13

Massachusetts Line to Be Scrapped

The Warren & Spencer Street Railway, Spencer, Mass., is to be torn up and sold for junk by the Swift-McNutt Company, Boston, Mass., which is now wrecking the Ware & Brookfield Street Railway in the same district. John F. Lambert, representing the Warren & Spencer Company at Ware, Mass., stated to the press that wrecking work would start at the West Warren end of the road at once. The property consists of 22 miles of track, 10 cars, a power plant and carhouse at Brookfield. The road connects with the Worcester Consolidated Street Railway at Spencer.

Indiana Road Being Dismantled.—The Cincinnati, Bluffton & Chicago Railroad, Huntington, Ind., which was sold at receiver's sale in September, 1917, is being dismantled.

Foreclosure Sale July 25.—July 25 has been set as the date for the sale of the property of the Central Crosstown Railroad, New York, N. Y., under foreclosure. The New York Railways, which is now operating the road, is expected to be the purchaser. Foreclosure proceedings against the Central Crosstown Railroad were instituted because of a default of principal and interest under the company's first consolidated mortgage.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.					
Period	Operating Revenue	Operating Expense	Operating Income	Fixed Charges	Net Income
1m., May, '18	\$17,225	\$10,572	\$6,653	\$475	\$6,178
1m., May, '17	14,885	12,938	1,947	431	1,516
AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.					
1m., Apr., '18	\$156,937	*\$138,884	\$18,053	\$35,892	\$17,839
1m., Apr., '17	163,746	*116,957	46,789	35,642	11,147
4m., Apr., '18	596,346	*549,043	47,303	143,291	95,988
4m., Apr., '17	633,263	*469,522	163,741	143,088	20,653
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.					
1m., May, '18	\$147,808	*\$115,601	\$32,207	\$31,317	\$890
1m., May, '17	117,840	*78,387	39,453	30,048	9,405
12m., May, '18	1,531,816	*1,315,437	216,379	365,586	†149,207
12m., May, '17	1,282,020	*897,275	384,745	357,387	27,358
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO					
1m., May, '18	\$350,814	*\$242,017	\$108,797	\$55,789	\$53,008
1m., May, '17	316,274	*223,357	92,917	47,109	45,808
12m., May, '18	4,192,179	*3,106,703	1,085,476	607,278	478,198
12m., May, '17	3,715,866	*2,398,038	1,317,828	527,138	790,690
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.					
1m., May, '18	\$1,709,860	*\$1,125,780	\$584,080	\$502,430	\$181,650
1m., May, '17	1,512,014	*931,921	580,093	437,257	142,836
12m., May, '18	20,509,341	*13,520,164	6,989,177	5,569,903	1,419,274
12m., May, '17	17,919,035	*10,366,987	7,552,048	5,103,594	2,448,454

GRAND RAPIDS (MICH.) RAILWAY					
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	\$105,683	*\$81,621	\$24,062	\$19,287	\$4,775
1m., May, '17	107,618	*77,355	30,263	18,174	12,089
12m., May, '18	1,287,722	*934,539	353,183	226,526	126,657
12m., May, '17	1,306,964	*865,665	441,299	205,206	236,093
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.					
1m., May, '18	\$73,099	*\$61,002	\$12,097	\$18,445	†\$6,348
1m., May, '17	71,822	*56,988	14,834	15,636	†802
12m., May, '18	875,096	*732,724	142,372	197,576	†55,204
12m., May, '17	842,493	*612,659	229,834	185,102	44,732
NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.					
1m., May, '18	\$232,266	*\$149,160	\$83,106	\$40,514	\$42,592
1m., May, '17	198,301	*\$136,260	62,041	40,339	21,502
12m., May, '18	2,522,800	*1,617,542	905,258	489,350	415,908
12m., May, '17	2,427,202	*1,526,588	900,614	499,167	401,447
NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO					
12m., May, '18	\$6,683,265	\$4,288,918	\$2,394,347	\$1,033,759	\$1,360,588
12m., May, '17	5,782,875	3,279,012	2,503,863	941,835	1,562,028
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.					
1m., May, '18	\$620,294	*†\$369,387	\$250,907	\$187,684	\$62,223
1m., May, '17	474,433	*265,308	209,125	177,102	32,023
12m., May, '18	6,676,191	*†4,065,109	2,611,082	2,144,652	466,430
12m., May, '17	5,647,205	*3,057,131	2,590,074	2,178,108	411,966

* Includes taxes. † Deficit. †† For the month \$18,611, and for twelve months, \$271,459 included for depreciation.

Traffic and Transportation

B. R. T. Wants Seven Cents

Application to Board of Estimate Shows Company Would Also Charge Two Cents for Transfers

A petition from the New York Consolidated Railroad requesting permission to charge a 7-cent fare on the new Brooklyn Rapid Transit Company subways was filed with the Board of Estimate on July 10. The communication pointed out that parts of the new lines have already been operated with financial success, but prospective deficits are mentioned, as follows:

"There seems to be no reasonable doubt that, upon the completion of the railroads which your petitioner is to operate, the combined system will be earning its full preferentials and yielding revenue to apply on the city's interest and sinking fund.

"From the time that initial operation begins any deficits in meeting these city charges can no longer be added to the cost of construction, as at present, but must be raised by taxation.

WANTS BURDEN SHIFTED

"In view of the city's present financial condition and the burdens on taxpayers entailed by the war, the question is submitted for consideration of your honorable board whether temporarily at least it would not be to the city's interest to shift the burden of this interest cost from the taxpayers to the fare payers by increasing the rate of fare chargeable under the contract. An addition of 2 cents to the fare would probably make the revenue sufficient to meet the city's interest immediately after full operation begins. We would not urge this except as a temporary measure justified by the unforeseen delays in completing rapid transit lines, the effect of the war conditions upon net revenue and the undesirability of increasing the burdens of taxation at the present time.

"Moreover, such a measure would place a large part of the cost of rapid transit upon the hundreds of thousands of persons making up the transient population of our city, who pay no local taxes or rent and who get their transportation at less than cost. In case this suggestion should meet with your approval, we should be pleased to take up with you and the Public Service Commission for the First District the preparation of a supplementary amendatory contract."

SURFACE LINES ALSO INCLUDED

There was a second petition from the surface lines allied with the Brooklyn Rapid Transit System asking that a 7-cent fare be permitted on these routes as well. This communication pointed out that the companies might be forced

to go back to the zone system of fares, said to be authorized by the franchises, unless the aid now sought is realized. Under the zone plan, it was noted, fares would be doubled and in some instances advanced even beyond that point. In this connection the company said:

"Instead of applying the rates which we are advised we have the right to charge, we prefer to solicit your approval to the following arrangement, to continue during the war and thereafter (not less than one year) until it shall be terminated by the action of your board or by the Public Service Commission for the First District, to wit:

"1. A unit charge of not exceeding 7 cents for one continuous ride upon any line of each petitioner company except to and from Flushing, North Beach and Coney Island, where the present fare [10 cents] will prevail.

"2. Each passenger paying a cash fare of 7 cents to be entitled for an additional 2 cents to a transfer ticket to any intersecting line, either of the company issuing such ticket or of any of the other undersigned companies. Such transfer to be subject to reasonable rules as to use. No transfer to be required to be issued on a transfer.

"Shall we go back to the zone system, as we are authorized to do by our franchises, relieving it of such of its extreme hardships as might be possible? We prefer not to unless there is no other way open. This would mean wholesale increases of fares."

Boston Fare Increase Coming

Within a few days an official announcement of their plan of action is expected from the trustees of the Boston (Mass.) Elevated Railway. In a preliminary statement issued on July 9 in their behalf it is pointed out that the estimated increase in the cost of operation, making no allowance for higher cost of materials, greater income taxes, better standard of maintenance, or for increase in wages to employees, amounts to more than \$4,200,000, while a 1-cent raise in fare would produce only \$3,650,000, assuming that as many cash passengers ride in 1918 as in 1917.

In the first five months this year, according to the statement, there has been a deficit, below fixed charges, of \$233,719. Among new items of expense is \$475,000 rental for the Dorchester tunnel.

After mentioning a "request from the employees for a substantial increase," the statement goes on to show that a raise of 1 cent an hour in pay would add \$250,000 to expenses, and it is added that the trustees "will have no option in the immediate future than to make a substantial increase in fares."

Richmond Hearing Begun

Council Committee Begins Higher Fare Sessions—Calls for More Fare Data from the Company

Advocates of the proposed increase to a straight 5-cent fare on the lines of the Virginia Railway & Power Company, Richmond, Va., presented their arguments in favor of the measure at the meeting of the committee on streets of the Council on June 27. Further consideration was deferred until July 8, when it was proposed to hear opponents of the measure.

In addition to the figures already presented, officials of the company were requested to submit the following data:

1. The amount of the gross revenues with the straight 5-cent fare in effect.

2. What per cent the city will receive on the present tax basis, and on a straight 5-cent basis.

3. The amount of gross revenues with the straight 5-cent fare, provided that workmen's tickets be sold at the rate of six for a quarter, the school tickets remaining at 2½ cents, remitting the city tax on school tickets.

E. Randolph Williams, general counsel, presented the case for the company. He stated that he felt it was unnecessary to explain that with the cost of labor and maintenance increasing by leaps and bounds it was absolutely impossible for the company to maintain the efficiency of its service under present conditions. He produced figures to show that in some cases, the cost of material had increased recently from 60 to 400 per cent and that the increase in wages has been even greater.

Atlanta Fare Case Concluded

Arguments on the petition of the Georgia Railway & Power Company, Atlanta, Ga., to increase its rates generally, were concluded before the Railroad Commission of Georgia on June 28. The case was taken under advisement. Attorneys had until July 2 to file reply briefs to the arguments.

Counsel for the so-called people's committee, which is opposing the petition, in concluding his case, made the point that the courts alone can decide as to whether the company can increase its fare from 5 cents to 6 cents, predicated the statement upon a contract alleged to have been made by the company and the city of Atlanta in 1902 by which the company, he claimed, agreed to charge at that time, and in the future, a fare of 5 cents.

Attorney Rosser for the company argued that it is the duty of the Railroad Commission to fix just and reasonable rates to meet present-day conditions as the commission found them; that it had been proved that the company could not do business under present war-time price conditions, under the present rates, and that it was merely a matter of permitting this company to carry on its operations and make its improvements, or to throttle it.

Montreal Fares Increased

Commission Appointed Under Recent Franchise Settlement Does Away With Tickets and Will Charge for Transfers

The Montreal Tramways Commission has announced the fares which will obtain for the next year on the lines of the Montreal (Que.) Tramways. The new rates will come into effect eight days after publication of an advertisement for two days in an English and a French newspaper of the city. This is expected to be between July 15 and Aug. 1.

The new rates apply to the lines both inside and outside the city, but it is to the city fares perhaps that most interest attaches. In the so-called uniform tariff or city territory citizens will pay in the day time 25 cents for five tickets, and 1 cent extra for transfers except from 5 to 8 o'clock in the morning when transfers are free. The fare after midnight will be 15 cents cash. The cash fare from 8 a.m. until midnight will be 6 cents and an additional cent for a transfer. These fares as stated in the announcement of the commission follow:

"In the uniform tariff territory comprising the city of Montreal as it exists at present, as well as the towns of Westmount, Outremont, Verdun, St. Laurent, Mount Royal, also the territories of that portion of St. Laurent parish, and of that portion of the municipality of Cote St. Luc lying to the east of the line of the Montreal Tramways, running from Snowdon Junction to Cartierville, including the land occupied by the said line, the fares shall be:

"(a) From midnight to 5 a.m., 15 cents, cash.

"(b) From 5 a.m. to midnight, 6 cents cash, or five tickets for 25 cents.

"(c) For school children from five years to sixteen years of age, on week days only, and between the hours of 8 a.m. and 6 p.m., seven tickets for 25 cents.

"(d) Transfers shall be issued free to school children specified in clause (c) and to all passengers traveling on cars between the hours of 5 a.m. and 8 a.m., on week days only. At all other times, a transfer shall be issued to any passenger paying his or her regular fare, at a charge of 1 cent."

The Tramways Commission, in establishing the tariffs, was bound to carry out the stipulations of the contract entered into by the city of Montreal and the Montreal Tramways on Jan. 28, 1918 (ELECTRIC RAILWAY JOURNAL of Feb. 9, 1918, page 288,) and ratified by the Quebec Legislature on Feb. 9, 1918. The tariffs according to the act must give full effect to this contract.

The revenue to be derived from such tariffs are to provide tramways service at cost. The Tramways Commission, after a careful study of the expenditure incurred by the tramways in previous years and taking into consideration the increase in labor and mate-

rial, found it necessary to provide for a total revenue of approximately \$10,000,000 for the twelve months ending June 30, 1919. This gross revenue exceeds the revenue of the year ended June 30, 1917, by an amount of \$2,500,000, during which period the fares averaged 4.11 cents per revenue passenger.

The increased cost of wages and material, as well as the increased fixed charges due to additional capital required, brought the estimated cost per revenue passenger to approximately 5.5 cents. This increase of about \$2,500,000 was made up as follows:

(a) Estimated increase in wages for thirteen months.....	\$750,000
(b) Deficit incurred since the putting in force of the contract until June 30, 1918.....	400,000
(c) Estimated increased cost of material and supplies.....	1,000,000
(d) Additional fixed charges.....	280,000

The cash fares from Montreal to outside points and return are less than before, but there seems to be no provision for the commutation tickets which made travel for citizens of the outlying suburbs quite cheap to date. On the Lachine line the present cash fares are from 5 to 15 cents in addition to the Montreal local fare. Now the cash fare is from 5 to 10 cents. To the Back River territory the fares have been 5 to 15 cents in addition to the city fare, but now Cartierville and Ahuntsic have only the city fare to pay, and it will be more favorably affected than almost any other part of the island. To Cartierville the additional cash fares now are from 5 to 15 cents. To Notre Dame de Grace a cash fare of 5 cents is now paid, so that no difference takes place there except when the traveler desires to transfer. To Bout de l'Île the present prices are 5 to 15 cents additional. The 5-cent cash fare to Rosemount disappears, and the residents there are in the same situation as Notre Dame de Grace and the rest of the city. A 5-cent fare is also charged from Queen's Park in Verdun to the end of the line. From last January there has been a 5-cent cash fare from St. Laurent into the city, but this now comes under the uniform tariff. The Pointe aux Trembles rate has been 5 cents in addition to the city fare to now.

A One-Man Car City

On June 30 the Boone Avenue and Lidgewood line of the Washington Water Power Company, Spokane, Wash., was equipped with one-man cars. This is the last line, with the exception of the Hillyard line, which is classed as semi-interurban, to be placed under the one-man system. All lines of the company except the Hillyard henceforth will be covered by the single-end service. The Washington Water Power Company, with the com-

pletion of the last forty converted cars started last winter, now has eighty-five single-end cars fully equipped and in service.

Right to Referendum Upheld

In Buffalo Six-Cent Fare Case Appellate Division of Supreme Court Rules in Favor of Voters

The Appellate Division of the Supreme Court at Rochester, N. Y., on July 2, affirmed the decision of Justice Herbert P. Bissell in the Supreme Court of Erie County, Buffalo, N. Y., in which the court held that the voters of Buffalo, N. Y., can hold a referendum to determine whether or not the action of the City Council shall be repealed in reference to suspending the franchise of the International Railway fixing a 5-cent fare and recommending to the Public Service Commission of the Second District that a 6-cent fare be fixed within the city limits.

Presiding Judge Kruse and Judges De Angeles, Hubbs and Lambert held that the Milburn agreement between the city and the railway cannot be amended to permit a 6-cent fare without disposing of "property and rights" of the city, and therefore is a subject referable to the people, who, under the city charter, have the right to hold a referendum on franchise agreements.

Consent of the Appellate Division for an appeal to the Court of Appeals at Albany, N. Y., was obtained by Henry W. Killeen, of Penney, Killeen & Nye, of counsel for the International Railway, and the appeal will be argued in Albany within the next week. The railway maintains that the action of the City Council is merely an emergency measure for the period of the war and was taken so that the traction company's employees could be granted an increase in wages and so that improvements and extensions could be made to the company's city properties, and is therefore not subject to a referendum.

Announcement was made on July 3 by Mr. Killeen on behalf of the railway that when the board of directors of the company holds its next meeting, it will vote to suspend the operation of increased wages to its employees until such time as the company can receive the benefit of an increased rate of fare. In a formal statement, Mr. Killeen declared that the wage increase for platform men amounting to 8 cents an hour calls for a payroll increase of \$2,000 a day, which the company cannot afford to pay if the 5-cent fare is continued.

"As soon as the directors of the International suspend the payment of the wage increase recently granted its employees and there is danger of a strike, I will make application to the courts for the appointment of a receiver for the International Railway," said George L. Buck, Mayor of Buffalo, in a letter to E. G. Connette, president of the International Railway.

Fearing a strike of the company's employees because the proposed referendum will probably overwhelmingly

oppose a 6-cent fare, Clifton Reeves, government labor mediator, has been sent to Buffalo to investigate the situation and make recommendations to the federal war industries board. Unable to affect an agreement between the City Council and the International Railway, Mr. Reeves on July 9 sent a telegram to the War Industries Board asking if it has the authority or can take over the operation of the railway.

The Appellate Division at Rochester, N. Y., was greatly interested in the points of law advanced by the company because it was the first time in the court's history that a referendum argument has been heard in a franchise case in a city where the commission charter applies. The court wanted to know whether it really was an "intelligent" vote that was cast in such matters. Mr. Killeen on behalf of the International Railway said that the action of the City Council would be repealed by the voters. At this point, Judge De Angeles asked:

"By ridicule or by some other line of publicity or campaign, could not the voters be persuaded to vote other than in an intelligent way and if that occurred, would not a second vote be necessary when the facts were straightened out, to obtain an intelligent vote?"

Court Action in Fare Case

Judge Howard Wiest, in the Ingham County Circuit Court, Lansing, Mich., on July 8 issued a temporary injunction, effective immediately, restraining the Michigan Railway, Kalamazoo, Mich., from charging in excess of 2 cents a mile as a passenger rate on its lines. Steps were immediately taken by the railway officials to apply for a judicial ruling dissolving the enjoining order.

The road had been charging 3 cents a mile under the recent government order raising all railroad fares to that figure. The Michigan Company has nearly 300 miles of trackage and it is built to be operated in the same manner as the steam roads with which it has traffic arrangements in the exchange and transfer of passengers and freight at intersecting points, the only difference being that the Michigan road is electrically equipped. It competes with the steam roads for business along its entire lines. When the railroads were taken over by the government, the Michigan Railway was included. On the return to its original owners of what are known as the "short roads," this company was on the list.

The road in opposing the issuing of the injunction held it was under government control and therefore exempt from provisions of the State law. Attorney-General Groesbeck, appearing for the State, contended this was not the fact, as the Director-General of Railroads McAdoo had severed that connection by turning back the road to its owners and therefore the statute limiting the rate to 2 cents a mile applied. This point, it is believed, doubtless influenced the court's action.

Seven-Cent Fare Denied

New Jersey Commission, However, Will Permit One-Cent Transfer Charge In Decision Rendered July 12

The State Board of Public Utility Commissioners of New Jersey on July 12 denied the application of the Public Service Railway, Newark, for an increase in fare from 5 cents to 7 cents and to charge 2 cents on an original transfer and another cent for a transfer upon a transfer. The board, however, issued an order allowing the company upon certain conditions to charge 1 cent for each original transfer on each fare. The board ruled that in order to make this charge, the company must before July 24 file its acceptance in writing of the following conditions:

1. The company must file with the board monthly, beginning with June last a statement giving the total amount of wages and salaries paid, classified by character of service rendered to the company, and the rates per hour, day or period and indicating any change in classification of employees and the resulting wage rate.

2. The company must also file with the board for each month, beginning with June last, a complete comparative income statement for 1917 and 1918 together with mileage, traffic and miscellaneous statistics.

3. The company must file with the board before Jan. 1, 1919, a plan whereby the present method of charging may be revised by an equitable zoning system over its entire territory, proper consideration being given to all of the elements to more properly relate the cost of service with the length of haul and value of service.

The order of the commission will become effective on Aug. 1.

Transportation News Notes

Hearing on One-Man Cars for Savannah.—The Savannah (Ga.) Electric Company has petitioned the Railroad Commission of Georgia for permission to use one-man cars and to introduce the skip stop. The commission set July 10 for a hearing.

West Penn Plans Skip Stop.—The West Penn Railways, Pittsburgh, Pa., and the affiliated Wheeling (W. Va.) Traction Company are at present making an intensive study of the skip-stop plan of operation. The work is being done at the request of the Fuel Administration in its campaign for fuel saving.

Columbus Fare Request Renewed.—At the last meeting of the City Council of Columbus, Ohio, a second request from the Columbus Railway, Power &

Light Company for a straight 5-cent fare for a period of six months was filed without comment. So far the Council has ignored the fare question, despite appeals made to it by business men, business bodies and civic societies.

Women for Small Washington Road.—The North Coast Power Company, Vancouver, Wash., plans to put women operators on its cars, just as soon as they become sufficiently acquainted with operating details. Women have taken over the work of cleaning cars at the carhouses. During the daytime, cars will be run by one operator, but after dusk it is planned to put on two.

Oregon Interurbans After Increased Rates.—Tariffs asking for 25 per cent increase in freight rates have been filed with the Public Service Commission of Oregon by all save six of the steam and electric railways operating in the State. The Public Service Commission retains jurisdiction over the electric lines, it is said, and it will no doubt suspend their tariffs pending hearings.

One-Man Safety Cars Sanctioned.—One-man cars have been allowed the Fort Wayne & Northern Indiana Traction Company by the Public Service Commission of Indiana for use in Logansport, Lafayette and on certain streets in Fort Wayne, provided the cars are equipped with approved air brakes and standard hand brakes and that all steam railroad crossings are guarded by gates or flagmen.

Increase Denied to Suburban Cars in City.—The New York Public Service Commission has denied the Buffalo, Lockport & Rochester Railroad permission to charge a 6-cent fare on that part of its line entirely within the city of Rochester. This decision is based on the recent rule of the Court of Appeals in the so-called Rochester case, denying the commission the right to grant an increase in fares when it is contrary to the provisions made part of the franchise contract accepted by a railroad.

Fare at Springfield May Be Raised.—The City Commissioners of Springfield, Ohio, have expressed their willingness to increase the rate of fare received by the Springfield Railway from six tickets for a quarter to straight 5 cents. C. E. Ashburner, city manager, has suggested that a change be made in the franchise ordinance to this effect. The increase, which will amount to about \$27,000 a year, will cover the recent advance in the wages of the motormen and conductors.

Withdrawal of Special Tickets Sanctioned.—An order permitting the East St. Louis & Suburban Railway, East St. Louis, Ill., to increase its charge for chartered cars run between Belleville and French Village from \$12.50 to \$15 a car per round trip, was entered by the Public Utilities Commission of Illinois on July 5. The company is also permitted to withdraw from sale all party tickets and to increase its commutation book prices from \$6 to \$7. The order is effective five days from the date of its signature.

Skip Stop Before Minneapolis Council.

—The skip-stop plan of operating for the Twin City Rapid Transit Company will be acted upon by the City Council of Minneapolis, Minn., on July 12. Recommendation that the plan be put into effect in Minneapolis simultaneously with St. Paul, about July 15, was made by the Council committee on street railway matters and extensions at a meeting on July 1. The committee report was favored by all members except one. Trial of the plan for ninety days is recommended by the committee report.

Would Fix Seattle Municipal Fares.

—An ordinance has been introduced in the City Council of Seattle, Wash., by Councilman Oliver T. Erickson, governing fares on Seattle's municipal railway lines. The new ordinance will make cash fares 5 cents, with transfer privilege. Tickets will be sold on the cars at six for 25 cents, but will carry no transfer privileges. School children, on presenting a certificate signed by their teacher, will pay 3-cent fares, or two may ride for 5 cents. Tickets will be 2½ cents or ten for 25 cents from the conductor. Employees of the municipal railway may ride free on displaying their badges.

Emergency Increase Denied.

—The Denver (Col.) Tramway was denied a 3-cent emergency increase in the fare between Denver and Golden when an application affecting the line routed by way of Berkeley was filed on June 28 with the Public Utilities Commission of Colorado. The commission contended that no order could be granted on such short notice, the application providing that the rates become effective within five days after tariffs were presented. The commission has signified its willingness to accept for filing a new tariff which will provide the customary thirty days' notice of intention to increase rates.

Long Island Roads Want Increases.

—Applications for increase of fare have been received by the Bureau of Franchises and the Board of Estimate of New York City from the New York & Long Island Traction Company, Hempstead, and the Long Island Electric Railway, Long Island City. The Long Island Electric Railway claims it should have charged 6.88 cents per passenger last year to have cleared its operating expenses and fixed charges, while the New York & Long Island Traction Company alleges it should have charged 6.11 cents per passenger to have made its operating expenses and fixed charges.

Petaluma Line Wants Increase.

—The Petaluma & Santa Rosa Railway, Petaluma, Cal., which operates a boat line between San Francisco and Petaluma, and electric lines between Petaluma, Santa Rosa, Sebastopol and Forestville, has asked the Railroad Commission for permission to increase its passenger and freight rates. The company wants all its passenger fares raised 5 cents. If granted by the com-

mission, this will make every fare between all points on its lines 5 cents higher. The proposed new freight rates are a 25 per cent increase over the present schedules, so that the company will have the same rates as the railroads under the order of Director General of Railroads McAdoo.

Inquiry Into Hudson River Fares.

—The United States Senate has adopted a resolution authorizing the committee on interstate commerce to ascertain why the Railroad Administration took over the electric lines between New York, Jersey City, and Newark, N. J., operated by the Hudson & Manhattan Railroad. The committee will ask whether any necessity existed for taking over these lines, which, according to Senator Frelinghuysen, author of the resolution providing for the inquiry, are not used in any way for military purposes, either for carrying troops or transporting supplies. The question in which Senator Frelinghuysen is most deeply interested, however, is that of the increased fare.

Morris County Wants Higher Rates.

—Notice has been served by the Morris County Traction Company, Morristown, N. J., upon the governing bodies of the twenty municipalities in which the company operates that it intends shortly to appeal to the Board of Public Utility Commissioners for an increase in its rates of fare. A flat 6 cents in each of its twelve zones is to be the object of the petition, as against a 5-cent fare generally and tickets at six for a quarter, which are sold solely within the limits of Summit. Further, the company, which made a 2½-cent fare for school children going to and from school at regular hours one of the conditions of its franchises in many places, wants this fare set at 3 cents everywhere.

Reading Suburban Fares Eight Cents.

—Abnormal operating conditions have made it necessary for the Reading Transit & Light Company, Reading, Pa., to increase the fares on its suburban lines of Reading, Lebanon and Norristown to 8 cents. Under the revised schedules filed with the Public Service Commission of Pennsylvania to become effective on Aug. 1, the city of Reading and territory for some distance into the suburbs in all directions is preserved as a 6-cent zone. City and suburban passengers may continue to ride to and fro between Reading and West Reading, Wyomissing and West Lawn; Mount Penn, Carsonia and Stony Creek; Black Bear and Paxon's Crossing; Oakbrook and Shillington; Hyde Park and Rosedale, for a 6-cent fare.

Increase in Milwaukee Suburban Fares.

—A fare of 3 cents a mile for interurban service and 2 cents a zone for suburban service went into effect on the lines of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., on July 3, following an order granted by the Railroad Commission of Wisconsin. The former rate on interurban service was approximately 2¼ cents a mile, and

the suburban fare was on the basis of thirty tickets for 50 cents; the new fare is thirty tickets for 60 cents, or at the rate of 2 cents per zone. The decision on the suburban fare is temporary, that on the interurban permanent. Mileage books will continue to be acceptable for six months, while zone tickets were accepted until July 11. The zone tickets are now being redeemed at face value.

Spokane Rate Advances Postponed.

—Some misunderstanding relative to the proposed flat increase of passenger rates to 3 cents a mile on the suburban lines of the Washington Water Power Company, Spokane, Wash., and the minimum charge of 10 cents for adults, which were to have become effective early in June, resulted in the schedules having to be changed to become effective on July 30. The freight rates were to have been raised 25 per cent on June 25 and these were also put over to July 30. Protests have been filed with the State Public Service Commission against the Spokane & Inland Empire Railroad, which raised rates at the time the rates on steam roads were ordered advanced by the Director General.

Atlantic City Advance Inadequate.

—Clarence L. Cole, receiver of the Atlantic City & Shore Railway, Atlantic City, N. J., has served notice upon the Board of Public Utility Commissioners of New Jersey of an intention to increase fares in the Inlet loop, Atlantic City, to Savannah Avenue, Margate zone, from 5 to 6 cents on and after Aug. 6. A similar advance is intended for the Savannah Avenue-Longport zone at the same time. The price of 100-trip family books, Atlantic City to Longport, will be increased from \$5.25 to \$7. In May the company was permitted by the commission to put into effect fare increases which it was estimated would result in increasing the revenue of the company \$20,058. This was referred to in the ELECTRIC RAILWAY JOURNAL of May 25, page 1029.

Favorable Report on Skip Stops.

—In line with the wishes of the United States Fuel Administration the committee on local transportation of the City Council of Chicago, Ill., has reported favorably to the City Council an ordinance providing for skip-stop operation of the electric railways in the city of Chicago. The plan, which was recommended to the committee by the city's department of public service, provides that cars shall not be required to make more than eight stops per mile for the purpose of letting off or taking on passengers. A survey, made by Thomas E. Flanigan, acting transportation supervisor, shows that at present there are close to 11,400 stopping places on the surface lines in Chicago and that under the proposed plan of skip-stop operation this number will be 7500, a reduction of 34 per cent. It is reported that skip-stop operation is to be put into effect on all surface lines throughout the city on the date that the proposed ordinance becomes effective.

Legal Notes

FEDERAL COURTS.—*A Franchise Is a Contract.*

Where a resolution of a board of county commissioners granted to a person therein named and his successors the right to construct, maintain and operate an electric railroad along a specified state road, without specifying any limit of time, the grant was not a mere revocable right, but a "contract" not subject to annulment by a resolution of the board of county commissioners declaring it terminated; in view of Const. Art. 1, Sec. 10, prohibiting the impairment of the obligation of contracts. (Northern Ohio Traction & Light Company, et al. vs. State of Ohio ex rel., 38 Supreme Court Reporter, 196.)

FEDERAL COURTS.—*Limited Franchise Extended to Perpetuity.*

An ordinance granting "all the right and authority that" the city had "the capacity to grant, to construct, hold and operate a street railroad upon and along" named streets, which provided for termination of the rights conveyed only in event of the failure of the grantees to keep their covenants, must be deemed a perpetual franchise, although a prior ordinance "prescribing the terms and conditions of street passenger railroads within" the city provided that "all contracts made under the provisions of this ordinance shall be for the term and period of twenty-five years," since this prior ordinance did not address itself to the construction or scope of future ordinances.

Where plaintiff street railway company, operating under a perpetual franchise, was authorized by an ordinance "granting the right-of-way over certain streets" to contract with another street railway company, operating under a twenty-five-year franchise having then eight years to run, for the right-of-way held by the latter and to occupy and use the streets specified in the contract of that road with the city "subject to the conditions limitations and restrictions contained in the ordinances regulating" plaintiff's right to streets occupied by it, and, in accordance with the ordinance, plaintiff purchased the other company's lines, it thereby acquired a perpetual franchise therefor, for the language of the ordinance conveyed more than a license to purchase what the vendor had, the title and the operative words importing a grant. (City of Covington vs. South Covington & Cincinnati Street Railway, 38 Supreme Court Rep., 376.) (See also note on page 822 of the issue of the ELECTRIC RAILWAY JOURNAL for April 27, 1918.)

CALIFORNIA.—*Liability for Injury Resulting from Collision with Unattended Automobile.*

Where an owner negligently left his automobile unattended on street car tracks and a street car was negligently run into it, catapulting it against one working at the curb of the street, the owner of the automobile was liable for the injuries. (Keiper vs. Pacific Gas & Electric Co., 172 Pacific Rep., 180.)

LOUISIANA.—*Cars Need Not Stop Actually at Station.*

Where a street car stopped 15 or 20 ft. beyond its usual stopping place at a place where the step of the car was 15½ in. or 16 in. above the roadway, so that a passenger might safely alight by extending his foot 7 in. out and stepping down while holding onto the handle-bar, such place was reasonably safe, and the carrier was not liable for injury to passenger while alighting. (Clogher vs. New Orleans Railway & Light Co., 78 Southern Rep., 248.)

MISSOURI.—*Consideration for Release—Subsequent Damage.*

A release signed by an injured employee of an electric railway company in consideration of medical services or as a condition of being re-employed is based on a sufficient consideration. Such a release, covering all "actions, causes of actions, suits, controversies, claims and demands whatsoever," bars an action for consequences subsequently arising from the injury of which the employee was not aware at the time he signed it. (Hogard vs. Kansas City Railways, 202 Southwestern Rep., 431.)

NEW JERSEY.—*Validity of Ordinance Forbidding the Transportation of Liquor.*

The commission government acts do not justify an ordinance making it unlawful for any common carrier to deliver in the city any alcoholic liquor consigned to a club, lodge or other association. (West Jersey & Seashore Railroad vs. City of Millville, 103 Atlantic Rep., 246.)

NEW YORK.—*Dancing Floor at Park Is a Place of Public Accommodation, Resort or Amusement.*

The dancing floor of an amusement park maintained by an electric railway as an auxiliary to and to increase its passenger business is a "place of public accommodation, resort or amusement" within civil rights law, Sec. 40. Hence the exclusion of a colored man from the floor on account of his color was a violation of the law. (Johnson vs. Auburn & Syracuse Electric Railroad, 119 Northeastern Rep., 72.)

NEW YORK.—*Regulations to Require Orderly Boarding.*

Where a street car was halted preparatory to taking on passengers, and railway company's inspector ordered the men to stand back so that the women could board first, it was within the power of such inspector to exercise the force necessary to compel compliance with the order. (Garricott vs. New York State Railways, 119 Northeastern Reporter, 94.)

OHIO.—*"Repave" and "Repair" Defined.*

The word "repave" in reference to a street improvement relates generally to a new pavement. The word "repair" is inherently local and more or less temporary. It is none the less "repair" because new material must be used in order to effect such "repair." (Cleveland Railway vs. City of Cleveland, 119 Northeastern Rep., 202.)

PENNSYLVANIA.—*How a Change of Street Railway Rates Must Be Posted.*

Under the public service commission act the posting and publishing of a schedule changing the rates of a street railway company are conditions precedent to the taking effect of the changed rate, and where the schedule of change is not properly posted, the Public Service Commission may restrain the company from putting the changed rate into effect.

The word "post" as used in this connection means the bringing to the notice or attention of the public by affixing to a post or wall, or putting up in some public place; to placard. It is insufficient if copies of the new schedule are sent to the company's agents at its offices and stations, with directions to keep a copy on file with the copy of schedule of fares for street car service on file at such offices, but no copy of the schedule was posted in the rooms to which the public had access. (City of Pittsburgh vs. Pittsburgh Railways, 103 Atlantic Rep., 372.)

TEXAS.—*Power to License Jitneys and Interest of Street Railway in the Subject.*

A street railway having a valid franchise to use city streets has such an interest in the use of the city streets that it may sue to restrain the use thereof by jitneys licensed under an alleged invalid ordinance. The Dallas City charter empowers the board of commissioners to regulate charges of franchise holders and to prescribe the service upon fair hearing, so that an ordinance regulating jitneys and authorizing them to be licensed, passed under the initiative and referendum clauses, is invalid. (Lindsley et al. vs. Dallas Consolidated Street Railway, 200 Southwestern Rep., 207.)

WEST VIRGINIA.—*Conductor Must Discharge Duty to Alighting Passengers Before Going Forward to Signal at Crossing.*

The fact that the rules of the railway company require conductors before crossing the tracks of a steam railroad to go forward and onto the tracks of the other railroad and look out for approaching cars or locomotives thereon before signaling the motorman to go ahead will not excuse conductors from first discharging their duty to passengers alighting or getting on the car, and his negligent performance of any of the duties so imposed upon him will render the railway company liable to a passenger injured thereby. (Cain vs. Kanawha Traction & Electric Co., 95 Southeastern Rep., 88.)

Personal Mention

J. H. McGraw Honored

Proprietor of Electric Railway Journal
Completes Thirty-Three Years
of Publishing Career

On June 15, 1918, James H. McGraw, president of the McGraw-Hill Company, Inc., completed thirty-three years of service as a publisher. To commemorate this event a committee of the employees arranged for the presentation to Mr. McGraw of a bronze tablet at exercises which were held on June 28 at the offices of the company. The tablet read as follows:

"To James H. McGraw, to commemorate his thirty-three years of service as a publisher; to bear witness to his vision, his ideals and their influence on technical journalism and engineering thought; to testify to their pride in his accomplishment, their faith in his leadership, their admiration, respect and love, this tablet is erected by the men and women of the McGraw-Hill Company, Inc., June 15, 1918."

The meeting was attended by some 800 employees and after the address of presentation, Mr. McGraw, to whom the proceedings were a surprise, made a short speech of appreciation. The tablet will be erected in the building owned by the company at Tenth Avenue and Thirty-sixth Street, New York.

Woman Welfare Worker

Brooklyn Rapid Transit Company
Appoints Miss Bullock to Look After
Interests of Conductorettes

Miss Grace Bullock will be placed in charge of welfare work among the women employees of the Brooklyn (N. Y.) Rapid Transit Company, in association with George W. Edwards, welfare administrator of the company. Miss Bullock is a sister of the late Capt. Harry A. Bullock, secretary of the New York Municipal Railway Corporation and head of many committees of the Brooklyn Rapid Transit organization, who was killed recently while serving with the American forces in France.

Short Line Section Manager

Railroad Administration Will Have
Such Official to Protect Short Lines
Relinquished by Government

An announcement from the Director-General of Railroads on June 29 explains the policy of the administration toward those short-line railroads over which federal control is not considered needful or desirable. It is to keep their status in every reasonable respect as favorable as that which they enjoyed during the three years ended June 30, 1917, and to give them fair divisions of joint rates, and a reasonable car

supply, circumstances considered, and to protect them against any undue disturbance of the routing of traffic. To carry out this policy, the Railroad Administration will establish a "Short Line Railroad Section," whose manager will be charged with ascertaining what is necessary to give such reasonable protection to these railroads. This announcement carries the specific indorsement of President Wilson.

Mr. Winsor Elected

Head of Adjustment Department Tacoma Company Made President of
Pacific Claim Agents

H. G. Winsor, superintendent of investigation and adjustment of the Tacoma Railway & Power Company and the Puget Sound Electric Railway, Tacoma, Wash., was elected president of



H. G. WINSOR

the Pacific Claim Agents' Association at the recent meeting of the association in Portland, Ore. He was formerly first vice-president of the association. Mr. Winsor was born in Bridgewater, Mass., in 1868. He was educated in the public schools and afterward took a special course in electrical engineering. Mr. Winsor entered public utility work with the Minneapolis General Electric Company as chief inspector, in which capacity he served from 1907 to 1913. In April, 1913, he resigned from the power company at Minneapolis to accept the position which he now holds with the Stone & Webster companies at Tacoma. Mr. Winsor has been greatly interested in the work of the American Electric Railway Claims Association, and at the convention of that association in October, 1916, he presented a paper "Motor Vehicle Accidents and Traffic Regulation," which attracted considerable attention. In this paper Mr. Winsor presented a table compar-

ing reports from twenty-five cities to show that while the increase in traffic has been phenomenal the electric railways had succeeded in keeping the percentage of increase in collisions between cars and motor vehicles within reasonable bounds.

W. R. Childress, assistant superintendent of the railway department of the Southern Public Utilities Company, Charlotte, N. C., has taken over the foremanship of the earhouse of the company relinquished by C. J. Addicks.

Harry H. Lloyd, secretary to the president of the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis Traction & Terminal Company, Indianapolis, Ind., has been appointed purchasing agent for these properties, succeeding R. R. Smith.

W. N. Smith, formerly electric railway engineer of Westinghouse Church Kerr & Company, who has been engaged recently on engineering matters on the Pacific Coast, has been appointed consulting electrical engineer of the Winnipeg (Man.) Electric Railway and has moved to Winnipeg.

I. M. Cook, for the last seven years foreman of the Southern Public Utilities Company's carhouse, in Dilworth, N. C., has resigned. Mr. Cook has been with the company for thirteen years. He will become foreman of shops for the Columbia Electric Street Railway, Light & Power Company, Columbia, S. C.

C. J. Addicks, for several years foreman in charge of the carhouse of the Southern Public Utilities Company, Charlotte, N. C., on Broad Street, has resigned, to accept service with the Macon Railway & Light Company, Macon, Ga. For the last five years he has been in charge of the repair work of the company.

C. O'B. Murphy, assistant general manager of the American Public Utilities Company, Grand Rapids, Mich., has been transferred as vice-president and general manager to the Merchants' Public Utilities Company and the Merchants' Heat & Light Company, Indianapolis, which are controlled by the American Public Utilities Company.

Frank G. Jones has been appointed fuel director for the District of Columbia by the United States Fuel Administration. Mr. Jones, who is a New Yorker by birth, was for twenty years partner of C. K. G. Billings in the ownership of the street railway at Memphis, Tenn., and was interested in the street railway business in other cities.

James M. Brown, chief clerk under Col. A. R. Piper of the South Brooklyn Railway, included in the Brooklyn (N. Y.) Rapid Transit System, has been commissioned captain in the quartermaster's corps and has been assigned to a regiment which is being recruited and trained for service in France. Captain Brown has been connected with the Brooklyn Rapid Transit organization for thirteen years.

Joseph F. Roach has been appointed assistant superintendent of interurban lines of the Portland Railway, Light & Power Company, Portland, Ore. Mr. Roach entered the employ of the company in the train service in 1902 and since that time has filled various positions, including inspector, chief dispatcher and train rule examiner.

R. R. Smith, purchasing agent of the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis Traction & Terminal Company, Indianapolis, Ind., has been appointed general manager of the Chicago, South Bend & Northern Indiana Railway, succeeded in T. F. Grover, who resigned recently. Mr. Smith will assume his new duties on July 15.

H. E. Funk, engineer of rapid transit lines of the Brooklyn (N. Y.) Rapid Transit Company, has been commissioned as a captain in the Engineers' Reserve Corps and has reported at Camp Lee for service. Mr. Funk entered the employ of the Brooklyn Rapid Transit Company in 1905 as track foreman. He was formerly superintendent of buildings of the company.

Edward J. Peartree, who has been general superintendent of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for the past three years, has been appointed acting general manager of the company to succeed the late Peter E. Hurley. Mr. Peartree went to Trenton from Troy, N. Y., in 1915, taking a position as superintendent of traffic on the Trenton line.

Martin Ackerman, Cincinnati, Ohio, has been appointed manager of the Cincinnati & Dayton Traction Company, which has been placed in the hands of the Warren Bicknell Company, Cleveland, Ohio, as announced previously in the *ELECTRIC RAILWAY JOURNAL*. Mr. Ackerman has been manager of the Interurban Railway & Terminal Company, Cincinnati. It is said he will make his headquarters at Hamilton.

George Garret, for sixteen years master mechanic and superintendent of rolling stock on the staff of the Winnipeg (Man.) Electric Railway, has resigned his position and will take a well-earned rest before entering similar duties elsewhere. As noted in the *ELECTRIC RAILWAY JOURNAL* for July 6, Mr. Garret has been succeeded by W. H. McAloney, former superintendent of rolling stock for the Denver (Col.) Tramways.

M. M. Lloyd, master mechanic of the Des Moines (Iowa) City Railway and the Inter Urban Railway, Des Moines, Iowa, has resigned to accept a position as superintendent of equipment with the Saginaw-Bay City Railway at Saginaw, Mich. Mr. Lloyd has been with the Des Moines properties since 1912. Previous to that he was master mechanic of the East St. Louis & Suburban Railway for seven years and with the United Railways, St. Louis, Mo., for twelve years.

A. L. Kenyon has resigned as general manager of the Columbia Railway, Gas

& Electric Company, Columbia, S. C., and is now engaged in war work for the government, manufacturing ammonium nitrate with the Air Nitrates Corporation at Toledo, Ohio. Mr. Kenyon supervised the making of many improvements for the Columbia utility during his administration. He also took an active part in the affairs of the city and did much to promote civic betterment. He was a prominent member of the Columbia Rotary Club.

A. C. Moore has resigned as auditor of the Chicago, North Shore & Milwaukee Railroad, Chicago, Ill., to accept a similar position with the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, South Bend, Ind. Mr. Moore's initials were incorrectly given as J. C. Moore in the item which appeared in the *ELECTRIC RAILWAY JOURNAL* of June 22. Previous to his position with the Chicago, North Shore & Milwaukee Railroad, Mr. Moore had been auditor of the Oklahoma Railway, Oklahoma City, and assistant auditor of the Union Traction Company of Indiana.

T. F. Grover has resigned as vice-president and general manager of the Chicago, South Bend & Northern Indiana Railway and the South Michigan Railway Company, South Bend, Ind. Mr. Grover was formerly general manager of the Terre Haute, Indianapolis & Eastern Traction Company in charge of both the electric lighting and railway business for more than ten years. He has been continuously connected with the public utility business for the last twenty-eight years. During that time he has served as president of the Fond du Lac Street Railway & Light Company, the Fond du Lac Gas Company, and the Fond du Lac & Oshkosh Railway and was vice-president and general manager of the Eastern Wisconsin Railway & Light Company. Mr. Grover expects to enjoy a well-earned vacation for a few months. His plans for the succeeding period have not been definitely determined.

M. Bernard, assistant engineer of special work, way and structures department, Brooklyn (N. Y.) Rapid Transit System, has resigned to enter the engineering department of Ford, Bacon & Davis, New York. Mr. Bernard was graduated from St. Johns College, Brooklyn, in 1904, and engaged the two following years in general construction work, then spent one year with William Wharton, Jr., & Company, Inc. In 1907 he entered the way and structures department of the Brooklyn Rapid Transit Company as a general engineering draftsman. From 1910 to 1913 he served as general assistant to the engineer of elevated lines and the assistant engineer of the surface lines. He was appointed to his present position in 1913. Mr. Bernard has been a frequent contributor on track subjects to the columns of this paper. His series of drawings and tabulations of costs of standard special work layouts, published during the latter part of 1917, attracted especial attention.

Obituary

Alvah Kittredge Todd, secretary of many companies under the management of Stone & Webster, Boston, Mass., died recently. Mr. Todd was graduated from Harvard University in the class of 1901. Shortly afterward he entered the corporation department of Stone & Webster. He was thirty-nine years old.

John Cline, locomotive foreman at the Marine City roundhouse of the Rapid Railway System, controlled by the Detroit (Mich.) United Railway, died on July 2, Mr. Cline entered the employ of the Detroit United in the horse car days prior to 1892 as a blacksmith and had been constantly in the employ of the company until his death.

George A. Steel, who with his brother financed and built several of the early railway lines in Portland, Ore., now included in the system of the Portland Railway, Light & Power Company, is dead. Mr. Steel was born in Stafford, Ohio, on April 22, 1846. He had lived in Portland since 1862. He was a former postmaster of that city and served as treasurer of the State of Oregon.

E. J. Haines, first lieutenant, United States Signal Corps, died of pneumonia recently at Camp Devens, Mass. Mr. Haines was formerly assistant to the superintendent of equipment of the Bay State Street Railway, Boston. He was well known in the New England electric railway field as a young man of unusual talent and before joining the colors he had begun to make a reputation for himself as an expert engineering witness in street railway accident cases. Mr. Haines was also talented musically and had written a number of successful motion-picture scenarios and short stories. He was about twenty-eight years of age. He was held in high esteem on the Bay State Street Railway and by a wide circle of friends and acquaintances outside the railway company.

Jacob L. Greatsinger, president of the Corning & Painted Post Street Railway and the Elmira, Corning & Waverly Railway, Elmira, N. Y., and formerly president of the Brooklyn (N. Y.) Rapid Transit Company, died on July 3 in his home in Elmira, N. Y., at the age of sixty-eight years. Mr. Greatsinger succeeded Clinton L. Rositer as head of the Brooklyn Rapid Transit Company in March, 1901, and was in turn succeeded two years later by Col. E. W. Winter. Mr. Greatsinger was educated at the Elmira Free Academy, and began his railroad life on the Erie Railroad, firing switch engines. Later he served in almost every capacity up to general manager of various railroad properties. At the time of his appointment to Brooklyn Mr. Greatsinger was president of the Duluth & Iron Range Railroad.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Recent Incorporation

Independence & Sugar Creek Railway, Independence, Mo.—A charter has been secured by the Independence & Sugar Creek Railway to construct a line from Independence to Sugar Creek. The company has a nominal capital of \$2,000. The line will be built and operated by the Kansas City (Mo.) Railways, but will be financed temporarily by property owners along the route. Officers of the Kansas City Railways are officers of the new company. [June 29, '18.]

Franchises

Santa Rosa, Cal.—The Petaluma & Santa Rosa Electric Railway has asked the Board of Supervisors for a new fifty-year franchise for Sonoma County. The old franchise has twenty years to run. Similar applications for franchises have been presented in the cities and towns through which the railroad passes. The Board of Supervisors directed notice of sale of the franchise next month.

East St. Louis, Ill.—The East St. Louis, Columbia & Waterloo Railway has asked the City Council of East St. Louis for a twenty-year franchise. The present ten-year franchise expires on Jan. 1, 1919. The company uses the tracks of the East St. Louis & Suburban Railway.

Springfield, Ill.—The Central Illinois Public Service Company has filed an application with the Public Utilities Commission of Illinois for a certificate of convenience and necessity to construct and operate a 16,000-volt electric transmission line from Milford, Iroquois County, through Iroquois, Kankakee and Vermilion Counties to Hoopes-ton.

Camden, N. J.—The Board of Commissioners of Camden has passed an ordinance authorizing the Public Service Railway to install new poles and equipment for its line on Adeline Street, from Liberty Street to Cass Street.

Fort William, Ont.—The Mount McKay & Kakabeka Falls Railway has applied to the City Commission of Fort William for permission to operate over the city lines of the Fort William Electric Railway to the vicinity of the market.

Track and Roadway

Decatur, Ala.—A communication from H. L. Merrill, president of the Decatur Booster's Club, states that nothing definite has been done regarding the construction of an electric railway from Decatur to Florence, Sheffield and Tuscumbia, as it would be almost impossible to construct the line owing to the high cost of material and war conditions generally.

Calgary (Alta.) Municipal Railway.—Plans are being considered by the City Council of Calgary for straightening and shortening the Ogden line of the Calgary Municipal Railway.

Municipal Railways of San Francisco, San Francisco, Cal.—The Board of Supervisors recently adopted the plan of City Engineer O'Shaughnessy to operate the municipal cars over the tracks of the United Railroads through the district west of Twin Peaks Tunnel. The arrangement provides joint privileges by the payment to the United Railroads of \$100,000, without surrendering any rights. Under the new plan city cars will run over the Ocean Avenue tracks from the junction of Sloat Boulevard and Corbett Road to Harold Avenue. The city agrees also to reconstruct the Taraval Avenue line from Twentieth Avenue to Thirty-third Avenue. City Engineer O'Shaughnessy explained that by joint operation with the United Railroads the city would save at least \$150,000 over the plan of building its own tracks.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—Work has been begun by the San Francisco-Oakland Terminal Railways on the construction of a spur track to the site of the Union Construction Company's new shipbuilding plant. The spur will be 900 ft. long and will connect with track on the property of the company. A sidetrack about 1000 ft. long will be constructed alongside of the track on the line running out to the mole. Construction work has also been begun on a line on Chestnut Street to serve employees of the Moore shipbuilding plant.

Colorado Springs & Interurban Railway, Colorado Springs, Col.—An extension will be built by this company from its Broadmoor track to the Myron Stratton Home.

Columbus (Ga.) Railway.—The City Council of Columbus has asked the Columbus Railway to extend its Fifth and Sixth Street line to the Riverdale Cemetery, a distance of about ½ mile.

Chicago, Milwaukee & St. Paul Railroad, Chicago, Ill.—The electrification of the Chicago, Milwaukee & St. Paul

Railroad between Othello, Seattle and Tacoma will proceed to completion under the government regime. The Director-General of Railroads has approved an expenditure of \$5,346,606 for this purpose during the current year and an additional expenditure of \$2,811,035 is contemplated for 1919. It is estimated the project will be completed by July 1, 1919.

***Mount Carroll, Ill.**—It is reported that a company has been organized to construct an electric line between Mount Carroll and Freeport, with a probable extension to Rock Island. R. H. Campbell is interested.

Des Moines (Ia.) City Railway.—Work has been begun by the Des Moines City Railway on the reconstruction of its tracks on West Locust Street from First to Sixth Avenue.

Tri-City Railway, Davenport, Ia.—Work is now under way by the Tri-City Railway on an extension in Bettendorf and it is expected that the line will be completed by next fall.

Winnipeg, (Man.) Electric Railway.—It is reported that this company will install a Y at the western terminus of its Logan Avenue West line on Kee-watin Street.

Detroit (Mich.) United Railway.—Operation has been begun on the new line of the Detroit United Railway on Ferry Park and Linwood Avenues to the Joy Road.

Public Service Railway, Newark, N. J.—In connection with the development of the new townsite at Gloucester City by the New York Shipbuilding Corporation, plans are being made by the Public Service Railway for the construction of an extension to the new location.

Brooklyn (N. Y.) Rapid Transit Company.—Operation has been begun by the Brooklyn Rapid Transit Company on the Jamaica Avenue extension from Cedar Avenue, Richmond Hill, to Cliffside Avenue, Jamaica. The extension is double-track, with provision made for a center track to be constructed for the use of express trains at some future time. The line is operated by the New York Consolidated Railway, a subsidiary of the Brooklyn Rapid Transit Company.

Stark Electric Railroad, Alliance, Ohio.—It is reported that the Stark Electric Railroad is considering the extension of its electric railway service in Alliance.

Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.—Plans are being prepared for the construction of a two-arch concrete bridge on Wells Avenue, to be built by the county, city of Wellsville and the Steubenville, East Liverpool & Beaver Valley Traction Company. The cost is estimated at about \$30,000.

Nipissing Central Railway, North Cobalt, Ont.—The Dominion Parliament has granted the Nipissing Central Railway an extension of time within which to construct a number of extensions on its branch lines.

Ottawa (Ont.) Electric Railway.—The City Council of Ottawa recently discussed the question of a proposed extension to Ottawa East and to the cemeteries, and a suggestion was made that in the event of the Ottawa Electric Railway refusing to make the extensions the Council enter into an agreement with the Hydro-Electric Power Commission to build them. It was stated that the extensions would probably cost \$800,000.

Port Arthur (Ont.) Civic Railway.—The City Council of Port Arthur has decided to reconstruct the line of the Port Arthur Civic Railway on Arthur Street between Court and Cumberland Streets. The 80-lb. rails at present on Hodder Avenue will be removed for placing on Arthur Street, and will be replaced with lighter rails.

Southern Pacific Company, Portland, Ore.—Physical connection between the Southern Pacific Company and the Oregon Electric Railway at Jefferson Street, Portland, is included in orders emanating from the Federal Railroad Administration requiring several connections between the competing roads in Oregon. Other connections between the Oregon Electric Railway and the Southern Pacific Company are ordered at Albany and at Eugene.

Quebec Railway, Light & Power Company, Quebec, Que.—Some small extensions in the city will be made by the Quebec Railway, Light & Power Company. The company is also having a survey made for the construction of a line on the Beauport Road, extending to the city limits.

Regina (Sask.) Municipal Railway.—Plans are under consideration by the City Council for the extension of the Regina Municipal Railway into North Annex.

Philadelphia, Pa.—Jerome Louchheim, president of the Keystone State Construction Company, and Joseph P. McCullen, the company's counsel on July 9 held their first conference with Mayor Smith and the other city officials with regard to annulling three subway contracts. No definite decision was reached and the matter has been referred to Director of City Transit Twining and the company's representative for more data in the expenditures already made by the contractors. The full amount involved in the contracts, as if completed, is about \$2,900,000.

Houston, Richmond & Western Traction Company, Houston, Tex.—The contract for the construction of the first section of the proposed line of the Houston, Richmond & Western Traction Company from Houston to Richmond has been awarded to Howard Kenyon, Houston, who has agreed to begin work within three months, accepting bonds of the company in payment. Right-of-way for the company's proposed line has been secured as far as Gonzales and will extend to San Antonio, touching the cities of Sugarland, Richmond, Rosenberg, Beasley, Shiner, Gonzales and New Berlin. Bonuses amounting to \$600,000 have

been raised in aid of the project by the citizens of the different towns and communities along the route. Ed. Kennedy, Houston, president. [Apr. 13, '18.]

Spokane & Inland Empire Railroad, Spokane, Wash.—A contract has been awarded to Grant Smith & Company, Seattle, for filling in the large trestle near Rosalia on the Spokane & Inland Empire Railroad. About 60,000 yards of material will be required.

Eastern Wisconsin Electric Company, Sheboygan, Wis.—It is reported that this company will construct an extension from Black Creek to Appleton this summer.

Shops and Buildings

Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio.—A new office building will be erected by this company at the corner of Wayne and Phillips Avenues. The structure will be 35 ft. x 65 ft., two stories, and will be divided into a waiting room and offices for the president and general manager.

Power Houses and Substations

British Columbia Electric Railway, Ltd., Vancouver, B. C.—The new Point Grey substation of the British Columbia Electric Railway, Ltd., at King Edward Avenue and the Lulu Island tracks, is nearing completion. The new building is 100 ft. x 60 ft., of reinforced concrete construction and will take the place of a smaller temporary building on the same site. The new station will contain two 1000-kw. rotary converters and one 1500-kw. motor generator. Both air-blast and water-cooled transformers will be used and there will be the usual oil switches, lightning arresters and arc circuits. A new high-tension line between Earl's road substation and the Point Grey substation was recently put in operation, forming a second link with that from Main Street.

Humboldt Transit Company, Eureka, Cal.—Negotiations are under way by which the Western States Gas & Electric Company will furnish electrical energy requirements of the Humboldt Transit Company.

Pacific Electric Railway, Los Angeles, Cal.—The contract for the construction of a substation at Slauson Junction has been awarded by the Pacific Electric Railway to A. Nelson at \$3,341.

Shore Line Electric Railway, Norwich, Conn.—A new high-tension transmission line will be built by the Shore Line Electric Railway north from Norwich through the Quinebaug Valley to the Massachusetts line in the town of Thompson.

Maysville Street Railroad & Transfer Company, Maysville, Ky.—The new modern power plant of the Maysville

Power Company will begin operation during this month and the old power plant of the Maysville Gas Company will cease operation, being retained for some time as a reserve plant. The Maysville Street Railroad & Transfer Company and the Maysville Gas Company will in the future secure power from the new plant.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—Preparations are now being made by the St. Joseph Railway, Light, Heat & Power Company to guard against possible breakdowns in heating, lighting and railway service the coming winter. New boilers that will develop an additional 1000 hp., are being installed, and the capacity of the old boilers is being extended, by increasing the grate surface. New superheaters will be put in, and other equipment is on hand that will increase the efficiency of the service of the street railway company when placed under the heavy strain of the increased demands of cold weather. In addition to these improvements, numerous economies are being introduced with a view to increasing output and lessening cost.

Alabama Traction, Light & Power Company, New York, N. Y.—A 30,000-hp. unit will be added to its Warrior, Ala., plant by the Alabama Traction, Light & Power Company.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—This company will complete within the next two weeks a short transmission line connecting its 45,000-kw. plant at Lowellville, Ohio, with the property of the Briarville Steel Company located between Youngstown and Gerard. This is a 66,000-volt two-circuit line. Seven-disk Ohio Brass insulators are being installed. The line feeds a 7500-kva. outdoor substation belonging to the steel company and a 9375-kva. substation belonging to the power company. This latter substation will interconnect with the 22,000-volt distribution system of the power company in the vicinity of Youngstown.

Philadelphia (Pa.) Rapid Transit Company.—Work has been begun by the Philadelphia Rapid Transit Company on the construction of a transformer building at Eightieth Street and Eastwick Avenue. The structure will cost about \$30,000.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—A new Westinghouse 1000-kw. motor generator set has been installed by this company in its Ballard substation. A new 1000-kw. transformer bank is also being installed at its North Seattle substation which, when completed, will increase the transformer capacity of the station 100 per cent.

West Virginia Traction & Electric Company, Morgantown, W. Va.—This company has recently completed new extensions and improvements in its plant, including the installation of new stoker equipment in the power house and the erection of about 7 miles of new transmission line.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Effect of Copper Advance on the Electrical Market

Wire and Brass Increase—Other Articles May Follow According to Amount of Copper Used

Somewhat as a surprise came the increase in the official price of copper from 23½ cents to 26 cents. Already its effects are being experienced in the electrical line. Wire, always the first material to feel the fluctuations in the price of copper, advanced accordingly. Rubber-covered wire base advanced from 30 to 34 cents, weatherproof to 32 cents. Trolley wire has advanced 2 cents.

Brass has increased as a result of the rise in copper at least 2 cents a pound where quotations are being made. The settlement of labor disturbances, anticipated shortly, is expected to make for steadier prices in brass.

PRICE INCREASE PROPORTIONAL TO AMOUNT OF COPPER USED

Copper and brass enter into the make-up of many electrical commodities. The effect, however, will probably be proportional to the amount of the materials used. Thus where but a small amount is used and the proportion of the expense of this material to the total cost of manufacture is small there is little reason to expect an advance in the price of the finished article, unless this is the culmination of a series of higher costs which on the whole necessitate a wider margin of profit.

A number of items of electrical fittings using both copper and brass in a limited degree have advanced within the past few weeks, and it is rather doubtful if these will go any higher as a result of the government's action. The manufacturers, it is known, are well supplied with 23½-cent copper.

On the other hand, there are a number of articles on which the increased cost of copper and brass will make an appreciably increased cost of production, such as motors, generators, transformers, knife switches, controllers, brass connectors, bushings, nipples, cable connectors and others.

A number of these items have yet to raise their price to take care of the recent advance in freight rates. It would not be surprising, therefore, to see many more advances in price than have been experienced in the past few weeks.

Furthermore, there are no indications that copper may not go higher, even to 30 cents, in another month. The present price of 26 cents, which

it is well known is by no means satisfactory to producers, is made only until Aug. 15. Prior to that time two meetings are scheduled between the War Industries Board and the copper producers, and it is no secret that the latter will make a strong effort to get a better price than 26 cents.

Rising Prices in a Fluctuating Market

Advances on Railway Accessories Announced Since July 1—Changes Occurring Frequently

Prices of railway accessories while fairly stable are advancing gradually along the whole line. The market fluctuates weekly, so much so that on certain materials quotations are wholly withdrawn or withheld for date of shipment, when the current price prevails.

The raise in copper has affected every line of which it is a part. Trolley wire was marked up 2 cents a pound on July 3, and it is likely to go higher, according to the largest manufacturers. This figure is for immediate acceptance, else the quotation at shipment will be enforced. Price seems to be the last consideration, delivery being paramount. Copper may go to 28 cents a pound on Aug. 13. Brass is 2 cents a pound higher, effective July 3.

On all pound wire, including rubber covered, weatherproof, magnet and cable an advance of 3 cents a pound was announced on July 5. This is figuring on a 31-cent base, although there is a likelihood of the concern making these new prices going to a 34-cent base shortly. One of the leading companies, adhering to a 37-cent base, advanced its prices on all pound wire 2½ cents a pound. Braid has been marked up from 40 to 100 per cent on the various sizes. This is due to the higher cost of cotton, wax, paint, rubber, tin and labor, factors entering into the production of wire and cable.

Saturday last (July 6) rail bonds were advanced from 7½ to 10 per cent. Deliveries are from thirty to sixty days behind, but this is considered very good in view of current conditions.

Bell, register and trolley cords are now 86 cents a pound against 50 cents a year ago. The price has been steadily going up with each jump in cotton, the latest increase being made a few weeks ago, when a 5-per-cent rise went into effect.

As poles are sold f.o.b. delivered in accordance with the recent advance in freight, prices will be higher in proportion. Cross-arms are from 4 to 5 per cent higher.

Coal Output Maintained at High Averages

Increase of Bituminous Over 1917 Nearly 8 Per Cent—Maximum Production of Anthracite

From the weekly report, compiled by the United States Geological Survey, ending July 6, it is learned that the production of bituminous coal during the week ending June 29 not only exceeded the production of the week of June 22 by 455,000 net tons, or 3.8 per cent, but resulted in the second highest weekly production in history. The output (including lignite and coal made into coke) is estimated at 12,458,000 net tons as against 12,003,000 net tons during the week of June 22 and 11,583,000 net tons during the current week of 1917. The average production per working day is estimated at 2,076,000 net tons, an increase over the preceding week of 75,000 net tons or 3.8 per cent, and over the same week of 1917 of 145,000 net tons or 7.5 per cent. Increased shipments during the week ending June 29 were reported from all districts with the exception of central Pennsylvania and Alabama.

Anthracite shipments increased 471 cars during the week ending June 29, the total movement amounting to 41,641 carloads. The insistent demand for coal has created new and intensive methods of production. There is a possible means of supply found by working abandoned mines; robbing pillars of coal where it is safe; new devices installed in and about the mines for greater mining facility and more electric power used. Every means will be employed to maintain, if possible, a maximum output close to 270,000 tons of anthracite daily.

Mr. Dee Leaves Drouve

Resigns as Officer of Company at Bridgeport to Manufacture Ship Hardware

William V. Dee, secretary and general manager of the G. Drouvé Company, Bridgeport, Conn., maker of the Anti-Pluvius puttyless skylights and other products, has resigned to engage in business for himself and to be more active in helping to carry out and produce materials that will directly help the war program, by manufacturing, designing and selling ship specialties and ship hardware. In addition to an office and factory in Bridgeport, Mr. Dee has established an office in Philadelphia so as to be in close touch with the headquarters of the U. S. Shipping Board, Emergency Fleet Corporation.

Mr. Dee has a wide acquaintance among engineers, architects, contractors, steam railroad men and electric railway operators. While he retires as an officer of the Drouvé Company, Mr. Dee will retain his financial interest in the company. Mr. Dee became connected with Drouvé twelve years ago. Previous to that he was associated with the *Railway Age*, with which he began his career as office boy. From the position of office boy he was soon

advanced to a clerkship, then he became a solicitor of subscriptions; from that it was but a step to soliciting advertising. Finally he was made assistant manager of the New York office of the *Railway Age*. It was during his connection with that paper under Hugh M. Wilson that Mr. Dee built up his wide acquaintance among railway operators and the makers of railway equipment, among whom he is everywhere known as "Billy Dee."

fifty for Washington, D. C., two orders for Wheeling, W. Va.,—one for twenty-nine cars and the other for fifty-two—and thirty cars for Buffalo, N. Y.

In looking over the rolling stock purchases, the bulk of the orders, it is noticed, has come as a result of increased transportation equipment needed to transport war workers. That other orders for the same purposes will be placed in the last half of the year there seems reason to believe. Most of the business came from the East, but now that the government intends to place more of its business in the Middle West, that section of the country should, as time goes on, find it more and more necessary to place rolling stock orders.

So long, however, as the financial situation remains in its present condition it is doubtful if electric railways will make any purchases other than those absolutely necessary.

Rolling Stock Market During First Half of 1918

Review of Orders Placed Show a Considerable Falling Off With Transportation of War Workers Influential in Bulk of Existing Market

Nothing is a better indication of the low level to which electric railway purchasing has fallen than recent rolling stock orders. Inability to secure funds has reduced traction companies to the state where even the smallest purchases are made with some hesitation. Increases in rates have not always produced the anticipated increase in revenue, while increasing operating costs are leaving less and less for up-keep or new equipment.

At this time each year the *ELECTRIC RAILWAY JOURNAL* reviews briefly the rolling stock purchases of the first half of the year and makes certain comparisons with the business for preceding years. The figures for 1918 are frankly disappointing. While it was known that rolling stock purchases had not been large, still it was not supposed that they had fallen off to such an extent.

A compilation of the orders reported by the *ELECTRIC RAILWAY JOURNAL* as having been placed in the first six months of 1918 reveal a total of but 676 cars for the United States and Canada. How these figures compare with former years can be seen from the following table.

	First Six Months.	Full Year.
1915.....	1,273	2,782
1916.....	2,224	3,942
1917.....	1,943	2,455
1918.....	686	

Should the conditions of 1916 and 1917 repeat themselves wherein the purchases in the second half of the year were considerably less than in the first half the 1918 total will be very sad indeed. However, it is somewhat reassuring to know that orders for 446 cars for four companies are now expected to be placed most any day. These orders include 300 cars for Boston, 100 for the Hudson Tube lines, twenty for Staten Island shipbuilding transportation and twenty-six for Seattle, Wash.

A segregation of the orders reported in the *ELECTRIC RAILWAY JOURNAL* for the first half of the current year shows that purchasing has fallen off in every section of the country and especially so in the central part of the country. Furthermore, the reports from Canada indicate that purchasing there has stopped.

The following table shows how the

rolling stock orders from different sections of the country and Canada for the first half year of 1918 compare with those for the first half of 1916 and 1917.

	1918	1917	1916
Eastern	534	954	1,257
Middle	84	580	805
Western	27	145	49
Southern	30	150	88
Canada	11	114	25
Total	686	1,943	2,224

These orders, it must be understood, are for new cars ordered from carbuilders only. No purchases of second-hand equipment are here included, although the market for used rolling stock has been very large. In fact, it is well known that many more second-hand cars could have been sold had they been available. Furthermore, these orders do not include rebuilt cars or cars built by the roads themselves. The figures do include a few storage-battery cars and a few snowplows.

It is difficult exactly to tell how many of each particular type of car have been ordered. There has been a demand for the one-man car, but not so great as existed last year.

Inquiries on safety cars are very brisk and in all probability a great many more orders would be placed if supplies were not believed to be limited. There are inquiries now for three cities, whose populations are 40,000, 300,000 and 250,000 respectively.

The only order for subway cars reported during the first half of the year was 100 cars for Brooklyn. In the first half of 1917, however, an order for 517 subway cars was placed. This single order as a matter of fact if deducted from the 1917 figures in the preceding table would bring the eastern orders for this period below the 1918 figures. Besides if subway orders are eliminated entirely the Eastern figures for the first six months of 1917 and 1918 would run 437 and 434 respectively, showing that so far as the East is concerned there has been comparatively little change in orders outside of the subway type.

Outside of the Brooklyn subway order the largest order placed so far in 1918 was for 100 cars for Philadelphia to take care of transportation of shipyard workers. Other notable orders include fifty-one cars for Newark, N. J.,

Rolling Stock

Tidewater Southern Railway, Stockton, Cal., contemplates the purchase of an electric locomotive.

Waukegan Electric Light & Railway Company, Waukegan, Ill., is reported as having placed in service two new pay-as-you-enter cars.

Winnipeg (Canada) Electric Railway has ordered ten semi-steel, single-end motor cars from the Ottawa Car Company. They will be a departure from previous Winnipeg cars in many ways, including the use of cross seats and trucks with 26-in. wheels.

Knoxville Railway & Light Company, Knoxville, Tenn., is reported as having received nine new passenger cars of the metropolitan type, with a seating capacity of fifty-two. The cars have been on delivery for a long time, the delay of the car builders being caused by war conditions.

Cleveland (Ohio) Railway has just acquired twenty-five all-steel passenger cars originally built for the Rochester (N. Y.) Electric Railway. The rolling stock is of the Peter Witt front-entrance, center-exit, pay-as-you-pass type. Their cost was \$7,800 each, and they weigh 32,000 lb.

Terre Haute (Ind.) Electric Traction Company, which is leased to the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., is reported as contemplating the purchase of thirty pay-as-you-enter cars for its city lines through the Car Trust Equipment Company. The City Council has authorized the company to place the order.

United Traction Company, Albany, N. Y., is rebuilding, remodeling and equipping eighteen of its open or summer rolling stock into closed cars. The design was furnished by Ernest Murphy, superintendent of equipment, and the cars are described by railway men as of a very handsome type.

When completed the cars are to be placed in operation on the company's Watervliet line.

Seattle (Wash.) Municipal Street Railway, through the Board of Public Works, Seattle, C. B. Bagley, secretary, will receive bids until July 12 for furnishing f.o.b. car builders' works, six single truck, double-end, safety motor passengers cars, equipped complete with air brake, including safety control features, also two motors with double-end control. The successful bidder will be required to file with the City Comptroller a bond for the full amount of the contract price. Each bidder must accompany his bid by a check for not less than 5 per cent of the total amount bid. Bids will be received on the same date and under the same conditions as above for furnishing twenty standard double-truck, double-end motor passenger cars, trucks arranged for four motors, multiple unit control, also straight-air brake equipment with automatic emergency feature, for use on the same railway. The officials are making every effort to improve the railway service.

Trade Notes

Atlantic Welding Company, New York, has changed its name to Lincoln Rail Welding Company.

J. R. Palmer, who had charge of the line material sales of the Ohio Brass Company, Mansfield, Ohio, for a number of years, is now in Philadelphia, where he will be engaged in naval airplane production work.

Electric Welding Company, Newport News, Va., has been incorporated with a capital stock of \$50,000. The officers are: William Schenstrom, president; Charles H. Peoples, secretary, both of Brooklyn, N. Y., and K. B. Johnson of Norfolk, Va., treasurer.

Railway Improvement Company, New York, announces that it has received an order for nine Rico terminal recorders from the Australian General Electric Company, for use on the lines of the Melbourne-Brunswick-Coburg Tramways Trust, Melbourne, Australia.

H. J. Pritchard, treasurer and director of the National Conduit & Cable Company, Inc., New York, N. Y., has been elected first vice-president of the company and placed in charge of operations. He is now virtually acting president, succeeding the late George F. Jackson.

General Electric Company, Schenectady, N. Y., has developed a small light line of portable testing instruments.

These consist of ammeters, voltmeters and wattmeters for both alternating and direct current circuits. They are designated as the type P-8 and are applicable to all commercial frequencies and wave forms without appreciable error. The instrument case with a window in the cover over the scale forms the carrying case.

Chicago (Ill.) Pneumatic Tool Company announces the appointment of L. C. Sprague as its special representative in connection with the sale of pneumatic tools to railroads. Mr. Sprague was formerly connected with the railroad department of the H. W. Johns-Manville Company, New York City.

Southern Car Company, High Point, N. C., bankrupt, will be sold at auction on Aug. 8 at 2 p. m. The trustee furnishes the following details of the property to be sold: A modern car plant fully equipped for the manufacturing of street and interurban cars, located in an ideal section for transportation, raw material and labor facilities. There are 15 acres of real estate, and eight buildings of 80,000 sq.ft. of floor space. The company has built cars for the leading railway companies of the country. The entire plant has some \$15,000 worth of supplies on hand. The property cost approximately \$180,000 seven years ago. For further information and a complete detailed inventory address W. A. Copeland, trustee Southern Car Company, High Point, N. C.

New Advertising Literature

Barnes & Irving, Inc., Syracuse, N. Y.: Circular describing the Misener expanding rotary hack saw for cutting circular holes in metal, wood, slate, marble, etc.

NEW YORK METAL MARKET PRICES

	July 3	July 10
Copper, ingots, cents per lb.....	26	26
Copper wire base, cents per lb.....	28½	30
Lead, cents per lb.....	8	8.05
Nickel, cents per lb.....	40	40
Spelter, cents per lb.....	8.87½	8.87½
Tin, Chinese, cents per lb.....	92	92
Aluminum, 98 to 99 per cent., cents per lb.....	†33.00	†33.00

* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	July 3	July 10
Heavy copper, cents per lb.....	22	23½
Light copper, cents per lb.....	19½	20
Red brass, cents per lb.....	19	22
Yellow brass, cents per lb.....	13	14
Lead, heavy, cents per lb.....	6½	7
Zinc, cents per lb.....	5½	5¾
Steel car axles, Chicago, per net ton....	\$41.52	\$41.52
Old car wheels, Chicago, per gross ton...	\$29.00	\$29.00
Steel rails (scrap), Chicago, per gross ton	\$34.00	\$34.00
Steel rails (relaying), Chicago, gross ton...	\$60.00	\$60.00
Machine shop turnings, Chicago, net ton...	\$16.25	\$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	July 3	July 10	July 3	July 10
Rubber-covered wire base, New York, cents per lb.....	34	30 to 37		
Weatherproof wire (100 lb. lots), cents per lb., New York.....	28½ to 34½	32.10 to 32.40	3.95	3.95
Weatherproof wire (100 lb. lots), cents per lb., Chicago.....	33.42 to 38.35	33.42 to 35	80%	80%
T rails (A. S. C. E. standard), per gross ton.....	\$70.00 to \$80.00	\$70.00 to \$80.00	80%	80½%
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton.....	\$67.50	\$67.50	82 & 3%	82 & 3%
T rails (A. S. C. E. standard), 500 ton lots, per gross tons.....	\$62.50	\$62.50	11½ to 22	11½ to 22
T rail, high (Shanghai), cents per lb.....	4½	4½	13 to 13½	13 to 13½
Rails, girder (grooved), cents per lb.....	4½	4½		
Wire nails, Pittsburgh, cents per lb.....	3½	3½	\$38.50	\$38.50
Railroad spikes, drive, Pittsburgh base, cents per lb.....	4½	4½	Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton.....	\$42.50
Railroad spikes, screw, Pittsburgh base, cents per lb.....	8	8	Asphalt filler, per ton.....	\$45.00
Tie plates (flat type), cents per lb.....	*3½	*3½	Cement (carload lots), New York, per bbl.....	\$3.20
Tie plates (brass type), cents per lb.....	*3½	*3½	Cement (carload lots), Chicago, per bbl..	\$3.34
Tie rods, Pittsburgh base, cents per lb...	7	7	Cement (carload lots), Seattle, per bbl...	\$3.68
Fish plates, cents per lb.....	*3½	*3½	Linseed oil (raw, 5 bbl. lots), New York, per gal.....	\$1.60
Angle plates, cents per lb.....	*3½	*3½	Linseed oil (boiled, 5 bbl. lots), New York, per gal.....	\$1.60
Angle bars, cents per lb.....	*3½	*3½	White lead (100 lb. keg), New York, cents per lb.....	10½
Rail bolts and nuts, Pittsburgh base, cents per lb.....	4.90	4.90	Turpentine (bbl. lots), New York, cents per gal.....	75
Steel bars, Pittsburgh, cents per lb.....	5	5		
Sheet iron, black (24 gage), Pittsburgh, cents per lb.....	4.90	4.90		
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb.....	5.80	5.80		
Galvanized barbed wire, Pittsburgh, cents per lb.....	4.35	4.35		

* Government price.