

*"War Service and Economy" Issue*

# Electric Railway Journal

Published by the McGraw-Hill Company, Inc.  
Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW



Volume 52

New York, Saturday, September 28, 1918

Number 13

## Using Disabled Men In the Railway Industry

**C**AN the railway industry use the services of physically impaired men with profit to both employer and employee? The question is one whose importance grows as the casualty lists mount up and the home man-power wanes. Elsewhere in this issue is published a brief survey of what is being done to reclaim and re-educate the human wrecks left on the back trail of war and industry, and of what they are able to accomplish after the reclamation process has been completed. That some interest in the matter is being taken by men in the electric railway industry is evidenced by the development of the pedal-controlled car of the Third Avenue Railway, New York City, described in the *ELECTRIC RAILWAY JOURNAL* for May 18, 1918, page 977, and by expressions of interest from men prominent in the industry.

Disability may preclude a man from being a "jack of all trades," but along certain lines the incapacitated man may be altogether as capable as an able-bodied man. Again, thanks to the skill of the artificial limb makers and the re-educational teachers, a missing member may not prove an insurmountable obstacle to the performance of duties which in the ordinary man require the use of the full complement of limbs. In any event, it seems to be better for everybody concerned that the cripple receive an opportunity to do a man's work with other men for a man's pay than receive a surplus of pity and charity.

Because of the limited range of activities of the disabled man his job should be one which gives steady employment. The stability of the electric railway industry in this respect makes it peculiarly attractive. For certain classes of disability there are opportunities open for platform men, particularly where modern types of cars are in service. In the shop it appears that there are a number of places where properly trained men could be used to advantage. The opportunities in the way department are more limited, but doubtless some exist. Certainly, railway men who have suffered some handicap in the war but are otherwise able should with some training be able to fit into some part of a railway organization. The government is providing in a splendid manner the means for rehabilitating the

men who have become incapacitated in the national service. Information as to the exact nature of the different kinds of employment, as to what cripples now in service are able to do, and as to the disqualifying disablements for the various lines of work is of great value and every assistance should be given in its collection.



## Our "War Service and Economy" Issue

**T**WO ways stand out prominently by which electric railway companies in this country can help the government in these days of national stress. One is by giving the best possible service which they can to the transportation of troops and war supplies as well as of workers in the munition and shipbuilding plants and all others engaged in essential industries. This might be called the direct way and applies to the transportation of both passengers and freight. The other way of assisting the nation is indirect but for that reason none the less important. It consists in giving the necessary service mentioned with the least possible draft upon the military resources of this country, particularly in fuel and man power. It is these two purposes to which this number is devoted, namely "War Service and Economy."

It has not seemed wise for the American Electric Railway Association to hold the usual four-day convention this year. The responsible executive officers of electric railway properties could not be spared for a long enough time from their properties, and the period of the Fourth Liberty Loan drive was set to include the dates originally selected for the convention. But the fact that the convention plan has been abandoned need not and should not prevent electric railway companies from operating their properties in such a way as best to promote our military success abroad. Many electric railway men are actively fighting the Hun, and it is the duty as well as the pleasure of those who remain in this country to co-operate to the best of their ability in the common cause.

Let every company strive toward war service and economy to the end that the enemy the more quickly may confess defeat.



## Electric Railways Are Bound to Live

OF ALL the valuable things accomplished by the modern one-man car, there is one that must mean much more to us all than any saving of the moment in wages, power or other items. That supreme result is the proof that the electric railway merely has to give frequent and comfortable service to beat the private automobile which while not a competitor in the true sense of the word was a serious subtractor of electric railway revenue. Jitneys were bad enough, but there was always the hope of keeping them within bounds; but how fight the machine which was not out for gain? The permanently satisfactory answer to both, we believe, will be found in such operating data as we have gathered for this issue from Florida to Washington. It is very gratifying to report that small cities where rides are short and private autos many are providing traffic that equals or exceeds the best days of the past. It is the experience of towns like these—not of the few heavily congested cities—that demonstrates the continued primacy of the electric railway as a common carrier.

With that knowledge certain, we can look more hopefully toward a future when war demands and war prices will no longer complicate the problem of making electric railway transportation pay an adequate return to those who give it.



## A Stone & Webster Service to the Industry

IN PRESENTING in this issue a new series on the modern one-man car, supplementing the group published in the *ELECTRIC RAILWAY JOURNAL* for Sept. 22, 1917, it is fitting to commend what Stone & Webster have done for the industry through their courageous pioneering at Bellingham, Everett, Seattle, Tacoma, El Paso, Fort Worth, Houston, Beaumont, Columbus and Tampa.

The mere mention of these cities is enough to indicate the value of Stone & Webster's contribution. Conceive the meaning of operating the same car on the shores of Puget Sound and the Gulf of Mexico, in towns of 21,000 and a city of 400,000, and of using a semi-convertible car to supersede open-bench and platform gate cars with equal success. These are only a few of the outstanding achievements worth the attention of those who have been believers in that killing phrase: "Our own conditions are different."

It will be evident from the articles on the cities named that they have a few differences of their own, too, in climate, topography, size, variety of population, labor, etc. For all that, they are doing very nicely with a standard car. In this, Stone & Webster have shown that car standardization was retarded not so much by differences in local conditions as by the endeavor to use the biggest car made possible by local clearances.

While the showings made with the Birney car on many of the Stone & Webster properties are magnificent, they do not mean that the electric railway's financial problem has found its *alkahest* or universal

solvent. Most of us now realize that no matter how greatly we increase the margin between income and expense, that margin will be wiped out eventually if fares remain fixed in a rising market. The really great service of the modern one-man car is that it will enable so many electric railways to give quickly that increase in quality and quantity of service which can build up a good-will without which all the publicity from Dan to Beersheeba would be useless. That is the wise course which Stone & Webster have taken at Tacoma and Houston in inaugurating more and better service first and asking for a higher rate of fare afterward.



## Excessive Ash in Coal an Enormous and Preventable Waste

IT IS HIGH TIME that the influences which ought to be potent in forcing the production of cleaner, much cleaner, coal were brought into action. The present situation is a disgrace to a country with the untold mineral resources that we possess. Not only is power plant coal difficult and expensive to get, but when it is delivered at the power plant much of it can be called coal only by courtesy.

What high-ash content means to the power plant was clearly explained in an article published on page 504 in last week's issue of this paper. This was based upon a report prepared by an eminent engineering firm for the National Research Council, and hence having a special significance at this time. The report showed that excessive ash in bituminous coal (considerably over 10 per cent) produces startling results when the country's total consumption is considered. For example, each 1 per cent of excessive ash forces the carrying of 5,000,000 tons of excess freight per annum, to say nothing of the deleterious effects on the power plant output.

And it is not simply a matter of transporting the coal and ash, handling it in the power plant and disposing of the ash and unburned combustible afterward. By no means! The worst of it, after all, is the fact that the ash in this coal prevents effective burning of the combustible, in some cases doubling the amount of combustible discarded. In addition, the ash takes up great quantities of heat which is carried off to the dump to be wasted. Consider in this connection the statement made last week that with coal of 10 per cent ash content, only slightly more than one-half of the number of power plant boilers are required for a given output as compared with conditions under which coal of 18 per cent or more of ash must be used.

The situation is bad enough, but here, as elsewhere, there is ground for hope if something can be done to improve the situation. Surely such important coal consumers as the electric railways have some influence on the coal situation. It is necessary, however, to get at the root of the trouble. This root is the miner. No influence which does not reach him will be effective. There is ample coal, and there are enough men in the country to get it out, once the situation is well in hand. It is just as important to get out coal as to man the trenches. In fact, we cannot man the trenches if we do not mine the coal and mine it properly. There is, of course, quite a gulf between the coal miner and the electric railway manager. How may this gulf be bridged?



Self-interest leads the miner to send out of the mine everything that he loosens up; coal, slate, rock, dirt. He is supposed to discard "gob," all readily separable trash, leaving it in the mine. After the coal has left the mine there is opportunity at some operations for the partial removal of impurities. Two influences will be effective with the miner. First and most promising is patriotism. This must be based on knowledge of the circumstances and can be best fostered through union officials. The mine bosses can help also. Second, government forces must be brought into play to insure a full supply of capable, conscientious mine workers. It would seem that the electric railways, individually and through the Electric Railway War Board, could put the matter squarely up to the government. They ought to be able also to reach the miners indirectly through the coal companies from which they secure their coal supplies.

It is the immediate and patriotic duty of everyone who has influence in this matter to "get busy" and keep busy!



## Chugless Sundays the Railways' Opportunity

THE effect of the request by Fuel Administrator Garfield to automobilists to refrain from using their cars on Sunday has been notable. The streets in city and country, where there are no trolley tracks, are deserted except for an occasional horse-drawn carriage, the carriage looking like a relic of bygone ages and the horse as if he had been borrowed for the occasion from the grocery man or milk man. For those who wish to travel in the city or afield at any speed faster than a horse trot, the electric railway (or steam road) is the only means available. In fact, gasless Sundays offer an opportunity to electric railways to repopularize their service among many people who had almost forgotten how to use electric cars. The deprivation of the use of his automobile on Sunday has been a hardship to many a citizen who has no other time to operate his flivver, but all have borne it cheerfully in the national interest.

While we have no fault to find with the fuel administrator for establishing chugless Sundays if the needs of the government for gasoline require them, and we accept his word for this, we invite his attention to another way in which he can stop the unnecessary use of a large amount of gasoline. We refer to the suppression of jitneys, for whose waste of gasoline, rubber and lubricating oil, all necessary to our military forces, there is no economic excuse. Such action by the fuel administrator would correct a manifest evil so far as the consumption of these war essentials is concerned, and would also release to the essential industries of the country or to actual war service the men who drive these cars and the mechanics who keep them in repair. Electric cars are common carriers and have to run, and where an electric line is parallel to jitney service it can furnish all the transportation needed both on Sundays and on other days.

Provost Marshal General Crowder can well include jitney drivers as among those to be affected in his next "work or fight" order.

## Keeping the Wheels Turning in Canada and Great Britain

THE way of Canadian and British electric railways in war time has been a thorny one. As the direct and inevitable result of hostilities, such companies have found themselves virtually compelled to tread the path of competition with the national government in the procurement of labor, materials and new capital. To be more exact, it has not been even a case of competition, for the government's needs were of paramount importance; the railways have had to eke out their livelihood on what was left.

This, of course, is as it should be. Our story is not a lamentation; it is rather a psalm of rejoicing that electric railways have been able to do so much for their country with the limited means at their disposal. The troublesome point, however, is that the public, patriotic as it is to the last heart throb, is none the less selfish in regard to its daily transportation service. In other words, the public is inclined to be decidedly impatient with electric railway burdens in war time unless it is made to understand that these must be undergone in the nation's interest. Hence electric railways have a threefold duty in these days—to serve the nation faithfully and tirelessly; to serve the local public as well as the nation's needs will permit, and to make the patrons realize that they too must do all in their power to keep the wheels turning.

We mention these three points because to our mind they well summarize the work of Canadian and British electric railways during the past four years of war. As shown by the detailed recitals elsewhere in this issue, such carriers have, in spite of many trials and tribulations, served both the nation and the local patrons well. The drain upon man-power, the high operating cost and scarcity of materials, the commandeering of capital—these difficulties, which American operators can visualize so easily, seem of late to be more deeply appreciated by the Canadian and British publics. This is particularly evident in Great Britain, for after assiduous efforts since November, 1916, on the part of railway representatives, and after extensive investigations, the national conscience has been so aroused that Parliament has just authorized fare increases in meritorious cases despite former statutory limitations. Thus the fare relief long needed is now a possibility; let us hope it will soon be an actuality which the public will cheerfully recognize as a necessity.

Does not this action in Great Britain contain a hint of a suggestion for this country? Government authorities there believed that local electric railways needed financial relief; after a certain amount of examination they acted positively and favorably. National authorities here are likewise convinced that electric railways must be aided if their national efficiency is to be preserved and increased; they, too, have acted, but only by suggestion. Conditions here and abroad are different, of course, but they are not so different as to warrant an assumption that centralized action, adopted as a matter of course in Great Britain, would not be advisable here. Some day the Washington administration may realize this fact, but at its present rate of speed, when that time is reached, pulmotors will be necessary for most railways.



# What the War Has Meant to Canada's Lines



*In the Land of the Maple Leaf the Electric Railways Have Rallied Nobly to Britain's Aid—Man-Power Shortage Has Caused Reduction in Requirements for Traction Employees—Patriotic Funds Have Been Loyal Support*

**L**NASMUCH as our brethren across the northern border have had to deal with war problems for more than four years, it has been deemed advisable to present a survey of their present man-power conditions, for it is likely that American electric railways will have to go through the same evolution. The following accounts indicate that while the shortage of men has not yet been acute enough to call for the general employment of women, the companies have been compelled to reduce the physical and other requirements for new platform employees. A problem to which the Canadian electric railways have been devoting special attention is the re-employment of men discharged after military service, many of whom are not physically crippled but

for various causes are suffering from a reduction in nerve fiber. The articles also show the active work of the several companies in connection with war funds and war publicity.

## The Track of War in British Columbia

*Vancouver's Early Losses Were Small Owing to the Company's Policy of Favoring Use of Married Men—Few Women Employed as Yet*

**W**ITH 536 men out of a total present payroll of 2200 employees serving or having served their country in some military capacity, the British Columbia Electric Railway, Vancouver and Victoria, B. C., is a fair example of how Canadian electric railways have been affected by four years of war.

As these withdrawals of men from their occupations have been gradual and labor only recently became scarce, the situation in British Columbia has not been so serious as might otherwise have been the case.



The figures and conditions referred to hereafter pertain to Vancouver alone, but in the main they are true also of Victoria.

When war broke out for Canada on Aug. 4, 1914, Vancouver was suffering from an industrial depression which had begun nearly a year before and was growing more severe. Not only did the war accentuate this, but the jitney, coming in December, 1914, further curtailed the electric railway traffic. Consequently the enlistments of men in 1914 and 1915 did not require replacements, owing both to the curtailment of service and to the speeding up of cars. Between 1913 and 1916 the company took on no new platform men.

With 1916 came an improvement in business, more traffic and a decrease in jitney competition, and it then became necessary to have more men. This situation became more acute in 1917, when shipyards began operations in Vancouver, creating more traffic and drawing men from the classes which might have been used for electric railway work.

During the last year the scarcity of men forced the British Columbia Electric Railway to lower its physical standards in order to obtain men. Prior to 1913 it would take no men of more than thirty-five years of age, but recently it has taken men up to fifty. For some time, before the conscription law was passed in Canada, the British Columbia Electric Railway would accept only married men or single men above thirty-five years of age as motormen and conductors.

Of the 423 men who have enlisted from the company's Vancouver system, platform men have contributed 19 per cent, shop men 13 per cent and electricians 20 per cent. In actual numbers here are the various departments segregated: motormen and conductors, 180; substation operators, forty-six; trackmen, etc., nineteen; gas company employees, twenty-nine; engineering department, sixteen; meter readers, twenty; janitors, etc., five; office staff, seventy-one; car repairers, etc., twenty-seven; laborers, general, five, and station agencies, five. All employees retain their seniority rights.

Owing to the policy of the company for several years of taking married men wherever possible, the call for Class 1 men in the Canadian draft did not affect the men in the electric railway service so much as in other departments. The service has at all times been kept up to standard, and at present sufficient men can be found, although with the counter-attractions of the shipyards they are becoming more scarce.

Thousands of men have returned to Canada from the front and have been discharged from the army. Of these Vancouver has received its share. These men may register at the Returned Soldiers' Club as requiring work, and it is now the practice for all employers to apply there first when needing help.

The British Columbia Electric Railway carries out this policy to the full and at present has sixty-three returned soldiers in its employ. Thirty-eight of them are motormen and conductors, eight are substation operators and six substation floormen. Others are employed as watchmen, meter readers and so forth.

It is impossible to tell from the experience of one company what the mental attitude of returned men is and how their experience at the front has affected them. Many of the men who obtain light work as watchmen do not stay long, but this may be accounted for by the fact that the work at best is considered temporary and also by the fact that the shipyards offer much higher wages for the same work.

All men who have returned so far have been discharged from the army for some physical or mental defect, and their disability often unfits them for the work of motormen and conductors. About 25 per cent of the men who have been taken on in this capacity have been unable to continue, although the physical standards have been lowered.

This inability of returned men to measure up to the platform men's standard does not militate against their obtaining work, because there is plenty in other lines. At present the company has not found it necessary to employ women to any extent. Several are employed as elevator operators and ticket clerks, but men have not been replaced in any general way by them.

Owing to the multifarious branches of military service, Canadian, reservist, naval and so forth, into which men from the company enlisted and the suddenness with which many of them were called away at the out-

break of war, the record of men in the service is not complete. In most cases, the company has had to depend upon the men or their friends for information as to changes in addresses. An attempt is being made to record all addresses. The office association endeavors to keep in touch with its members, and each Christmas hampers and other remembrances are sent to all the men of the office staff in England or France. *The Employees' Magazine* goes to as many of these as are on record.

The records kept by the company show that twenty-seven employees have made the full sacrifice; forty-one have been wounded, and at least four are prisoners of war in Germany. Besides a number who have not reentered the company's service, thirty-three men have come back and are again in its employ. Among British Columbia Electric men in army service there are three majors, three captains and fifteen lieutenants, besides a considerable number of non-commissioned officers.

#### HONORS TO THE GALLANT

Owing to many of the men being reservists and being in the British army, a complete record of honors and casualties cannot be obtained, as only Canadian lists are published in Vancouver papers. It is known, however, that at least five men from the company have won the Military Medal. One other, previously in the company's employ, won the Distinguished Service Medal for gallantry against an Austrian submarine in the Mediterranean when he was in charge of a steamer.

The honor of being mentioned, along with other Canadians, in the despatches of Sir Douglas Haig belongs to Capt. F. R. Glover, general executive assistant of the



A Brave Railway Man Is with the Colors



# Canada's Weak Spot

**1 in 23** Population of GREAT BRITAIN Bought Victory Bonds

**1 in 27** Population of U.S.A Bought Liberty Bonds

**1 in 187** Population of CANADA Bought our last

Are You Satisfied?

*Oh please do! Daddy*



Victory Bond Posters Which Helped Canada Go Over the Top

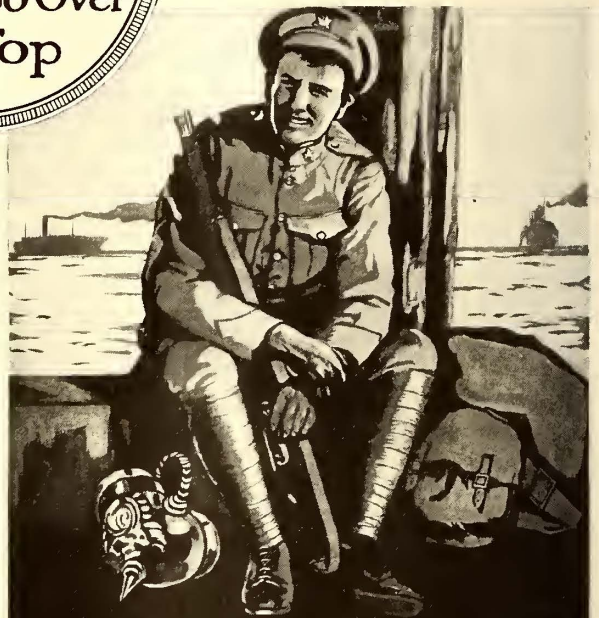


## VOTRE ARGENT!

Plus **5 1/2%** d'Interêt

Le Canada est votre garantie

Voyez les journaux pour les détails.



### Bring him Home with the Victory Loan



company. He was quartermaster of the Seventy-second Battalion which was in the assault of Vimy Ridge in 1917. Captain Glover was later transferred to the railway construction corps.

#### PAYMENTS TO DEPENDENTS AND SPECIAL RATE TO CONVALESCENT SOLDIERS

The British Columbia Electric Railway started out in conjunction with many other companies to give half pay to the dependents of employees who had enlisted, but the monthly payment soon reached \$1,800. The company therefore turned the families over to the Canadian Patriotic Fund, the official body for that purpose, and itself made a payment of \$2,000 a month to the fund. Practically all of this work is now handled by the central fund in order to avoid duplication.

In Vancouver, North Vancouver and New Westminster, where the fare is now 6 cents, the company allows a special 4-cent rate for the convalescent returned soldiers. This ticket allows these men to travel to and from the military hospitals in the 7-cent zone.

While the war in general has adversely affected the revenues of the company, it is difficult to estimate the extent to which the decrease has been caused by the war itself as distinguished from that caused by the jitney and the depression which had set in before the war. The exodus of nearly 20,000 men from Vancouver and the surrounding district undoubtedly caused a decrease in traffic, especially as a large part of the company's revenue came from the younger men who enlisted.

It is only fair to say, however, that business had been on the downgrade in Vancouver before August, 1914, and that people were leaving the district for more prosperous parts. As a consequence, construction work had ceased before the war, and the effect of the outbreak of hostilities was rather to confirm the depression. This condition was not at all changed until war orders began to come to the coast.

### *On the Way to France*

(The Lyric Tribute of a Canadian Electric Railway Man to Uncle Sam)

BY RALPH M. READE

Superintendent City Street Railway Division  
Quebec Railway, Light, Heat & Power Company  
(All Rights Reserved)

- "Cheer up, my friends!" said Uncle Sam,  
"I've just received your telegram—  
A million Yanks are now in France  
To lead the Huns a merry dance:  
Ten million strong are coming 'cross the sea,  
To do the right and keep the jubilee—  
Then, here's to our uncle and here's to his gallant sons;  
They will teach that right is might with Yankee guns!"

#### Chorus

"Steaming, steaming, over the ocean blue,  
Chasing the Kaiser's submarines  
And sinking quite a few:  
Steaming, steaming, taking a sporting chance,  
Sinking the Huns with Yankee guns—  
On the way to France.

- "Our soldier boys across the sea,  
Will fight the fight for liberty,  
While you and I must do our share  
With plow and hoe to keep them there:  
In Berlin town upon the River Spree,  
Our flag shall wave, the symbol of the free—  
Then, here's to our uncle and here's to his gallant sons;  
They will teach that right is might with Yankee guns."

## Montreal Men Liberal Givers

*Those Who Stayed at Home Have Contributed Liberally to War Funds While Management Has Loaned Cars for Promotion of War Purposes*

OF MONTREAL'S 600,000 people more than 30,000, or one in twenty, are in munitions manufacture. So important has this work become that the Montreal Tramways has actually been obliged to withdraw its all-day two-car trains from Ste. Catherine Street in order to serve more effectively the munitions factories in the Lachine district. These close their doors at 5.30 p.m. whereas the big downtown stores close at 6 p.m. Fortunately, for the railway and the public, the factory load is practically gone when the business center is reached, so that the trains may go through with a new load or else be turned back.



Night Illumination of Victory Loan Advertisement on Montreal Car Float

The fifty two-car trains taken from Ste. Catherine Street are made up of a four-motor leader and a motorless trailer. Fifty other and later two-car trains have multiple-unit control and are made up of a four-motor leader and a two-motor follower. Most of these trains are on St. Lawrence Street, operating on four-minute headway during the morning, noon and evening swings. In both types the motor car is entered at the rear and the trailer at the front—a most effective way to secure quick and even loading. The snappiness of this service is aided in large measure by the door of the Montreal Pneumatic Company, this being the first installation of air-operated doors in Canada.

From this preface it is apparent that Montreal is a busy war center. Hence it is scarcely necessary to add that the shell and other war plants proved potent attractions to tramway workers for both patriotic and financial reasons. It has been simply impossible to replace men as fast as they have gone. In May, 1914, there were 2560 men in platform service; in May, 1918, only 2070—2270 resignations in this period being met by only 1780 engagements. In 1917 alone 1077 men came on and 1166 went off!

The first hard blow to the company came at the opening of the war, when 141 French reservists heard the call of La Belle France. They were followed by hundreds of others. In accordance with the Canadian military service act, 200 selectives between the ages of twenty-one and thirty-four left in July and August,



**MONTREAL TRAMWAYS COMPANY**

*Office of the Superintendent*

MONTREAL, November 15, 1917.

My Friend:

It is with much pleasure that I write you these few words as I bring you the good news that our company, always ready to be of service to its faithful employees, offers to aid you in making a safe investment—"Victory Bonds"—and moreover to finance the payment of same for you.

The company's offer—to buy for you the amount which you judge possible to lend to our beautiful Canada—is one of the best, and I sincerely trust that each one of you will appreciate what this encouragement from our superiors means, which for many of us will be the opportunity to make the first step towards economy, so necessary at this time, and to put aside the first dollar which may be the foundation of the future well-being of our families.

The official notices have given the necessary details for us to understand this enterprise thoroughly, and these few additional words of mine only to ask you to study these notices well and to impress on you the advantage which the company offers to obtain for you.

Read these circulars carefully, and I will, during the course of the coming week, go and see you to talk with you of the advantages of this opportunity. I wish to insist right now, however, that every one of you make it his duty to assist at one or other of these meetings which will be held at the stations, as I am anxious to meet you all.

Recent events, I feel sure, will have the result of tying more closely the friendly bonds which have always been so strong between us, will give me the right to expect that my task in this nation-wide campaign will be made easier and will assure my explanation of a cordial reception from all, and I trust that our efforts will result in a great success.

We owe it to ourselves to show that if we cannot, on account of our duties here, go and fight on the battlefield, we can and are willing to aid in another way in fighting the common enemy.

Au revoir, until next week. Think of it well.

Yours truly,

A. GABOURY,  
Superintendent.

**The Montreal Tramways Makes a Strong Appeal to Its Employees to Buy Victory Bonds**

and the company is due to lose 365 more in the same classification. Montreal permits all enlisted men to come back with their seniority unimpaired.

One of the first things the Montreal Tramways did was to seek out as many satisfactory ex-employees as possible, particularly conductors. If these men proved to be in sound health, the company waived its usual age limit of thirty-six years. One of these come-backs is fifty-four years old! Once these men have graduated from the extra list and get back to the old habit of a regular run, they are thoroughly satisfied.

During the period of these changes, from August, 1914, to August, 1918, wages were increased three times to a total of 12 cents an hour over the 1914 rate. No attempt has been made to employ women, owing to the severity of the climate.

At all times the Montreal Tramways has been glad to furnish rolling stock for patriotic floats, like the Y. M. C. A. one illustrated, and even for a recruiting office on wheels as shown in the headpiece on page 538. Cars have also been supplied free to carry parties of soldiers, but this does not apply to individuals.

The employees have always subscribed generously to the different war funds. During the first part of the war, March, 1915, to March, 1916, they gave a day's pay monthly to the Canadian Patriotic Fund. During 1916-1917 this was changed to 1 per cent of earnings, the Red Cross being included. The Patriotic Fund is now maintained by taxation.

The latter part of 1914 saw the first Red Cross drive, to which the men made 50 cents and \$1 contributions. In

the second Red Cross drive the objective was to form a 10,000 club, each member to pay \$1 a month for twelve months. This mark was exceeded by a large margin. The men are also maintaining a bed in a Paris military hospital, and the tobacco fund fostered by a Montreal newspaper has received hundreds of dollars.

Doubtless the biggest thing done so far by the management and the men was the work in the second Victory Loan. Addresses were made by all the department heads, who explained the generous conditions under which the employees could purchase these bonds through the company. An accompanying fac-simile shows the invitation sent (in either English or French) to all trainmen. As the result of the company's campaign \$162,000 was subscribed.

The terms under which the bonds were sold follow:

Fortnightly payments required for the purchase of Dominion of Canada Victory Loan Bonds bearing interest at 5½ per cent per annum referred to in circular dated Nov. 13, 1917.

Half Month Ending	\$50 Bond	\$100 Bond
Dec. 15, 1917.....	\$2.08	\$4.16
Dec. 31, 1917.....	2.09	4.17
Jan. 15, 1918.....	2.08	4.16
Jan. 31, 1918.....	2.09	4.17
Feb. 14, 1918.....	2.08	4.16
Feb. 28, 1918.....	2.09	4.17
Mar. 15, 1918.....	2.08	4.16
Mar. 31, 1918.....	2.09	4.17
April 15, 1918.....	2.08	4.16
April 30, 1918.....	2.09	4.17
May 15, 1918.....	2.08	4.16
May 31, 1918.....	2.09	4.17
June 15, 1918.....	2.08	4.16
June 30, 1918.....	2.09	4.17
July 15, 1918.....	2.08	4.16
July 31, 1918.....	2.09	4.17
Aug. 15, 1918.....	2.08	4.16
Aug. 31, 1918.....	2.09	4.17
Sept. 15, 1918.....	2.08	4.16
Sept. 30, 1918.....	2.09	4.17
Oct. 15, 1918.....	2.08	4.16
Oct. 31, 1918.....	2.09	4.17
Nov. 15, 1918.....	2.08	4.16
Nov. 30, 1918.....	1.23	2.58
	\$49.18	\$98.37

Each employee subscribing will pay \$49.18 for a \$50 bond and \$98.37 for a \$100 bond and in the same proportion for any multiples thereof, which will return him each year at rate of 5½ per cent per annum or \$2.75 on the \$50 bond and \$5.50 on the \$100 bond, when same are fully paid. He will be required to make fortnightly payments as per above schedule and will receive, when the final payment is made, his bond of the denomination subscribed for bearing the interest coupon due Dec. 1, 1918.



*One-Man Service May Solve Regina, Sask., Difficulties*

**T**HE chairman of the street railway committee of the Regina (Sask.) City Council is reported to have said recently that one-man cars and a 7-cent fare will probably be the ultimate solution of the problem of financing the local municipal railway. He is not in favor of one-man cars, however, until all the possibilities of the present system of operation have been tried out. Various suggestions are before the committee, although both the 7-cent fare and the one-man car proposal have been defeated for the present.



## Toronto Men Left by Platoons

*Oratory of Recruiting Officers Depopulated Some Carhouses Almost at One Call—Recovery of Travel Has Made Man Shortage a Most Serious Factor*

**I**N 1914 the Toronto (Ont.) Railway had about 1900 platform men in its employ. To-day the force numbers little more than 1500. The consequence is that even the regular runs have to be served by loyal men who frequently work extra hours and even give up part of their weekly day of rest. The following table of resignations and enlistments will interest United States operators who think they are already as badly off as possible:

	Re- signed	En- listed	Total
1914 .....	243	77	320
1915 .....	275	258	533
1916 .....	1039	318	1357
1917 .....	945	44	989

In all about 800 employees of all classifications volunteered before the passage of the Canadian conscription act. All of the platform men retain their seniority. This does not apply to the large number who resigned to go into munitions work, either because they were urged to do so for patriotic reasons or because the attractively high wage of \$5 to \$8 a day was offered in the early days of the war.

Toronto's electric railway employees were especially open to the recruiting urge, for that city became the most active military center of Canada. Moreover, the platform men were considered particularly fine material for soldiers because of their high average health, their hardiness toward outdoor life and their education in the value of time and discipline.

The railway, of course, gave the recruiting officers every opportunity to address the men at the depots. On top of this, enlisted men who had tasted the joys of camp life would visit their old comrades in company with such forceful speakers that whole platoons of employees would enlist on the spot. Under the circumstances, a car-starter's life was not a very happy one.

At the beginning of the war the coming of many volunteers to be regimented at Toronto swelled the population to about 550,000. By the last quarter of 1914 and the first quarter of 1915, however, the exodus of soldiers from the city had caused such a tumble in receipts that there was no immediate shortage of em-

ployees until 1916, when the traffic began to pick up again.

By this time men were so scarce that the company had to relax its old standards of age and physique. In the earnest endeavor to get men it advertised heavily

	Accepted for Trial	Completed Training
Aug. 1, 1914.		
To Dec. 31, 1915.....	752	544
To Dec. 31, 1916.....	2424	1384
Aug. 1, 1914	1491	1023

in the newspapers, frequently using quarter pages. While these advertisements did not draw all the men needed, they served as self-evident proof to the public that the Toronto Railway was doing its best to maintain the service. The poor average of applicants may be gaged from the figures in the above table, comparing applications and acceptances.

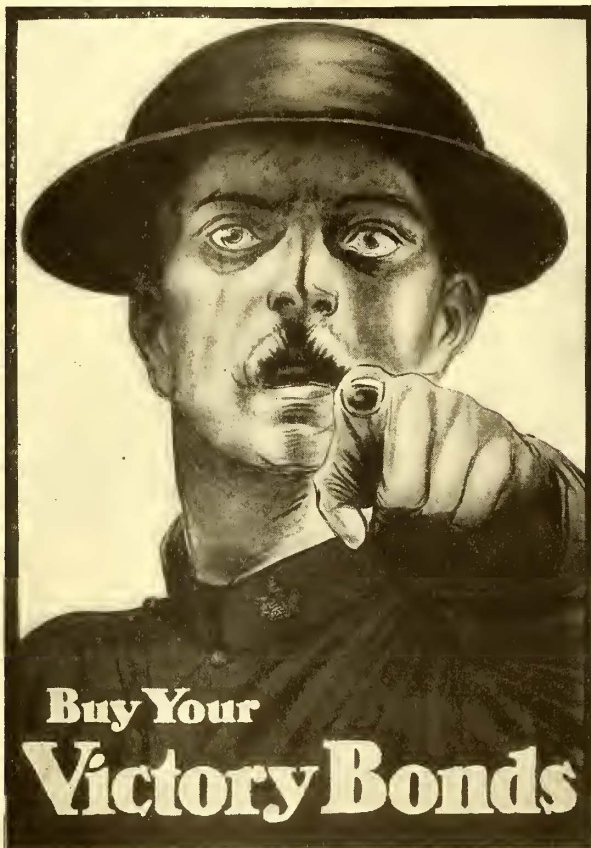
Up to July 25, 1918, the company had reinstated 122 employees returned from service and employed 238 ex-soldiers new to street rail-roading. As is the case with other Canadian roads, some of these men who have suffered gas or shell shock are inclined to be nervous, touchy and less amenable to discipline. The restlessness of some is also manifested by their coming back and forth to the job two or three times. Nevertheless, the management continues to prefer the war veteran, believing that much of this jumpiness will wear off in time.

Although the general average of the present trainmen is below that of pre-war days, their wages are about 33½ per cent higher. The old maximum was 27½ cents—and the present is 37 cents an hour. The new men are not paid during tutelage, but the platform instructors

receive 25 cents a day bonus. Owing to unusual franchise conditions which have prevented expansion, the traffic on much of the Toronto system is considered too dense for one-man car operation. No amelioration has yet been secured in that direction.

The company intimated that women might be employed as a measure of relief. While at first no objection was made by union officials, just as soon as active measures were taken to put the plan into operation, the organized employees by resolution declared that they would not train or work with women employees, although it was the intention of the company to pay the women the same rate of wages as the men. To date nothing further has been done in this matter.

The man shortage is by no means confined to the platform men. The table on page 544 gives the record for the several departments:



The Canadian Fighter's Message Back Home



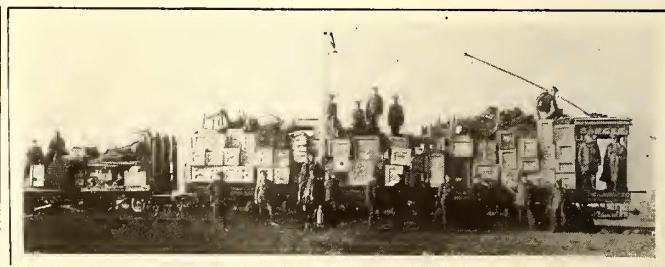
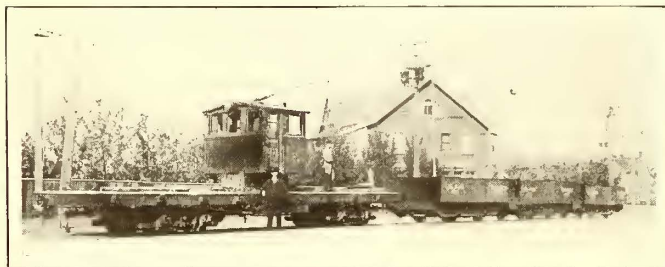
	Aug. 15, 1914	April 30, 1917	Loss
Trainmen .....	1896	1523	374
Carhouses .....	158	120	38
Shops .....	767	567	200
Office .....	42	38	4
Total .....	2863	2247	616

About 30 per cent of the shop force was lost through enlistments, and the company obviously could not compete with munitions plants in holding on to the others. Indeed, so serious is the shortage of vigorous workers that the company could not build 100 new cars, although its franchise contains a clause calling for home manufacture. The municipality, it may be added, secured the company's release from this provision through the Legislature, but the railway has found it impossible to get the cars from either Canadian or American builders. The only immediate thing it has been able to do is to equip fifty cars for non-bulkhead prepayment operation by installing the peninsular style of conductor's stand and two two-leaf folding doors on the rear platform, the doors to be operated with National Pneumatic door engines. The usual Toronto car has one sliding door in the rear bulkhead and is inclosed on but one side of the rear platform.

#### HOW CANADA CARES FOR HER OWN

When the war opened the city of Toronto took out a \$1,000 life insurance policy for each of its citizens who enlisted. Toronto Railway men who left for the front had certain charges for uniforms remitted and members of the Employees' Sick Benefit Association remained in good standing without paying dues.

As elsewhere in Canada, the Patriotic Fund, which cares for the dependents of soldiers, is now handled by taxation instead of voluntary contributions. As for Red Cross drives, these have been handled in a geographical way at Toronto. The company has not had any special



At Left—Calgary's Truckless Trailers, with Spring Supports Used to Give a Touch of Luxury. At Right—Camp Freight Rides Well on Cars Made of Rails and Ties

control over the methods of solicitation other than to direct the Red Cross workers to the different divisions and facilitate the collection of pledges.

The Toronto Railway has been glad to furnish cars without charge for the transportation of groups of soldiers to and from theaters, parks, hospitals and sanitariums. For incapacitated soldiers it also waives the rule of rear entrance, allowing them to use the front platform to avoid jostling. It draws the line, however, at indiscriminate free carriage of the large number of soldiers always in Toronto. The comparatively short Toronto Civic Lines carry soldiers free, but the expense is a charge against the municipality as a whole instead of a few stockholders. To be consistent, the municipality ought to present the soldiers with tickets good on the Toronto Railway cars.

## One-Man Operation Kept Calgary Out of Trouble

*Fifty Men Have Enlisted But One-Man Operation Reduced the Number of Men by One Hundred and Thirty—Men Who Return Are More Restless*

AT THE OPENING of the war, the Calgary (Alta.) Municipal Railway employed 270 men. Of this number about fifty have enlisted to date. Five have been killed in action, and nine have returned as incapacitated for war but not for car service. One of those who has passed to that greater "Over There" was a motorman, L. Webster, who rose from private to major before his gallant death.

The municipality has a standing offer to give its returned men any kind of work for which they are fitted. Only about half the returned men, however, care to go back to the old work. There are various reasons for this. One is that the men have become more adventurous or restless; another that they may be suffering from impaired nerves because of shell shock or gas. Should crippled men come back, light work will be found for them at a wage which will enable them to live comfortably when added to the government pension of \$30 to \$40 a month. Another outlet for the veterans is in farming, as they are entitled to a free grant of 160 acres. At this time, in fact, a number of men are taking free courses in agriculture under the auspices of Alberta's department of education.

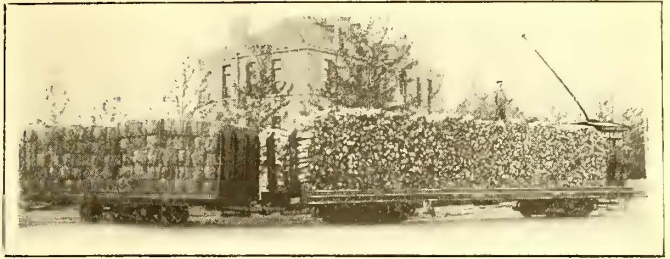
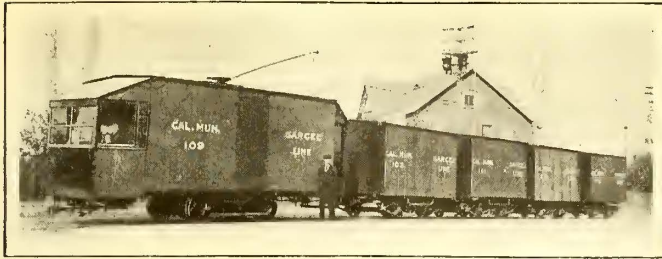
The Municipal Railway introduced one-man cars much faster than it lost men, so that it never suffered from shortage of man power. In fact, the war has taken

only fifty men to date whereas the one-man operation has saved 130. Furthermore, few shopmen or other technical workmen were qualified for military service so that, if anything, maintenance is kept up more easily than before.

An example of the restlessness of some men, particularly while the war goes on, is a "Princess Pat" man. He returned after convalescing from a shot through a lung. He stayed at work for a month and then joined the Provincial mounted police for a month. He returned to the railway's service for a second trial of a month and thereafter tried jobs at Vancouver and Edmonton. Later Supt. McCauley found him wandering idle about Calgary. Now once more he has enlisted, this time in the Dental Corps!

The Municipal Railway did not have to assume any





At Left—Using Old Dump Car Trucks to Carry Bread and Milk to the Soldiers. At Right—Cordwood and Hay on Way to Camp Sarcee, Near Calgary

special burdens for the dependents of enlisted men, as the government provides certain allowances and these are supplemented by the various patriotic funds. For Christmas the Employees' Benefit Association sends a \$5 package to every comrade in the service. Recently this association gave \$275 to the widow of an enlisted man to pay funeral and other charges. In a Y.M.C.A. drive the men at home showed their patriotism by making an average contribution of \$5.35.

While the Municipal Railway makes no contribution to its enlisted men as such, it grants to all soldiers convalescing at the three sanitariums in Calgary the privilege of riding into town free, so that they have to pay fare only when outward bound. There are about 200 men of this class at Calgary. Supt. McCauley has also recommended the free carriage of all amputated cases, of which there are now about seventy-five, and this is being done. Moreover, a 4-cent fare each way has been made to Camp Sarcee, 6 miles away. Formerly the rate was two fares each way.

#### EXTEMPORIZING EQUIPMENT TO CAMP SARCEE

In addition to regular upkeep, the Municipal Railway constructed a 3½-mile extension out to Camp Sarcee, and then had to extemporize freight equipment to haul building supplies, food and fuel thereto. The equipment thus built up from odds and ends is amusing to look at, but it fulfills its purpose—and what more is to be expected in war time with the nearest carbuilder 2500 miles distant and no cars to be had anyway?

What is most interesting about this equipment is that so much of it was made by using rails for longitudinal sills and wooden ties for cross-sills or platform sills, all borrowed from the track department and ready to be returned almost as good as new when the need for these cars has passed! For example, there is the car which carries twenty cords of wood at a time. Each longitudinal sill is just a pair of 6-in. rails laid and fastened base to base; they were formerly drilled for guard rails. The cross-sills are every-day 6-in. ties held together with lengthened track-tie or through bolts. At the truck centers is a 12 in. x 12 in. timber with a reinforcing plate. Truss rods are not needed. The controller and motors were taken from a sprinkler car. The shop cost of construction of the improvised car was about \$75.

Its trailer, carrying baled hay, is of somewhat lighter build, each side sill consisting of but one 6-in. rail. The truck under this car is just two pairs of wheel set, journal boxes and connections of oak. The vehicles, numbered 109, 103, 101, 100 and 102, constitute the bread and milk, meat and refreshment train for the camp. No. 109 is a motor car whose truck is built up

with wooden framing. The others are trailers mounted on old dump car trucks, the bodies being set so that the weight comes in the center. This makes them flexible and swaying does no harm.

With this equipment the railway has had no trouble to meet all freight requirements of a camp whose population has been as high as 14,000 men.

## On the Plains of Abraham

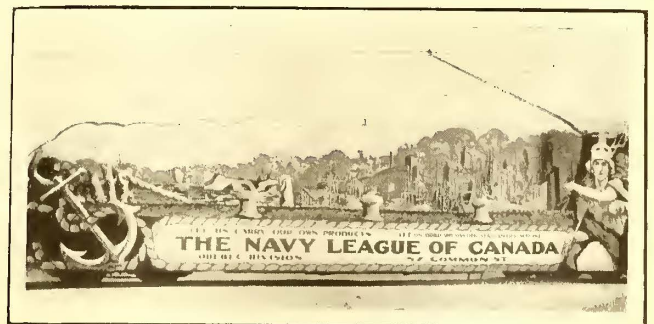
*Quebec Utility Company Has Raised Its Age Limit for Employees to Fifty Years—The Average Cost of Supplies Has Risen 109 Per Cent*

**L**IKE the other large systems of Canada, the Quebec Railway, Light, Heat & Power Company has been seriously affected by the war, although it has not lost so large a number of its men. No change in car operation has been made except that three one-man cars are in use on outlying lines of light traffic.

About 15 per cent of the men employed in the railway department have entered military or naval service, and their places have been kept open without loss of seniority. The vacancies have been filled by accepting men up to fifty years of age on the basis of slightly reduced physical standards. Men who wear glasses are now eligible for employment. The men who return from overseas, of course, receive preference for re-employment. As most of the shop men, track men and line men are over age, and usually have large families, they do not come under the military service act. Therefore, man power in these departments has not been affected by the war.

While there is no regular organization to keep in touch with the men at the front, it is customary for the men every month to make up a general parcel of socks, tobacco and other supplies.

The company has distributed the large amount of the



Helping the Navy League's Campaign in Montreal



literature prepared by the Canadian government about Victory Loans, Red Cross drives and other war activities. Most of this literature is in French.

No special reduction in fares has been introduced for soldiers and sailors, but the company supplies special cars to carry parties of these men from camps and other places to all functions gotten up for them.

The company has increased its rate of fare by abolishing cut-rate tickets. This has decreased passenger travel by 5 per cent, but the revenue is 10 per cent above that of the same period last year. This compares with a 20 per cent increase in wages of platform men and an average increase of 109 per cent in the cost of fuel and other materials. New cars have not been bought or built and much maintenance has been deferred because of the high cost and scarcity of supplies.

## Winnipeg Has Lost One-third of Its Men

*Six Hundred Men Called to the Colors—No Women Employed but Age Limits Abolished—Much Free and Reduced Rate Riding for Soldiers*

**O**N THE Winnipeg (Man.) Electric Railway about 600 men have enlisted out of an average of 1800 employees of all departments. In addition, there have been such large defections to other work—particularly to the wheat fields in seeding and harvest time—that out of 1000 trainmen on July 1, 700 had been employed only for eight or nine months. The difficulty of maintaining 100 per cent service is obvious. Except for eight or ten stub lines, the company operates no one-man cars, and it does not plan to employ women.

One necessary result of the shortage has been to eliminate the old arbitrary limits of weight, height and age. For example, the fact that a man is more than forty-five years of age does not debar him from service if his health is sound and his mind active. Returned soldiers who are not too severely incapacitated for car service

are also put on, and, if crippled, receive light work, such as switch tending. There is even a one-legged motorman!

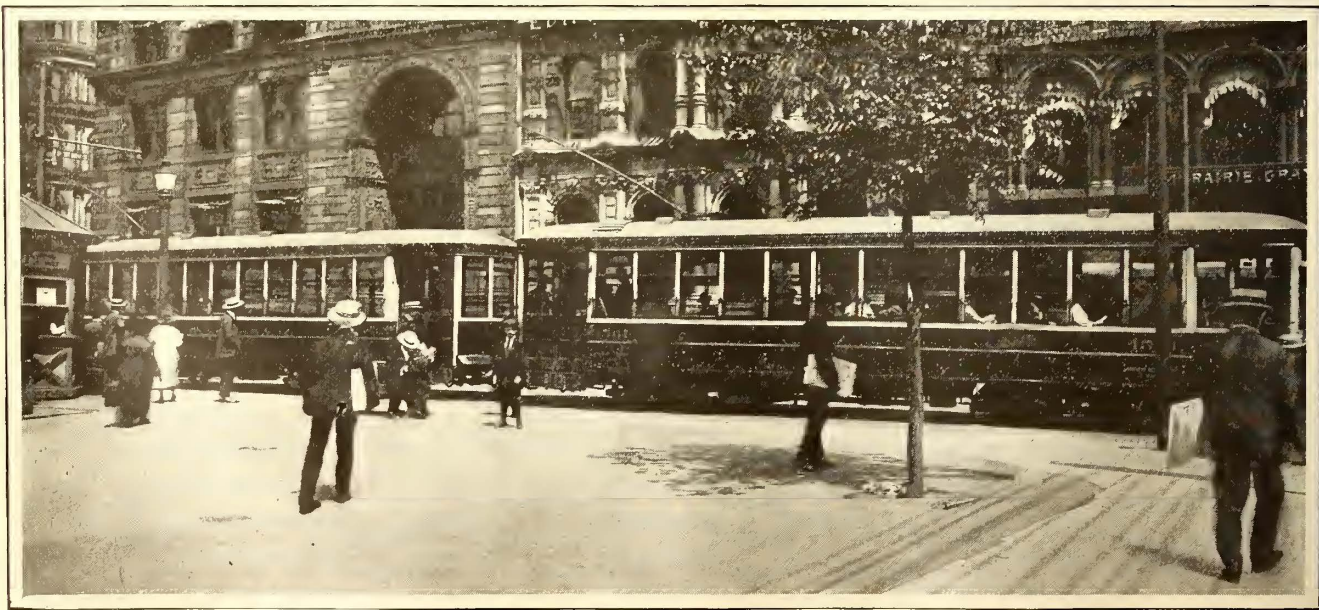
An unfortunate fact is that some of the old-time railway men, through shell shock or other causes, are too nervous to work on the platform or under conditions where noise is common.

A portion of the harvest truants also come back when the weather and work in Winnipeg are more agreeable than on the prairies or, in some cases, when the novelty of outdoor life has worn off and the men want to get back to their people.

Every railway employee who enters the national service retains his seniority. If he returns, he not only is entitled to his relative position but actually receives the cumulative difference between any old and new wages for men in his classification. If he is unsuited for the old work, he gets the top pay customary in the job which he can do.

The company and its men have co-operated most effectively in raising war funds of one kind or another. In the 1918 Red Cross drive, they gave \$7,200 on the basis of \$600 a month. In this case, the trainmen pledged themselves to give 25 cents a month, other employees gave in proportion to their means and the remainder was given by the company. Moreover, at the beginning of the war in 1914, before the Patriotic Fund for dependants of Canadian soldiers was taken over by the government on a taxation basis, the company and its employees co-operated in a similar manner. For two years the men paid \$600 a month and the company \$500 a month. The war tax, which has supplanted these contributions, now equals \$10,000 a year for the company alone.

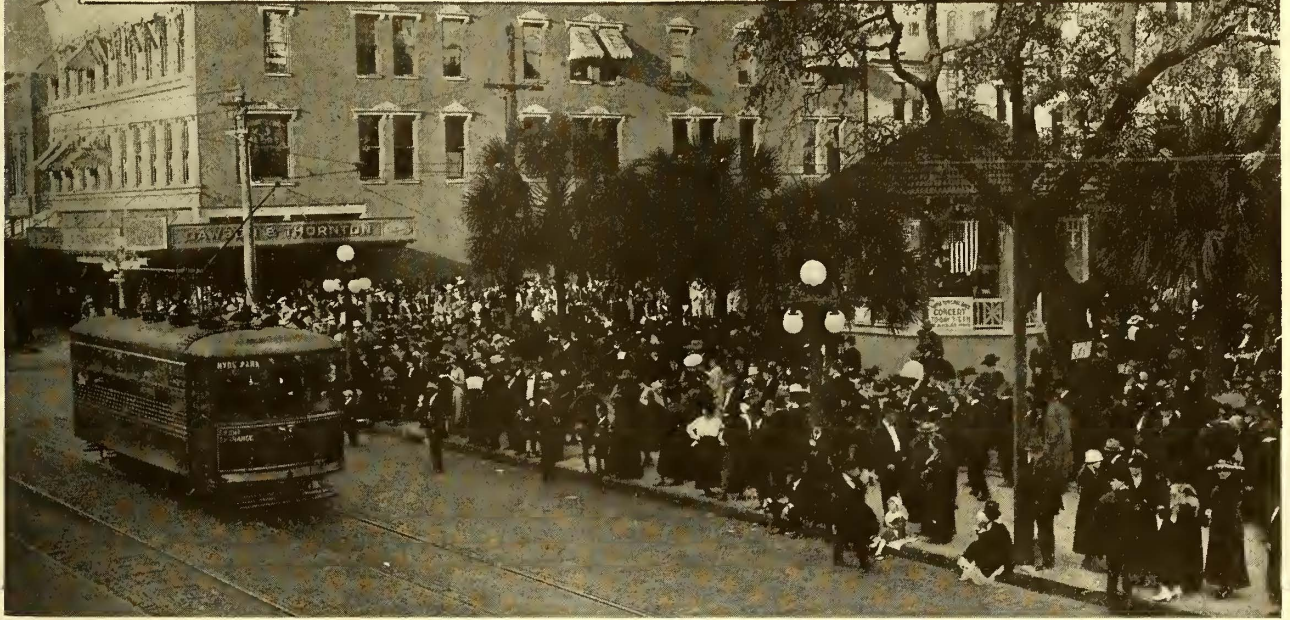
The Winnipeg Electric Railway has been most liberal to men in military uniform. Any soldier has the privilege of riding on the workman's eight-for-25-cent ticket at any hour of the day. Thousands of rides are given free to returned wounded soldiers attached to the three large hospitals at Winnipeg, and whole carloads of troops are transported to and from entertainments and training grounds without charge.



Montreal Motor-Car Train, at Place d'Armes, Operating to Munition Works



# How Safety Cars Save Fuel and Men



*Experiences in Twelve Cities From 20,000 to 400,000 in Population Indicate Reduction in Fuel Consumption and Platform Employees, Together With Increase in Patronage—The Scope of One-Man Car in Large Cities Is Widening*



DATA obtained in twelve cities ranging in population from 400,000 down to 20,000 show that the introduction of the one-man car with automatic safety appliances has made it possible to operate at great reductions in fuel requirements and platform personnel. Furthermore, an increase in service invariably has been followed by an increase in patronage often greater in percentage than the increase in service, due partly to the elimination of the jitney and partly to the creation of traffic.

It is also shown that the scope of the one-man car as regards service in large cities or on busy track generally is much greater than has previously been considered possible, this being due in large measure to the low step, the high rates of acceleration and braking and also

to the decreased number of stops per mile which naturally follow the introduction of smaller cars on shorter headways. These factors have made it possible to secure increased schedule speed despite a sometimes slower rate of interchange per passenger.

Included among the following articles on actual installations is an analysis by John A. Beeler pointing out the possibilities of the safety car in a specific case where operating costs under the old methods have reached a prohibitive figure. In this analysis Mr. Beeler indicates that rerouting, through permitting the overlapping of the cars of various lines within the downtown walking zone, is in this particular example equivalent to shortening the headways of the individual lines. He further concludes that the safety type of one-man car is a good investment on the basis of lower costs alone.



## Fort Worth Still Blazes the Trail

*Five Lines now Operated With Safety Cars, One a Through Line in Congested Streets—Enormous Increase in Travel, Due to Camp Bowie, Readily Absorbed—Thirty Cars in Use and More Ordered*

FORT WORTH has justly become the classic for safety-car operation. From the time, Nov. 1, 1916, that the Summit Avenue line went into operation, hundreds of railway men have gone to Fort Worth for salvation as Mahommedans go to Mecca!

After the ELECTRIC RAILWAY JOURNAL in the Sept. 22, 1917, issue had published its eagerly-read story of the inauguration of this service, there were still many anxious skeptics throughout the land asking tremulously: Will it last? Will the public keep on liking the cars? Will accidents be less? Will it be possible to run these cars, mixed in with big cars, on downtown streets?

What better answer to these questions can there be than the simple statement that since Oct. 1, 1917, there are thirty cars in use in Fort Worth instead of ten; that there are five lines in operation instead of one; that schedule speeds have been maintained under the most arduous conditions, and that the limit to the safety car is set only by the ability of the Northern Texas Traction Company to pay for them and of the car builder

ten minutes; headway between 7 a.m. and 8.30 a.m. and 3.30 to 8 p.m. cut from seven and one-half to five minutes; maximum number of cars raised from six to eight; schedule speed raised from 8.9 m.p.h. to 10 m.p.h., or 12.5 per cent increase; round trip for 6.64-mile run cut from forty-five to forty minutes.

The foregoing holds true to-day except for slight cuts in the rush-hour service, amounting to 2700 car-miles per annum.

It was also noted in the Sept. 22 article of last year that the traffic for the three months November, 1917—February, 1918, showed an increase of 18.4 per cent over November, 1916—February, 1917, with a 26.4 per cent increase in car-hours and 34.1 per cent increase in car-miles.

To gain a still better conception of the traffic absorption capacity of the one-man safety car, consider also the figures in Table I.

TABLE I—STATISTICS FOR SUMMIT AVENUE LINE DURING APRIL FOR THREE YEARS

	1916	1917	1918
Passengers carried, exclusive of transfers . . .	90,548	116,803	147,089
Transfer passengers . . . . .	23,705	31,583	47,057
Car-miles . . . . .	22,148	34,431	31,782
Receipts per car-mile, cents . . . . .	19.4	16.2	22.3

It will be observed that the earnings per car-mile with the safety car are now far ahead of the 1916 record of the big cars.

The number of men employed on this line is still twelve owing to the change from swing to straight plus tripper runs hereinafter described. The increase in



On One of Fort Worth's Safety-Car Routes—East Front Street

to deliver them. In fact, ten more cars are on order now, and plans are in hand to equip fifteen single-truck and eighteen double-truck peak-service cars with the outfits of the Safety Car Devices Company.

In the Sept. 22, 1917, story of the Summit Avenue line, the following changes from the old to the new practices were noted: Headway between 8.30 a.m. and 3.30 p.m. and 8 p.m. to midnight cut from fifteen to

daily car-hours over the original operation is from seventy-five to 108, but the actual man-hours are as 150 to 108.

We will now take leave of the Summit Avenue line to see what its followers are doing.

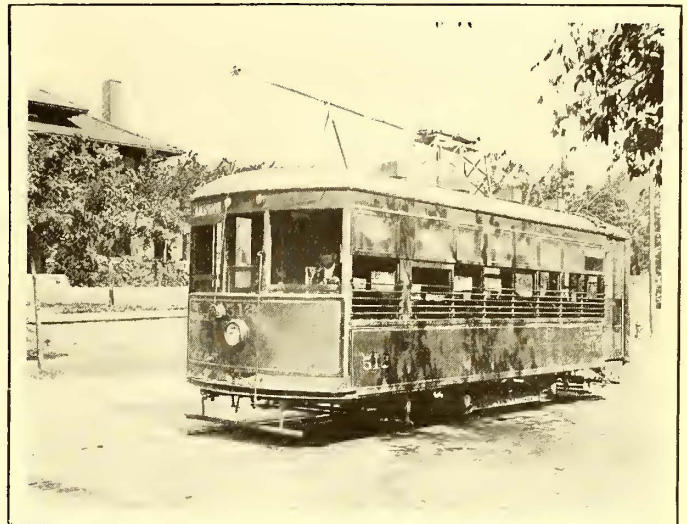
*East Front-Samuels Line.* This is a through-routed line 6.06 miles round trip, with eighteen blocks on Main Street and twenty-four blocks in all on busy streets.



The original headway of fifteen minutes has been retained. The running time is also, as before, forty-five minutes. Any increase in schedule speed for this line would be extremely difficult because of the congested section through which it passes and because many of the riders are strangers from the railroad station who are laden with baggage.

The increased earnings of this line, like those of the rest of Fort Worth, are not ascribed to the use of safety

cars was added to Henderson Street with the opening of safety-car service. This change added 1½ miles to the round-trip mileage. The headway for the greater part of the day is still ten minutes, but the peak service morning and evening has been increased to a five-minute headway. Thus three cars do the regular work and three are added for the heavy hours. The schedule speed of 9.9 m.p.h. is the same as before. A comparison of car-mile receipts is given in Table II.



Fort Worth's Safety Cars Also Serve Fine Residential Sections

cars, especially as there was no increase in service. Therefore, in studying the traffic figures for this and other lines it should be remembered that the earnings of the Fort Worth lines as a whole in April, 1918, were 26.8 cents per car-mile compared with 21.4 cents per car-mile in April, 1917. The big thing to take into consideration is the fact that the safety car unhesitatingly has met a much larger increase in traffic than was looked for at the time these cars were ordered. The figures for the three cars in operation on the East Front-Samuels line as compared with three large cars in use the year before are given in Table II.

Owing to the change made on May 12, 1918, from split runs to straight runs it is not possible to compare man-power conditions on a direct basis. At present as many runs as possible are made nine hours straight, but any man who desires may work several hours longer in tripper service on any line. There are left a few split runs where the men come on to work from 5.30 to 9 a.m., then leave off for a sort of siesta until 3 or 4 p.m.

Because of this change, only the man-hours can be compared to gain any idea of saving in labor. A direct reduction in man power is observed on the East Front-Samuels line because it is not confused by tripper service, the reduction in men being from twelve to six and the car-hours (with one operator per car) rising from 53.5 to 56.25. This is really 107 man-hours against 56.25 man-hours.

**Henderson-West Weatherford Line.** This first runs over downtown track to serve a residential section, like the Summit Avenue line. The round trip is 6.07 miles made in fifty minutes. It is difficult to compare this line with its predecessor because the West Weatherford section was formerly a part of the Third Ward line and

While fourteen trainmen are in service throughout the day compared with twelve, there is no real increase in personnel, for all the trippers or nearly all are regular men who have made their straight nine-hour run elsewhere. The daily man-hours for April, 1918, com-

TABLE II—STATISTICAL COMPARISON FOR VARIOUS LINES IN FORT WORTH FOR APRIL, 1918 AND 1917

Name of Line	East Front-Samuels		Henderson-West Weatherford		St. Louis Avenue		Forest Park	
	1918	1917	1918	1917	1918	1917	1918	1917
Fare passengers	73,068	48,604	139,697	77,559	87,340	62,177	46,664	34,635
Transfer passengers	16,357	10,285	20,802	9,161	13,489	9,583	10,852	9,599
Car-miles	13,210	13,068	26,162	17,506	15,454	13,827	11,283	10,559
Receipts per car-mile, cents	25.2	16.9	25.8	21.1	26.8	20.8	19.9	15.7

pared with April, 1917, decreased from 142 to 121. It must also be borne in mind that this line was lengthened so that five cars instead of four are required to make the ten-minute headway.

**St. Louis Avenue Line.** This line first runs over busy track and then through a residential section. Its round-trip length is 5.1 miles, made in thirty-six minutes, as before, giving a schedule speed of 10.2 m.p.h. The service throughout the day has been kept on a twelve-minute headway; the peak service is doubled. The operating figures are given in Table II.

Instead of ten men on this line there are now twelve, but the daily man-hours were 110 in 1917 and are fifty-six now.

**Forest Park Line.** This line overlaps the Summit Avenue line for 2 miles on its way to Forest Park and the Texas Christian University. The round-trip is 9.05 miles long and is made in one hour, as before. Two cars are run on a thirty-minute headway as previously. Following the custom of the past this line has occa-



sional extra service with double-truck cars when necessary, as for concert crowds.

The Forest Park line has four men instead of six and the man-hours for the months in question were seventy-six in 1917 and thirty-nine in 1918.

In view of the detailed study made of the Summit Avenue line, the management did not consider it necessary to make similar tests of energy consumption, loading speeds, etc. The figures and other data presented should cast illumination enough.

#### SOME OPERATING AND MAINTENANCE EXPERIENCES IN FORTH WORTH

In the introduction of a car with a much higher rate of acceleration and braking, it is natural to expect a temporary increase in collisions. However, the new cars have caused no noticeable increase in this respect. There is also this difference: While more damage may be done to the car than in "battleship" operation less is done to the other vehicle. It is cheaper to repair a car than to pay claims for heavy damages! Then, too, the men naturally take less chances with these cars than with bigger ones.

As to platform and step accidents, these have been practically abolished.

The first ten cars have Hess-Bright ball-bearing journals; the twenty later cars have Gurney ball-bearing journals in addition to the Gurney ball bearings on the armatures of the motors, all of which are GE-258. The journals were formerly lubricated every three months, but for absolute safety these are now lubricated monthly. The lubricant is Pierce-Fordyce cup grease No. 2 in summer and No. 3 in winter. It is squirted in with a gun. There have been some broken raceways and a few minor troubles with the journal bearings, but this is ascribed more to lack of accurate fitting into the trucks than to the ball bearings.

The motors themselves have done all that was expected of them. The K-10 controller is on the first ten cars because the K-63-B used on the others could not be delivered in time. The K-10 weighs 212 lb. and the K-63-B, 140 lb. The latter, according to the shopmen, has better wearing fingers than the K-10. Furthermore, the deadman's handle of the K-63-B cannot be slugged with a piece of wood by negligent motormen.

A slight change in the type of piston packing in the circuit-breaker cylinder has resulted in the lower maintenance cost of that item.

### *Too Many Bosses Would Kill Municipal Ownership*

A NUMBER of residents of Calgary, Alta., contend that the City Council should not have withdrawn the eight-for-25-cent tickets in the evening from the Calgary Municipal Railway without having first taken a vote of the people.

In commenting upon this contention, the *Canadian Railway and Marine World* says: "If every matter affecting the operation of a municipal public utility had to be submitted to a vote of the people—which would be the outcome if the claim of the residents referred to were admitted—municipal ownership would not have the slightest chance of success anywhere."

## Beaumont Converts Cars to the Safety Type

*After Two Years' Operation of Hand-Brake Cars in This Noted Texas Oil City, Safety Devices Are Added and Service Improved*

ON JULY 10, 1918, the Beaumont (Tex.) Traction Company put into operation the first of fourteen safety cars. These cars were not strangers to the 35,000 inhabitants of Beaumont, as one-half the cars had been operating for two years and the other half for one year as rear-entrance, hand-brake Birney cars with conductors. It was not until this summer, however, that they were equipped by the Safety Car Devices Company.

Up to this time Peacock geared brakes had been used exclusively, with gooseneck handles on seven cars and with vertical wheels on the other seven. On several occasions the cars were operated successfully as one-man cars, owing to the shortage of men.

Through the use of the safety devices and consequent



Beaumont Has Added Electro-Pneumatic Safety Equipment to These One-Man Cars

one-man operation, it will be possible to give increased service on the Calder-College, Royal and Park Lines, which will eventually be entirely equipped with safety cars. Double-truck cars will be continued in operation on the Sabine-Magnolia line, but it is intended that during the rush-hour periods the safety car will be put in operation.

The first lot of the converted cars has Westinghouse 328 motors with K-36 control; and the second, GE-258 ball-bearing motors with K-10 control. With the safety devices added to these fourteen cars and the additional five new cars of the safety type, which are promised for October delivery, the company feels that its needs for the time being will be well taken care of.

Owing to the lack of equipment and the shortage of labor, the company's program has been slowed down. By the middle of August, however, it had four safety cars in operation on the Calder-College line, and two more were ready to be placed in operation.

The schedule on the Calder-College line has not been changed since the introduction of the safety cars, but it has been better maintained with the new equipment.



There will be a decrease of ten men on the three lines on which safety cars will be operated, on the basis of the present schedule. The men seem to like the cars and are anxious to break in on them, and the company has received no unfavorable comments from the public.

## Fighting the Private Automobile at Austin

*Jitneys Not a Factor, but Traffic Carried by Private Automobiles Equals Railway Load—One-Man Operation Absolutely Necessary to Keep Up Service*

**A**LTHOUGH Austin, capital of Texas, has but 40,000 people, it has some streets of sufficient width to solve the congestion problems of a world city. In other words, there are no physical limitations to the use of automobiles. Ten years ago there were about 100 machines in Austin, five years ago, 2000, and now this city of 40,000 people has 6000 automobiles. It will therefore be clear why these statistics of railway passengers carried in April of each year show so little increase: 1915, 458,602; 1916, 538,198; 1917, 523,036; 1918, 541,089. The figures for July, 1918, are a little more encouraging as they include the period of operation with one-man cars. They follow: 1915, 531,246; 1916, 592,473; 1917, 568,563; 1918, 636,447.

Seven cars with safety equipment are operated in Austin. Three of these were bought in 1916 and the

Then these cars, like the four delivered in August, were equipped with the apparatus of the Safety Car Devices Company for one-man operation. These seven cars have double doors on each side, but in future cars there will be but one opening per vestibule. In general, these cars replaced types weighing 5 tons more each, but as seventeen other cars are operated in Austin from the same plant the company has no exact data to show the power saving due to the new cars.

These safety cars are run on four lines. Rio Grande, 2 miles long; S. M. A. (School of Military Aeronautics), 2 miles; South Austin, 2½ miles; Duval, 2 miles. A six-minute service is maintained all day long from the Colorado River along the main business streets and through the heart of the city as far as ½ mile north of the University of Texas, a total distance of 2 miles. During the morning and evening peaks, the headway is three minutes in this section. The safety cars actually make the one-way trip in five minutes less than before, thus giving the operators longer layovers. Because of the criss-cross or paralleling layout of the lines the company believed that it would not be good policy to increase the service unless it could do so on all lines. Of the lines named, the S. M. A. serves the only war institution within Austin, the School of Military Aeronautics, a ground school of the Signal Corps. It has 1500 students.

The pickings for any jitneys in Austin would be small indeed after obeying the ordinance, which calls for bonded liability, schedules and routes.

Fares in Austin are 5 cents cash; 4½ cents for tickets



At Austin This Safety Car Has Made the Continuance of Service Possible

rest delivered in August, 1917. These cars are double-ended with platforms 12 in. longer than the Birney car, an increase which permits three more seated passengers in the rear vestibule and two more in the front. The first three cars were operated by two men with manual control until the fall of 1917, as the question of one-man operation was then pending before the municipality.

sold in stores at \$2.25 a book, and school tickets, 2½ cents. Cash is counted in Johnson fare boxes, and all paper is registered with an International register.

As many regulars are employed as ever, although the extra list has been cut from twenty to eight or nine. Swing runs have just been abolished in favor of straight nine-hour runs with the privilege of taking out trippers.



This appears to be very satisfactory, for many men who stop at 3 p.m. or about that time are glad to work the trippers after their regular run.

The change from two-men to one-man operation has enabled the company to break even on platform expenses, for the nine-hour wages of all men are equivalent to their twelve-hour earnings before the war. In addition, the operators of safety cars get a bonus of 5 cents an hour. These increases, combined with the plan of straight runs, have done much to keep good men in the service.

Just to prove that operating costs are high in any event the following July operating ratios are quoted; 1915, 62 per cent; 1916, 61 per cent (general economies not due to one-man cars); 1917, 66 per cent; 1918, 56 per cent. The company hopes to run one-man cars eventually on all lines except those with heavy colored travel.

## Over the Way from Mexico

*Introduction of Safety Cars at El Paso Followed by 35 to 40 Per Cent Increased Travel and 15 Per Cent Greater Service—An Ideal City for Safety Car Operation Throughout*

**S**EVENTY-FIVE THOUSAND people live at El Paso, Tex., in normal times; and as many as 100,000 have been served by the El Paso Electric Railway at the height of the encampment period. Therefore El Paso is not a small town for which any kind of electric railroading will do. It demands and gets good service.

But for several years past the management had realized that with the competition of the automobile and constantly rising costs of operation, the accepted heavy car with a man on each platform would no longer do. It surveyed the situation and decided that the time had come for light-weight, one-man car operation provided the cars eliminated heavy manual labor and proved as fast or faster than the existing cars.

Thus it came about that ten safety cars were ordered. The first four went into service on Feb. 14, 1918, with such instantaneous success that the company quickly asked for ten more and ordered safety equipments for the remodeling of twelve of the present cars. With these thirty-two cars in operation, about three-quarters of El Paso's mileage will be given in this modern way. Financial and manufacturing resources are the two controlling factors in making El Paso a 100 per cent safety-car city. "Potter's Jitneys," as they were named by the newspapers for H. S. Potter, manager, have come to stay.

### THE PIONEER LINES

The double-tracked Washington Park line, 6.5 miles round trip, was the first to get the new service beginning Feb. 14. This was followed within a few days by the Sunset and Depot line, 3.33 miles round trip, and the Mesa line, 4.4 miles round trip. The last is merely a single-car proposition with a thirty-minute headway through a thinly-populated territory.

The Washington Park line had four regular cars, with two trippers afternoon and morning. Rush headways were seven and one-half minutes; ordinary, ten minutes. Now there are five safety cars in regular

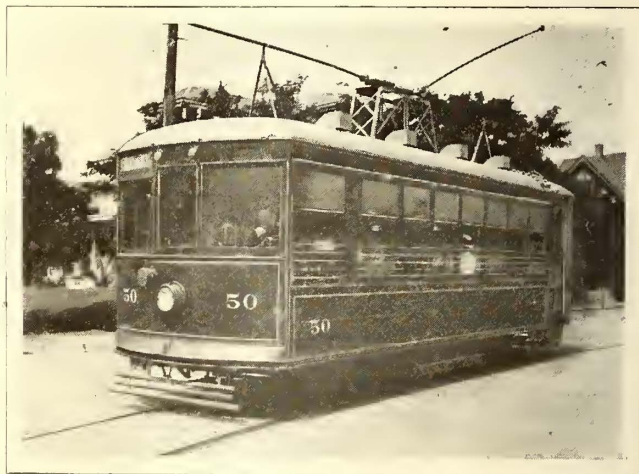
service, with one morning and evening tripper, and the respective headways are six and one-half and seven and one-half minutes. These improvements also were made possible by raising the schedule speed—and maintaining the raise—from 9.25 to 10.11 m.p.h.

While the Sunset and Depot service was just a replacement of two cars for two, the greater schedule speed of the new cars permitted the headway to be cut from fifteen minutes to twelve minutes.

### CAR TRAVEL UP—JITNEY TRAVEL DOWN

Meeting the jitney has been an exceptionally hard task in El Paso because of the many Mexican residents and the Mexican "jitneys." The former like the aristocratic feeling of riding in an automobile, be it ever so dilapidated; the latter are satisfied to earn \$1.50 a day, for their demands on life in the way of food, raiment and lodging are modest. Nevertheless, even these conditions are being overcome by the increased and speedier service now given. From the very beginning, the jitneys on the Washington Park line lost ground. From fifty the number was reduced to thirty-five by Aug. 1. The three jitneys on the Sunset line also suffered a quick drop in revenue. In short, the management is satisfied that the service has done much to discourage the jitneys.

The safety car had the immediate effect of attracting the American travel in the case of the Washington Park



35 Per Cent Increased Travel—15 Per Cent Greater Service Is the Safety Car's Record in El Paso

line and of turning walkers into riders on the shorter Sunset line.

Coming down to figures, the company finds that a 15 per cent increase in service at the faster speeds named has increased travel on the Washington Park line by 35 per cent and on the Sunset line by 40 per cent as of May 31. An interesting point about the Washington Park line is that the earnings per car-mile in April, 1918, 15.7 cents, were exactly the figure obtained with the larger cars in April, 1917.

The old single-truck car of equivalent capacity took 1.8 kw.-hr. per car-mile; the new cars of lighter weight and favored by the use of anti-friction bearings and higher rates of acceleration take but 1 kw.-hr. per car-mile.

The saving in man-power has been appreciable. Washington Park has six men for ten; Sunset, four men for eight, and Mesa two men for four. This makes



the total for these three lines twelve men instead of twenty-two.

Everyone familiar with the shifting of platform men even in normal times knows that to absorb a reduction like this without discharging a man, one need only stop hiring. In selecting men for this service the management made a hit by allowing the men to apply in the order of seniority. Those who proved incapable were allowed to find this out largely for themselves, thus avoiding friction. As a matter of fact, however, the cars are very popular with the men. There is every reason to believe that the higher-paid men who have these cars will be far less likely to change than in the past.

## Safety Cars Lighten Tacoma's Burden

*Loss of One-third of Tacoma Platform Effectives Because of Defection to Shipyards Made Good in Part by These Cars, Which Are Also Standing Up Under the Punishment of Big Loads on Heavy Grades*

EVER since the spring of 1918 the problem of the Tacoma Railway & Power Company has been not "How many cars shall we run?" but "Where shall we get the men to run them?" Under the circumstances the presence of thirty-two new safety cars installed during the year has proved a real help, although the man shortage has made it necessary for these cars to render greater service than was ever intended. Loads of eighty people, some on seats and some on sills, but all determined to get there, have been a common feature in this

### SAFETY-CAR RESULTS SECURED IN TACOMA

*Portland Avenue Line Began Safety-car Service on Dec. 7, 1917*  
Headway changed from fifteen and twenty minutes to ten, twelve and fifteen minutes.

Average speed reduced from 9.3 to 8.1 m.p.h.  
Number of operatives lowered from twelve to nine.  
Total passengers, including transfers, May, 1917, 97,241; car-miles, 16,370.

Total passengers, including transfers, May, 1918, 122,713; car-miles, 18,892.

Passenger increase, 26.2 per cent; mileage increase, 15.4 per cent.  
Total passengers, including transfers, June, 1917, 95,815; car-miles, 15,856.

Total passengers, including transfers, June, 1918, 128,766; car-miles, 18,974.  
Passenger increase, 35 per cent; mileage increase, 18.5 per cent.

#### *Sixth Avenue Line Began Jan. 28, 1918*

Headway changed from six and ten minutes to three and a half and five and a half minutes.

Average speed reduced from 8.5 to 8 m.p.h.  
Number of operatives reduced from twenty-six to twenty-five.  
(This small reduction was due to the addition of so many cars to the schedule.)

Passengers carried, including transfers, May, 1917, 194,715; car-miles, 24,295.

Total passengers, including transfers, May, 1918, 301,719; car-miles, 41,222.

Passenger increase, 55 per cent; mileage increase, 69.6 per cent.  
Total passengers, including transfers, June, 1917, 197,560; car-miles, 23,515.

Total passengers, including transfers, June, 1918, 306,513; car-miles 39,303.  
Passenger increase, 55.3 per cent; mileage increase, 67.1 per cent.

#### *Old Tacoma Line Began Nov. 19, 1917*

Headway reduced from ten and twelve minutes to eight and ten minutes.

Average speed reduced from 8.3 to 7.5 m.p.h.  
Operatives reduced from twelve to eight.

Total passengers, including transfers, May, 1917, 83,082; car-miles, 10,966.

Total passengers, including transfers, May, 1918, 106,591; car-miles, 15,000.

Passenger increase, 28.3 per cent; mileage increase, 36.8 per cent.  
Total passengers, including transfers, June, 1917, 84,700; car-miles, 14,909.

Total passengers, including transfers, June, 1918, 101,529; car-miles, 13,746.

Passenger increase, 19.9 per cent; mileage decrease, 1.09 per cent.

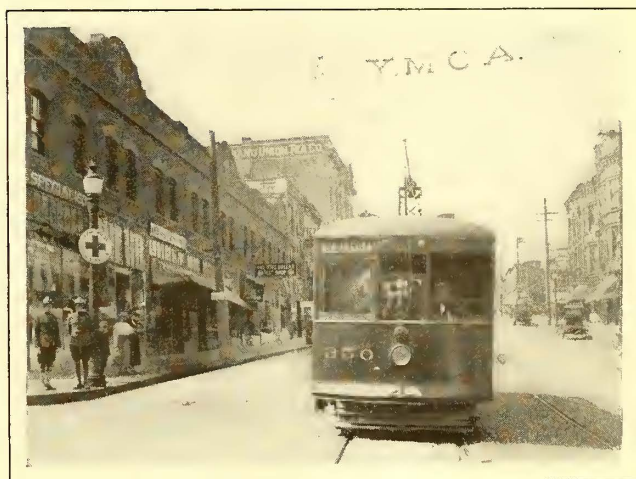
mountain-grade town. Yet the equipment has stood up wonderfully with nothing worse than the failure of a single cross-channel. The great difference between light load, 13,000 lb. and maximum load, 24,200 lb. (13,000 + 80 × 140) has also made it necessary to raise the braking power to 120 per cent of load with car empty.

Pending the receipt of new cars the company had equipped six cars in 1917 with the safety combination. These cars are much heavier and less attractive to the men and the public. Therefore they have been withdrawn until such time as it is possible to use them for tripper service. Since June, 1918, men who operate safety cars have been receiving a 4-cent instead of a 2-cent bonus. The company tries to keep the same men on these cars, but on account of the rapid turn-over it has been unable to do so to its entire satisfaction.

The safety cars are used on four lines, all of which except the one on Tacoma Avenue come downtown. On Tacoma Avenue a one-man car replaced an old single-truck car on a forty-minute headway. This is the pioneer one-man car line and is too unimportant for the presentation of traffic details. The accompanying report gives in tabular form the results on the three other lines.

It will be noted that the schedule speeds have been lowered. This is exceptional and is simply indicative of the desire to play safe in a city full of heavy grades.

The company's experience shows that there has been no material change in the accident situation through the use of the one-man safety cars. There is no record of an instance where a patron has figured in a step acci-



Transporting Soldier Visitors from Camp Lewis Played No Mean Part in Tacoma's Success with the Safety Car

dent—namely, getting on or off a car while it is in motion. This undoubtedly is due to the fact that the operator has control of the entrance, and doors are kept closed and steps folded up while the car is in motion.

### *Chicago Elevated Railways in War*

THE war score of the Chicago (Ill.) Elevated Railways, as recently compiled, was 609 employees in the United States Army and Navy. This total included four ensigns in the Navy and one major, five captains, five lieutenants, eleven sergeants and eight corporals. For the first three Liberty Loans the company had 8463 subscriptions among its employees for a total of \$588,850 of bonds.



## Everett and Bellingham Have 100 Per Cent Safety Operation

*In Both Cities the Jitney Has Disappeared and Car-Riding Is as Good as or Better Than Ever—Unquestioned Proof That With Good Service at Safety-Car Costs the Electric Railway Is Without a Peer*

**I**N SOME CITIES the effect of increased service with the safety car is obscured by war prosperity. This is not the case at Everett, Wash., which was practically at a standstill up to the spring of this year, when the United States government began to make heavy purchases of lumber. Therefore, any figures on Everett are exceptionally interesting. The figures apply to the city as a whole instead of individual lines, for with the coming of the new-type cars considerable rerouting was done.

As described in the Sept. 22, 1917, issue of the *ELECTRIC RAILWAY JOURNAL*, the Puget Sound International Railway & Power Company in Everett began operation of one-man cars by equipping existing cars of single-truck type, weighing 22,000 lb., with air brakes and by using double-truck cars weighing from 48,000 to

existing 21-E trucks. The line-up of cars at Everett is now as follows:

Smelter, four cars, ten instead of fifteen-minute service.

River-Bay Side, five cars, five instead of ten-minute service.

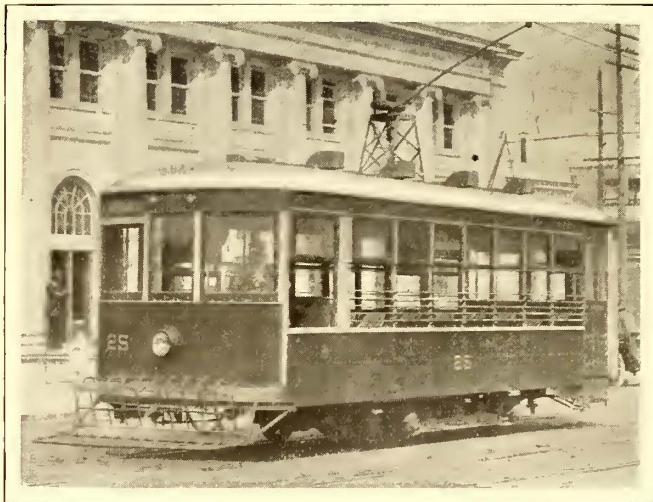
Colby-Rucker, four cars, eight instead of ten-minute service.

Lowell-Grand, three cars, fifteen instead of twenty-minute service.

One-man operation with two of the air-braked cars began in March, 1915; two more were added in October, 1915. The first four safety cars went on in October, 1916. Some of the effects of the change to 100 per cent safety-car operation in a city of 25,000 people are shown in the accompanying table. The increases of from 37 to 43 per cent in the number of cash passengers carried in a town of stationary population speak for themselves. The jitney, regardless of ordinance or no ordinance, has simply faded away because it could not stand up against the service.

### BELLINGHAM CARRYING MORE PASSENGERS THAN EVER BEFORE

The Sept. 22 "More Service—Less Cost" issue also told how the Bellingham (Wash.) Division of the Puget Sound Traction, Light & Power Company had gone into the safety-car game by equipping its York Addition-



Short-Headway Safety Cars in Everett Are Creating Short-Haul Traffic

50,000 lb. Of these cars, only four are in use to-day, all on the Colby line. Three more are held for heavy traffic conditions.

Most of the present safety service is carried out with fourteen Birney cars, two others of Birney type being operated at Ballard. The company is also planning to build three bodies of this design and mount them on

Court House line, 2½ miles long, with three cars in place of two in order to shorten the headway from fifteen to ten minutes.

This change in operation was made in December, 1916. In July, 1916, the earnings were only 11.4 cents per car-mile; by July, 1917, they had risen to 15 cents and by July, 1918, to 18.6 cents. For the same months the

EFFECTS OF CHANGE TO 100 PER CENT SAFETY-CAR OPERATION IN EVERETT

	April		May		June		July	
	1916	1918	1916	1918	1916	1918	1916	1918
Car-hours.....	6,227	8,773	6,452	9,103	6,249	8,870	6,484	8,977
Kilowatt-hours per car-mile (city lines).....	3.34	1.91	3.32	1.81	3.26	1.75	3.28	1.79
Total kilowatt-hours.....	221,127	160,570	249,014	168,029	236,671	159,151	245,902	171,610
Collisions with vehicles.....	4	2	3	5	1	5	4	3
Cash passengers.....	222,198	305,659	228,041	328,178	230,432	326,435	255,688	357,936
Transfer passengers.....	43,087	49,814	44,263	54,660	43,521	54,299	47,841	63,296
Car-miles.....	63,257	77,204	64,866	81,006	63,794	78,436	65,814	81,782
Cars operated.....	13	18	18	13	13	18	13	18
Receipts per car-mile.....	\$0.195	\$0.211	\$0.194	\$0.215	\$0.199	\$0.224	\$0.220	\$0.239



passengers carried were 42,084 in 1916, 62,882 in 1917 and 73,653 in 1918, demonstrating that the public was showing a continuing appreciation of the service offered by the safety cars.

To-day there are twenty-four cars in service, eight of which are home-built Birney bodies on 21-E trucks whose wheels were changed from 33 in. to 30 in. diameter. These cars are now used on all lines, except in the case of the 5-mile Lake Whatcom suburban line, as follows:

Eldridge Avenue and South Bellingham—4.6 miles long, fifteen-minute service changed to ten-minute service on May 27, 1917, with six cars for four.

North Street—2.8 miles long, fifteen-minute service changed to ten-minute service on Aug. 8, 1917, with three cars for two.

Schome Wharf— $\frac{1}{2}$  mile long, fifteen-minute service as before, but new car in August, 1917, replaced old-style car operated with one man in August, 1917.

departed this life in June, 1918, despite the fact that the operator had built up a brisk consistent service on a street without tracks.

While the safety car replaced rolling stock of larger capacity, it is worthy of note that the earnings per car-mile in July, 1918, were 18.7 cents; in July, 1917, with partial safety-car operation the figure per car-mile was 15.2, and in July, 1916, it was 15 cents. That the size of the car must be considered in comparing car-mile earnings is evident from the case of the Eldridge line, which showed 20.9 cents in July, 1918, compared with 17.3 cents earned with the earlier double-truck cars; but for the same period the passenger traffic rose from 116,712 to 192,312.

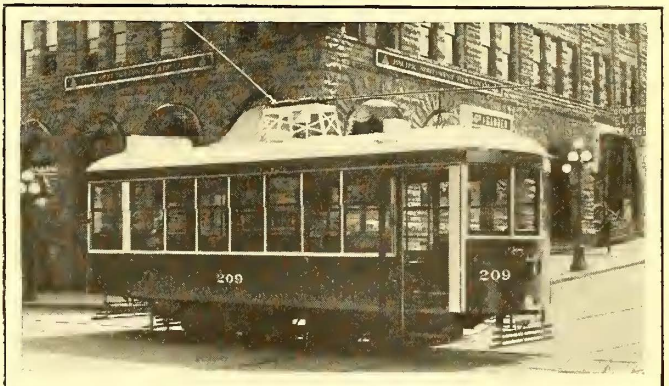
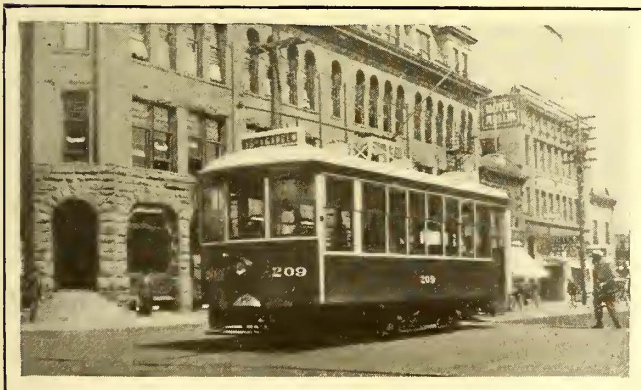
The flexibility of the new cars is illustrated in another way by the North Street line, on which the original schedule of 11.2 m.p.h. is maintained without any difficulty.

From the man-conservation standpoint, it is note-

Typical scenes in Bellingham, Wash., the first 100 per cent safety-car city of its size.



The evident popularity of the safety-car with the ladies promotes midday shopping travel.



Garden Street—2 $\frac{1}{2}$  miles long, fifteen-minute service unchanged but two new cars replaced old two-men cars in June, 1917.

Happy Valley—1.4 miles long, thirty-minute service as before, but new car in August, 1917, replaced old-style car operated with one man.

These changes are reflected by the comparative power statement. In July, 1916, 190,800 kw.-hr. were used, or 2.36 kw.-hr. per car-mile; in July, 1918, 132,100 kw.-hr. were used, or only 1.41 kw.-hr. per car-mile. The car-miles for the same periods increased from 74,627 to 93,740, the passengers carried from 326,389 to 463,609—a marvelous increase in a city of 37,000 and higher than the best records of the past. It is pertinent to add that the last jitney—the Bellingham dodo as it were—

worthy that despite the great increase in service forty-nine instead of seventy to seventy-five men are now in platform service.

“MORE SERVICE—LESS COST” ISSUE TO THE RESCUE

In all the company's experience with the public, only one important group of objectors arose. On Feb. 12, 1918, the Washington Public Service Commission called a hearing on the complaint of the Central Labor Council that the one-man car was “hazardous”—and a few other dangerous adjectives. This was the result of two accidents between cars of the old and new types—a front-end fog collision in which the small car got the better of the big one, and a rear-end collision in which the reverse occurred. The company had no difficulty in



showing that the new cars were anything but inferior to the older ones. The Sept. 22 "More Service—Less Cost" issue of the ELECTRIC RAILWAY JOURNAL formed an important exhibit. The commission dismissed the complaint of the Central Labor Council the very night of the hearing.

According to Superintendent Hickok, collision accidents with automobiles are less with these cars than before, largely because the cars can be stopped so much more quickly by the experienced operators.

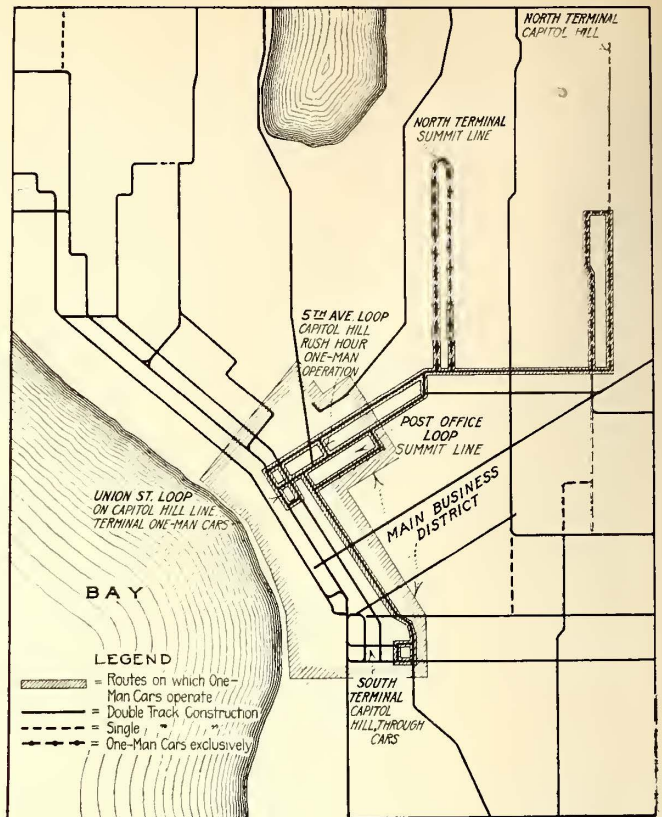
## In a City of 400,000

*Seattle's Safety Cars on Summit Avenue Line Have Increased Receipts 67 Per Cent with 55 Per Cent Increase in Service*

AS EARLY as the summer of 1915 the Seattle division of the Puget Sound Traction, Light & Power Company advocated the use of one-man cars in real city service. After some operation with shuttle lines in 1914 and 1915, two cars were put on the Summit Avenue line, in June and October, 1915, respectively, to operate in with the regular cars. One of these cars was No. 108, a remodeled car weighing 22,000 lb., seating thirty-six passengers; the other was No. 142, a single-end Birney car weighing 10,000 lb. Both cars had safety-door, braking and sanding outfits. Through the use of these cars, as described in the ELECTRIC RAILWAY JOURNAL of Sept. 22, 1917, the service was increased by 24.5 per cent with a resultant growth of 35.3 per cent in receipts. Although the Summit Avenue cars came downtown over tracks where the headway of the combined lines was as low as thirty-five to forty seconds, no difficulty was found in keeping the safety cars properly spaced.

### SAFETY CARS RESULT IN 67 PER CENT INCREASE IN TRAVEL

By the summer of 1917 there were in operation two cars on the Summit Avenue line and one each on the Twelfth Avenue line and the Fremont, Ray and Ballard shuttles. At that time the company had on order twenty-five single-end cars and was planning to remodel twenty-nine. At present the new cars are on hand, but only five cars have been remodeled, for the great short-

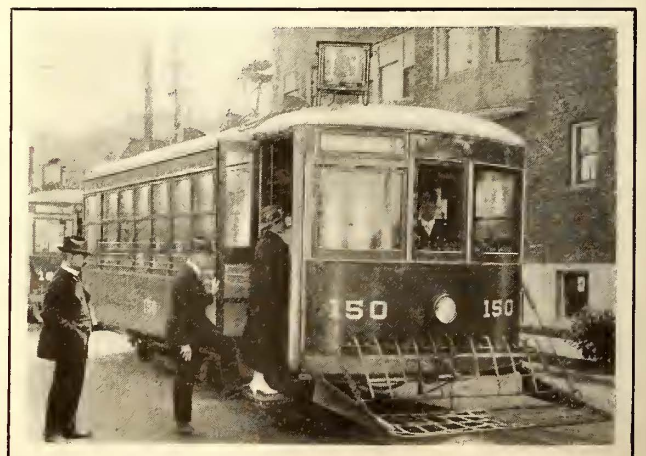


Where the One-Man Cars Travel in Seattle

age of both shop and platform labor and the necessity of meeting the extraordinarily heavy shipyard service have hindered the more extended application of the safety cars.

Rather than scatter such safety cars as it could use all over the system, the management has followed the policy of changing over a single line entirely. This is the Summit Avenue line, which has been equipped since Feb. 20, 1918, with ten cars necessary for the maximum schedule. The length of a round trip on this line is 4.9 miles, the running time forty-two minutes, the lay-over three minutes and the schedule speed, exclusive of layovers, 7.53 m.p.h. Some morning and evening cars are turned back at the Post Office, which is in the liveliest part of the city.

The progress of service on this line may be gaged by the following three dates covering the period of no



In Seattle, the Largest City Using Safety Cars



safety-car operation, of partial safety-car operation and of complete safety-car operation:

PROGRESS OF ONE-MAN OPERATION IN SEATTLE			
	June 27, 1916	Oct. 12, 1916	June 27, 1918
Car-miles per day.....	661	834	1,003
Cars per hour.....	7.33	9.11	11.35
Longest headway (minutes)...	12	12	12
Shortest headway (minutes)...	5	4.5	4
Per cent increase in service....		24.3	55
Daily receipts.....	\$124.43	\$168.24	\$208.23
Per cent increase in daily receipts.....		35.3	67

These ten cross-seat cars replaced only eleven of the old longitudinal-seat type, but they seat thirty-five instead of twenty-six each. Furthermore, the short-lining to the Post Office during rush hours is another element in giving more service.

The average increase in seats per hour from the Post Office loop is 46 per cent. The increase in service afforded by the new cars was fully explained to the public through the company's organ, *The Electrogram*, which is distributed on the cars.

**ACTUAL OPERATION WITH TWO MEN PROVED ONE OF THEM UNNECESSARY**

Regardless of the question of higher pay, the men convinced themselves that one man could operate a safety car with ease. The following simple experiment by the management accomplished this conversion.

When the cars arrived, a number of the men affirmed emphatically that they would not and could not operate them. They were told that the shortage of cars demanded that these modern equipments be used in any event; but if they felt that these cars could not be operated by one man, the management would try the experiment of operating them with two.

This was done. After the first day, the conductor was so much in the way at the entrance that the motorman would ask him to "go back and sit down." Passengers

soon caught on to the absurdity of the extra man and would ask the conductor what his purpose in life was. Before long the extra man was seeking instruction from his mate in regard to the operation of the safety car. and then the motorman alternated as idler. In one week the men realized that their objections had been based purely on unfamiliarity with the car. The men gracefully withdrew their opposition, and the incident was closed. All safety cars have ten-hour straight runs.

**FUTURE PLANS**

The value of the safety car in these parlous times may be judged from the fact that even with the 4-cent premium, the operating cost is in the ratio of 2 to 3 as compared with all the cars in Seattle. Other lines using safety cars, including rebuilt cars with recessed steps, are the Twenty-third Avenue crosstown line, with three cars on a fifteen instead of twenty-minute headway, making a forty-five minute round trip of 6.68 miles; and the Fortieth Street crosstown, with one car on a 2-mile round trip.

The latest line equipped is the one on Capitol Hill, where five one-man cars are interpolated over the densely settled portion of the line. The other cars are of two-man type, of which six are in service all day and eleven more go on as trippers. This change in schedule is in line with the expressed policy of the management to use the safety car first as a builder of traffic and goodwill, and second as a reducer of operating costs.

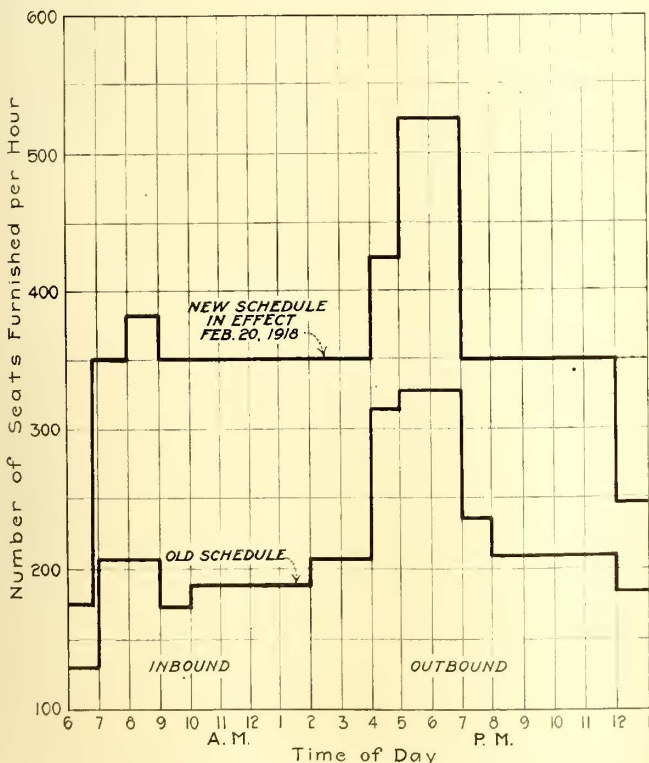
One-man cars are operated on the Capitol Hill line from Union Street Loop to Fifteenth Avenue and Mercer Street, alternating with the larger two-man units except between 4 and 6.30 p.m., when they turn back at the Fifth Avenue loop to avoid the serious congestion at Second Avenue and Pike Street. This is the type of supplementary service which the company plans to introduce on a number of lines as soon as men are available.

**SCHEDULES SHOWING EFFECT OF SUPPLEMENTARY ONE-MAN CAR SERVICE ON SEATTLE CAPITOL HILL LINE**

	Old Schedule	New Schedule		Total
		Two-Man Cars	One-Man Cars	
Car-miles per day.....	1,106	973	562	1,535
Cars per hour.....	7.26	6.95	6.78	13.72
Longest headway (minutes).....	12	9	9	4.5
Shortest headway (minutes).....	5.5	6	6	3
Per cent increase in cars, per hour.....				89
Per cent increase in seats per hour.....				54
Men required.....	28	24	8	32
			Through Cars	One-Man Cars
Length of line (miles).....			7.0	4.5-4.0
Running time (minutes).....			54-60	36
Scheduled speed (miles per hour).....			7.8-7	7.5-6.7

The accompanying table shows the difference in service under the old schedule and the new schedule of combined one-man car and two-man car operation, which went into effect on Aug. 5. It gives an excellent idea of the operating results that may be obtained where, by the addition of four men in an eighteen-hour day, there are increases of 54 per cent in seats per hour and 89 per cent in cars per hour.

It is proposed to curtail the services of the Glasgow (Scotland) Corporation Tramways by about one hour in the evening, owing to 100 motormen being called into military service.



Comparative Number of Seats Per Hour Before and After Adopting One-Man Car Operation on Summit Avenue Line in Seattle



## Greensboro Keeps Its Railway

*By the Use of Safety Cars, 40 Per Cent in Man-Power Is Saved; Payroll Lowered 21 Per Cent While Individual Wages Are Increased 26 Per Cent; Energy Cut 35 Per Cent with 2 Per Cent More Mileage; Accidents Nearly Nil*

**I**N A TOWN that runs only eleven to twelve cars on its regular schedule, the line between profit and loss is a very thin one. In fact, the step from some street railway service to none at all is very short. Now when a property of that size can invest \$50,000 in something and get it back at the rate of \$1,000 a month or more, that "something" is surely worth investigation and emulation. The town is Greensboro, N. C.; the "something" is the one-man safety car with automatic equipment.

### GREENSBORO'S TOTAL POPULATION ABOUT 25,000

According to the census Greensboro itself numbers 18,000 to 19,000 people. With contiguous built-up territory, however, the population may be placed at 25,000.

There are four lines, as follows: Pomona, 4.48 miles; White Oak, 3.75 miles; South Greensboro - North Elm, 2.85 miles; Glenwood, 2.60 miles. For these lines the normal daily schedule was and is operated by twelve cars. Ten out of twelve safety cars are regularly in use. The company was anxious to cut the headways at the same time that it introduced safety cars. Owing to shortage of labor, however, it has been impossible to add new sidings and shift old ones.

Therefore the new service is a unit-for-unit replacement. The headways as still maintained are fifteen minutes on the White Oak and Pomona lines and twenty minutes on the other two lines. Schedule speeds of 8 to 10 m.p.h. are kept up far more easily than they were with two-men cars.

For Saturday afternoons and other special occasions, four extras are available. These are big cars recently converted to one-man service.

### TRAVEL STICKS DESPITE RAISE IN FARE

From the satisfaction expressed by the public it is evident that the new cars have made a hit. However, it is not possible to gage their effect in this regard. The cars were installed in September, 1917, during a period of increasing travel. Until the end of the year also there was a distressing variety of cut-rate tickets which produced about 50 per cent of the gross revenue, 30 per cent in value being six for 25 cents; 10 per cent being school and college tickets at eight for 25 cents, 5 per cent being workmen's tickets at eight for 25 cents and 5 per cent being children's tickets at ten for 25 cents. Upon petition to the North Carolina Corporation Com-

mission these old franchise regulations were abolished in favor of a straight 5-cent fare. In spite of this increase in rates, traffic has held up so well that the gross earnings for June, 1918, were \$568 or 6.8 per cent in excess of the gross for June, 1917. The simplification of fare collection is also an advantage to the car operators as now they need handle only cash and transfers, using a non-registering box for the money and International registers for transfer registration.

### OVER \$1,000 A MONTH ON A \$50,000 INVESTMENT

While siding limitations have prevented the North Carolina Public Service Corporation from creating traffic and so getting more net through shorter headways, the company has taken full advantage of the economy possibilities of the safety cars. For example, a comparison of March, 1918, with March, 1917, shows:

Payroll decreased 20.7 per cent or \$510.42, despite the fact that men average \$12 a month more.

Energy consumption decreased 35 per cent or \$487.57 with 1 per cent increase in car-miles.

Kilowatt-hours per car-mile decreased from 2.54 to 1.55.

The fact that nine thirty-passenger cars with an average weight of 25,000 lb. and three forty-five passenger cars weighing 40,000 lb. each were replaced by twelve 15,000 lb. twenty-eight passenger safety cars, accounts for the energy reductions. As the gross revenue also increased \$568, the net was raised approximately \$1,600. This increase is a fair monthly average. Since the twelve safety cars were ordered in the fall of 1916 they did not cost more than \$50,000. The higher reward of getting there first is obvious!



The Safety Car Has Saved Greensboro's Street Railway

As Manager Hole says: "We wouldn't be operating any cars at all to-day if we hadn't secured one-man safety cars."

Prior to the inauguration of service at Greensboro, Superintendent Frazier spent a week at Fort Worth studying the famous safety-car tryout line of the Northern Texas Traction Company. On his return he found that the safety cars had already been delivered. To train the men, the dead-ended North Elm line was selected as a trial track. Here the cars were run up hill and down for several hours every afternoon until all the operators had been broken in. One-man service was begun in September when the two men who were considered the most capable began running cars on the Glenwood line. This was soon followed by the service of two other cars on the North Elm line. The complete installation was actually accelerated by the interest displayed by the public in this innovation. No extended publicity was necessary—merely a descriptive circular setting forth the merits of the car along the lines of the circular used at Fort Worth and described in the *ELECTRIC RAILWAY JOURNAL* for Sept. 22, 1917.

It may be said here that the management realized



very well that the only way to introduce one-man operation was to use a better, safer car. If the railway cannot show the regulatory body that the new way is better than the old, it can hardly expect to secure public approval. Hence the air brake, the pneumatic door and step, the deadman's handle, the interlocking of control and doors are sure to have great weight with the regulators, the public and the men. Instead of increasing liability, it is the company's experience that the safety car decreases it. In nearly a year's operation there has not been a single platform accident, and the number of collisions, both front and rear, has decreased. These accident savings add to the net earnings and add to the mass of favorable public opinion.

The Greensboro company has also found a very real psychological advantage in operating small, light cars

the cars. Not a single legitimate complaint has come from them.

At the time the cars were ordered in 1916 the company was thinking far more of giving additional service than of reducing the number of platform men. As matters have turned out, the one-man car was its salvation, for in saving 35 per cent man-power the losses due to the draft and the lure of war-work were absorbed with little disturbance. The company has a few conductors who are too old for service on the front end of the car, but these men are taken care of as extras on the two-men cars.

#### MAINTENANCE IS EASY

So far as maintenance is concerned, the company has reason to expect a considerable cut over the big cars.



Greensboro Is a Small City with Ample Street Width for Automobiles

instead of big, heavy cars, to wit, in the matter of placing blame for collisions and side-swipes. In the old days the traction battleship was held to blame as a matter of course, and the railway paid. To-day the vehicle owner realizes that these light cars are not trouble-hunters and that they also move fast in emergencies. The result is that when a careless chauffeur or driver backs into a fender or shows other damaging carelessness, the owner is likely to receive a little bill from the railway, and he pays it, too! Collections up to \$200 have been made for damages of this kind. Times have changed.

#### FEWER MEN AT HIGHER PAY

At no time has there been any difficulty with the men. Shortly before the cars arrived the company voluntarily increased their wages to 3 cents an hour, making the rates 19 cents first year, 21 cents second year and 23 cents third year. These rates have been recently increased to the following schedule: First year 21 cents, second year 23 cents, third year 25 cents. The men like

It notes as a pleasing phenomenon that due to the truck design or some other cause, flats on chilled-iron wheels have the habit of rolling themselves out. At first the doors of these cars were too fast, but this was remedied by a slight relocation of a pin to shorten the main lever. Last winter, which was unusually severe for the section, also caused some freezing in the air compressor piping. It was so slight, however, that the operators could correct the trouble with a newspaper torch and with less delay to service than would have occurred in the case of the old-fashioned rolling stock.

It may be added that in the later air equipments on cars of this type the main reservoir capacity is divided into two units. The Safety Car Devices Company also recommends 25 ft. of discharge radiating pipe between the compressor and the first reservoir, and a corresponding length of pipe between the first and second reservoir, for the purpose of precipitating the moisture in the main reservoirs and preventing its entrance into the brake system. All operating valves also are now placed inside the car. These changes have been found to avoid



troublesome freezing in cities with harsher weather than Greensboro.

The Greensboro company's tracks cross the Southern Railway at six different places in the city. Three of these crossings are at double-track points and one is at a six-track crossing. At the last place the trolley company keeps a flagman during the hours of operation, but at the other crossings the car operator stops the car and observes the rules of the usual crossing agreements with steam railroads.

## Energy Consumption Halved in Columbus, Ga.

*Only Drawback of Safety-Car Service in Georgian City Is that Residents on Other Lines Are Clamoring for Same Operation While Company Cannot Get More Cars at Present!*

WHEN a public utility has a power department which bills the railway department so much per kilowatt-hour for energy used, the railway part of the organization is likely to have a keen appreciation of the meaning of car weight. If it is stated bluntly that the safety cars average 1 kw.-hr. per car-mile as compared with from 2.1 to 2.3 kw.-hr. for the single-truck cars replaced, it is easy to understand why Columbus, Ga., would like to be 100 per cent equipped with the new cars as fast as financial and manufacturing condi-

and the men. It had been customary for years to have a rear entrance with gates, no farebox and no air brakes. The only preparation for the change lay in the fact that the company had vestibuled some cars a few months before so that pending the arrival of the new cars the converted rolling stock was used as two-men, near-side cars. The men in this service were permitted to take turns as conductor and motorman.

When the safety cars arrived, the men were trained first on a stub track and were then double-headed around the belt line. Those who entered the service were paid 2 cents an hour more than they received in two-men service. Although there were two or three who said they would not operate a safety car under any circumstances, the use of air brakes and air doors, the easier control, the comfortable chair, the larger pay—and possibly the pleasure of seeing the words: "The Operator of This Car Is Mr. Joseph Jones"—brought a quick reversal of opinion. At present nine men are giving 50 per cent more service than was formerly given by twelve men.

### SIMPLE FARE COLLECTION AND TRIP SHEET

The fare collection on the safety cars is simplified by the fact that in Columbus there is a common transfer station at Broad and Twelfth Streets. The transfers are given out by a man in the street. The fare-collecting mechanisms on the car are a one-denomination Johnson fare box and an International R-5 square register for transfers. Still further to simplify the work, the men are asked to make out only one report covering the period they have been continuously on the car, instead of making out individual trip reports.

The transfer station, when built, was not in the center of the best business section. At what was originally the more logical spot, the neighboring merchants protested against the plan as injurious to them. Now they actually have built a transfer station for the company. As two transfer stations will not be practicable, the new building can serve only as a waiting room.

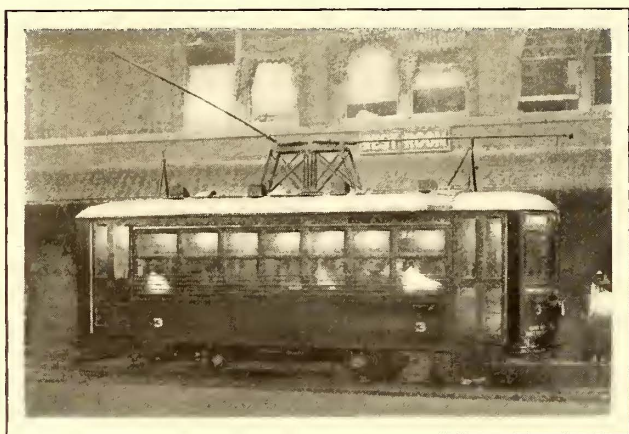
### OTHER LINES WANT SAFETY CARS

One of the little problems that has followed the introduction of the safety car on the belt line is the reluctance of the riders on the Rose Hill line to accustom themselves to front-entrance operation without being rewarded by new cars! The employees, too, want to know why they cannot have the comforts of the later equipment. Hence the company is wishing for the day when it can order and have a total of twenty-five instead of eight light-weight cars.

### CAR AND LINE EQUIPMENT FEATURES

According to tests over an individually-feedered part of the belt line, the cars thereon average only 1 kw.-hr. per car-mile. This is due not only to the low weight but also to the use of Gurney ball bearings on motors and journals. The motors are GE-258 and the control K-63-B. The inter-operating equipment is, of course, that of the Safety Car Devices Company, including foot valve for emergency use.

To maintain safe and quick service along the route, the company has installed seven blocks of Nachod signals—two counting, directional type CD and five non-counting, non-directional type P—as well as two Collins non-plashing automatic track switches.



In Front of the Transfer Station at Columbus, Ga.

tions permit. Yet there is a difference of only two seats per car.

Safety-car operation was begun at Columbus on April 15, 1918, on the belt line, a 6-mile run through everything that a Georgia town of 21,000 could be expected to have, namely: Business section, negro quarters, mansions, park and section of middle-class whites. Only the mills are not directly on this route.

Eight cars were purchased, of which six are in regular use. The twenty-minute service was replaced by a twelve-minute headway up to 8 p.m., and the running time for the 6-mile round trip was reduced from forty minutes to thirty-six minutes. The speed was thus increased to 10 m.p.h. There are several railroad crossings, but only one which must be flagged.

The change was a most radical one to both the public



## Less Fuel, Less Personnel, More Business at Tampa

*Rich Men Have Stopped Automobiling and Poor Men Have  
Quit Walking Since the Coming of the Safety Car—Air  
Operated Doors and Steps With Safety Devices Are Also  
Used on Big Rebuilt Cars*

**N**ESTLING on the gulf side of Florida, Tampa is off the beaten track of business travel; but it does not represent a case of "the world forgetting, by the world forgot." Tampa, for its population of 65,000, is indeed a most attractive city with its fine public buildings, its tourist hotels and its thoroughly-alive electric railway. But the success of the latter, in meeting the harsh conditions caused by the automobile and aggravated by the war, is the particular subject here.

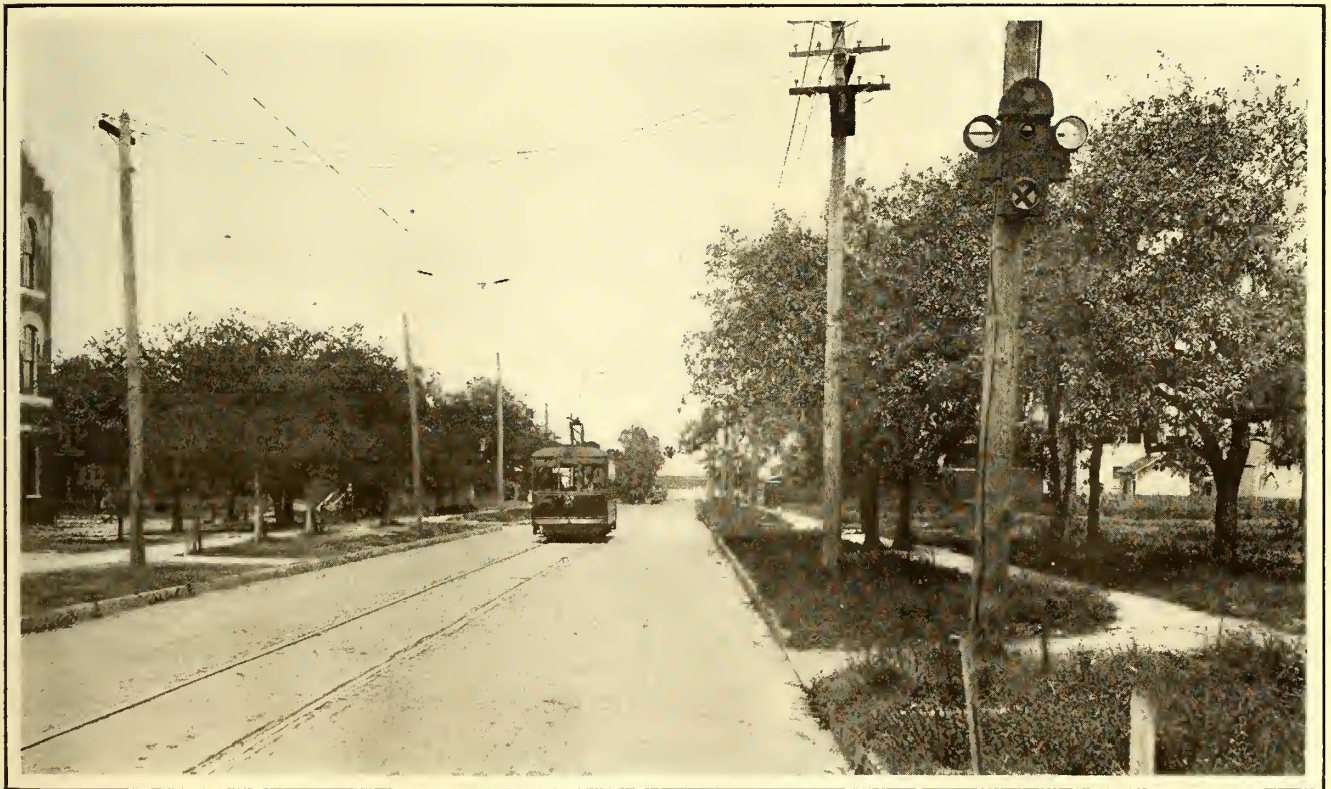
Immediately after the Fort Worth demonstration with the safety car in November, 1916, Stone & Webster made a study of its applicability to their southeastern properties. In the case of Tampa, two lines were considered—Michigan-Hyde Park and West Tampa-Ybor

round-trip length is 12.22 miles. This line is the most cosmopolitan in the city. At the Michigan end are cigar factories with Latin workers; next is a residential section; then the business section, and finally the highest class residential section in the city.

It was thought unwise to begin with the West Tampa-Ybor City line, covering 25 per cent of the city mileage, because the traffic is preponderantly Latin. After a goodly proportion of the cigarmakers had become familiar with the more general line, however, it was decided to make the change on the second line.

The change to safety-car operation in Tampa was a far bolder step than in other communities because of other radical changes in practice. With the exception of four cars on the semi-interurban Port Tampa line, only open cars had been run all the year round. Prepayment, of course, was unknown. Passengers had the cheerful habit of getting on and off whether the car was standing at a corner or running in the middle of the block. Furthermore, they had not the slightest apparent knowledge of the request: "Please tender exact fare." Then, too, the employees had to adapt themselves to the new ways of near-side entrance, prepayment, closed car and positive stops before entering or leaving.

At present eleven safety cars are operated during the morning hours up to 9 a.m., eight between 9 a.m. and



Automatic Trolley Contact Signals Keep the Operator from Leaving the Safety Car

City. Only the former line was ordered equipped, owing to lack of funds. The success of the first line, however, soon led the company to order more equipment to carry out the original plan. With the eight cars recently delivered the company has twenty-three in all, of which two are considered as spares.

The Michigan-Hyde Park line was placed in service on Jan 10, 1918. It is believed to be the first through crosstown route to be operated with safety cars. Its

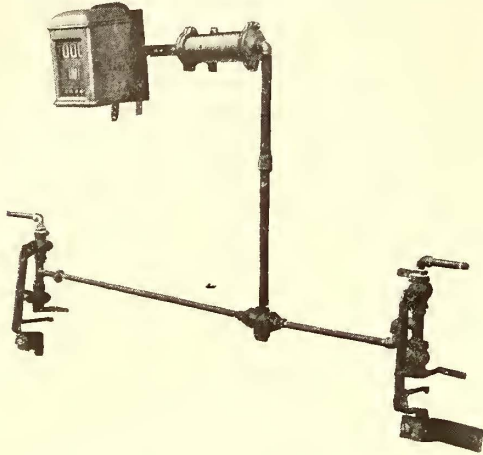
noon; eleven between noon and 8.30 p.m., and eight to five cars thereafter. The old headway of ten minutes has been replaced by one of seven and one-half minutes (eleven cars), and the fifteen-minute headway by one of ten minutes (eight cars). In the late night hours the service is tapered to a fifteen-minute headway (five cars). In this way the traffic curve is met better than with the two headways used before.

The twelfth out of the fifteen safety cars first ordered



was used on the Woodlawn line, which operates over the intown end of Sulphur Springs line (suburban) and accepts transfers from other city lines.

The West Tampa-Ybor City line, which has been operating with nine safety cars since July 7 of this year, is also a crosstown route, 4 miles long. It has a six-minute headway during the rush hours. The headways



Air-Operated Transfer Register Used in Tampa

for other periods are gradually being adjusted to meet the changes in traffic.

With these three classes of service 40 per cent of Tampa's mileage is operated with safety cars.

#### THIS IS SNAPPY SERVICE! NO LAYOVERS!

Only 28 per cent of the Michigan-Hyde Park line is double track. In practice this means that with eleven cars and a seven and one-half-minute schedule, meets are made every three and three-fourths minutes. C. W. Wetterer, manager, is authority for the statement that the men have gotten down to their work with such precision that slip-ups are a rarity.

Important equipment factors in maintaining this clean-cut operation are: The use of seven automatic track switches (of Collins non-splashing type), of United States Electric block signals (type K 2) and of a Nachod headway recorder. The last is not confined to any one line but is shifted about whenever a check on layovers or detection of other irregularities is desired. Another feature is the use of O-B trolley guards at crossings.

Further proof of the snappy service on this line is the absence of layovers. At the Michigan end a man is stationed to turn the trolley poles.

#### AIR OPERATED REGISTERS AND GONGS, TOO!

Although the safety car does so many things by power instead of brute force, the Tampa management has gone two steps farther by adding an air-operated register and an air-operated gong.

As the fare collection equipment was first installed, the International square-type transfer register was operated by foot power through vertical rods running to the ceiling at each end of the car and actuating a transverse rod running the full length of the car. To relieve the operator of ringing up this register by foot power through the heavy lever mechanism, the device shown in the illustration above was invented by E. T. Smith, master mechanic.

The register remains mounted on the bulkhead, and its air engine has been placed beside it. To actuate, the operator simply depresses a pin in the platform. The travel of this pin is regulated by a set screw. At the right in the illustration is an exhaust valve which is held open when not operated. Above is the inlet valve from which air is supplied. When the pin is depressed, the lever goes down, the exhaust valve is closed and the inlet valve is opened. This causes air to go through the three-way valve shown in the center, to the engine, which operates the register much more effectively than by foot power. The engine used is the standard controller cylinder used by the Safety Car Devices Company for opening the circuit breaker.

The air-operated gong is another novelty for making the operator's life easier. It has a remarkable tremolo ranging from a gentle, persuasive "Baby Ben" tinkle to a set of clanging vibrations calculated to unkink the curliest head in Tampa.

#### TAKING THE CAR TO THE PRESS, THE MUNICIPALITY AND THE PUBLIC

While the local newspaper men knew that a new kind of car was coming to town, Manager Wetterer asked them to say nothing until the cars had actually arrived. In the meantime he referred them to the Sept. 22, 1917, "More Service—Less Cost" issue of the *TAMPA TRAILWAY JOURNAL*, from which they could get a good idea of the car and some of its installations.

On Jan. 9, 1918, a day before regular service, a demonstration run was made for the newspaper men and the officials of Tampa, West Tampa and Gary. This proved most satisfying to all concerned.

In addition the company had paved the way with the general public by large newspaper advertisements and

—IMPROVED SERVICE WITH—

## PAY-AS-YOU-ENTER Front Entrance Safety Cars

WILL BE INAUGURATED ON THE  
**MICHIGAN-HYDE PARK LINE**  
**THURSDAY, JANUARY 10th**

**THIS SERVICE WILL BE**

More **COMFORTABLE**

More **FREQUENT**

More **RAPID**

More **SAFE**

**PLEASE—**Be at the stop ready to enter promptly.  
**PLEASE—**Have Exact Fare ready to drop in fare box.  
**PLEASE—**Ask for Transfer when paying fare.  
**PLEASE—**Do not stand on the front platform; it blocks the entrance.  
**PLEASE—**Press the Button when you want to get off.  
**PLEASE—**Be at Front Door ready to alight when car stops.

**TAMPA ELECTRIC COMPANY**  
C. F. W. WETTERER, Manager.

Introducing the Safety Car to the Tampa Public

car circulars for a period of three days. The newspaper advertisements covered not only the regular English and Spanish papers but also the "literary digest" which professional readers expound to cigarmakers at work.

After this preliminary publicity the cars were allowed to speak for themselves in their usual persuasive way. The favorable feeling of the public, however, was increased shortly afterward by two pieces of outside publicity. In the first place, the Feb. 16, 1918, cover of the *ELECTRIC RAILWAY JOURNAL*, which featured the use of Gurney ball bearings on these cars,



showed a car with the famous Tampa Bay Hotel in the background. When Mr. Wetterer explained that the ELECTRIC RAILWAY JOURNAL reached thousands of influential men who would see these evidences of Tampa progressiveness, the pleasure of the patrons was evident.

But the climax of gratification came when they saw their car and their hotel reproduced for all of America to see in the *Saturday Evening Post* of a few weeks later. The management heard from people all over town: "Say, did you see that picture in the *Post*?"

PERFORMANCE OF THE SAFETY CAR

The average number of passengers handled per day by the safety cars over the Michigan-Hyde Park line since they started operation is as follows:

February.....	8670	May.....	7560
March.....	8700	June.....	7880
April.....	8340	July.....	7470

This represents an increase of approximately 20 per cent in the riding.

The reduction in energy consumption is proportional

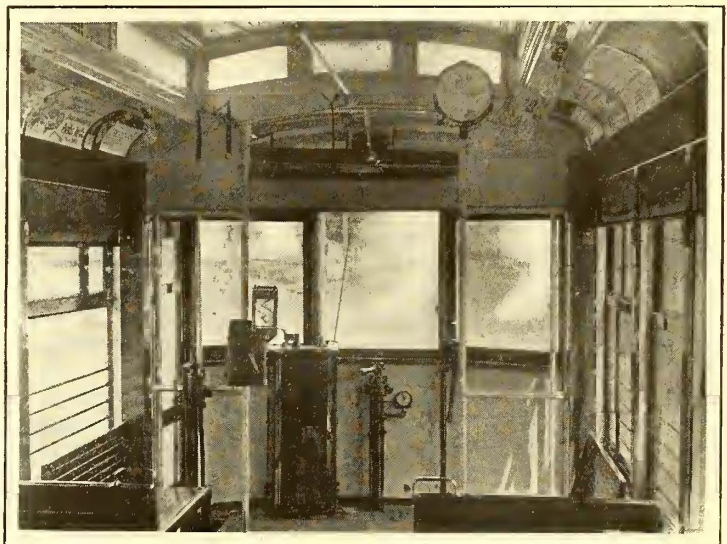
been as high as 75 per cent. On two occasions negroes stopped Mr. Wetterer himself to get change, saying: "You know, Mister, they don't like to make change on those new ears." Accidents of every type have decreased, and step accidents are practically unknown.

FEWER MEN—HIGHER WAGES

Through the introduction of the new cars on the Michigan-Hyde Park line alone, or 25 per cent of the mileage, the thirty men formerly needed to make fifteen runs have been changed to twenty men for twenty runs. No men had to leave the service, however, as the extra list had been decreased just before the new cars came.

On the old cars the men now average 32 cents an hour. On the new cars they average 36 cents an hour, for 4 cents an hour in addition to the regular scale is given for operation on the safety cars. By addition of 30 per cent service the actual ratio is 64:47, or 25 per cent saving.

All men have a chance to operate these cars, but the company reserves the right to refuse those who prove unsuitable. The men capable of operating the safety



Large Car Rebuilt for Operation with Safety Devices Combination

to the weight of the cars, say, 7½ tons as compared to 14 and 15 tons, or a saving of about 50 per cent.

The following table gives comparison of the car-miles and earnings of the safety versus the old open-type of equipment:

	MICHIGAN-HYDE PARK			
	1918		1917	
	Car-Miles	Cents Per Car-Mile	Car-Miles	Cents Per Car-Mile
January (27 days).....	34,800	20.5	26,650	21.9
February.....	44,331	22.0	37,309	22.5
March.....	48,866	22.0	37,437	23.8
April.....	48,528	20.4	36,848	22.2
May.....	50,222	18.5	38,004	21.6
June.....	48,203	19.4	36,778	20.2
July.....	49,220	18.8	37,987	20.1
August.....	49,041	19.2	37,852	19.9
	WEST TAMPA			
July (26 days).....	31,670	20.5	21,740	18.8
August.....	39,335	20.9	25,822	20.6

The rich are leaving their automobiles at home, while many a cigarmaker who formerly walked a half dozen blocks to his home cannot resist the temptation to ride on those new safety cars.

Another fact which proves the interest of the public is that the proportion of riders with exact fares has

cars choose their own runs on a seniority basis. The three or four men who went back to the old cars soon wanted to return to single-headed management and the name plate in the vestibule.

SAFETY CARS FOR TWO-MAN OPERATION

So successful has proved the air-operated door and safety combination that the company has applied it to five forty-eight passenger cars on the Sulphur Springs semi-interurban line. These were open cars which have been vestibuled and fitted with cross-seats.

These cars have two control stands at each end. From the motorman's valve only the right-hand front exit is under control. At the same time, the conductor at his rear stand controls the entrance and exit at his left. In case, however, the motorman throws his brake handle to emergency, the door at the right of the conductor will also be unlatched and can be opened by hand. When all doors are closed, a pilot lamp lights up in the cab. The door engines for these cars are of National Pneumatic manufacture embodied in the safety combination of the Safety Car Devices Company.



## Why Calgary Makes Money on a Four-Cent Fare

*Eighty Per Cent Short-Haul Riding Through Encouragement of Cut-Rate Ticket Sales and the One-Man Operation Thereby Made Possible Are the Big Reasons. Manager Says Railway Would Earn Less on a 5-Cent Cash Fare*

**I**N THE "More Service—Less Cost" issue, Sept. 22, 1917, Thomas McCauley, superintendent Calgary (Alta.) Municipal Railway, told how he had introduced one-man car operation throughout a city of 65,000 to 70,000 people with 75 miles of track and with cars up to 46 ft. long. Since this article appeared the number of regular cars has been raised from forty-two to forty-four, with about thirty-two trippers. A schedule ranging from 8 to 15 m.p.h. is being successfully maintained, although on some downtown blocks the combined headway is only one to two minutes.

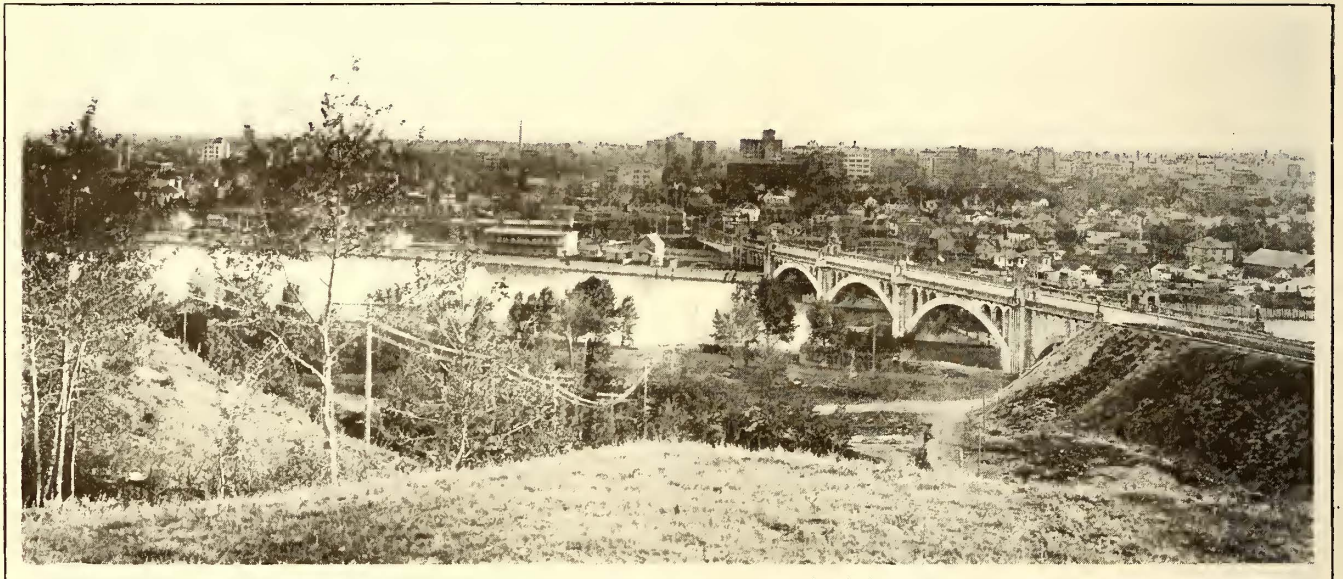
Complete one-man operation dates from Nov. 6, 1917.

door arrangement and partly to the fact that out of a dozen passengers only one had no tickets. And even he stopped to buy some!

Except in the limited cases of people having their clothing caught in doors and jumping on the few fixed steps that are gradually being changed for folding ones, accidents have been almost nil.

The automatic fender installed to prevent backing-up accidents has not had a single opportunity to prove its necessity. The double-truck cars have both Westinghouse air and Peacock hand brakes. The latter are boxed to form a change table for the operator. On the eighteen single-truck cars only the Peacock is used. Mr. McCauley has patented a spring attachment to the brake whereby the operator must wind up the brake to store energy while the car is standing. This is done by a down pressure of the operator's foot. A slight turn then causes the application of the brake in stopping the car. This plan also prevents dragging brakeshoes.

As to braking safety on grades, the worst accident of the kind occurred in 1916 on a two-man car just when the management was planning one-man operation throughout. This has led the management to believe that



Calgary, Where the Public Likes One-Man Car Operation

This includes the operation of two-car trains to the Ogden shops of the Canadian Pacific Railway. In these trains the motor-car operator cares for seventy seated passengers and the conductor of the center-entrance trailer for eighty-four.

It is unnecessary to recapitulate here the ingenious mechanical changes made in the cars by Mr. McCauley in order to suit them for one-man operation except to emphasize the importance of the novel entrance door, illustrated on page 565, which was cut into the front dash without interfering with the operator or his apparatus.

This door, although it does not lengthen the platform 1 in., makes it perfectly feasible for people to enter and leave at the same time even better than in long-platform cars with exit and entrance side by side. In the traffic on a June evening, at Eighth Avenue West and First Street, it was observed that passengers were interchanged with astonishing celerity, owing partly to the

many a braking accident occurs just because there are two men on the car who are engaged in talk instead of business—a sight common enough on the outlying parts of a route. The air-brake cars have a passenger's emergency pull-cord and valve for use if the operator becomes incapacitated.

An objection made to the use of the altered cars was that the front doors were open on a non-bulkheaded car in a temperature as low as 40 deg. Fahr. below zero. As a matter of fact, nothing serious occurred because the rear end was always closed except for a door which was opened only in emergencies or when inspectors were helping off crowds, as at the annual fair. Hence, with the cars closed at one end, there were no drafts, so the cars really were warmer than with the rear platform in use. The inclosed rear is now used as a smoking compartment, which is a popular feature. It is heated by a portion of the motor rheostat by energy otherwise lost.





One-Man Cars Carried All These People



Loading Calgary One-Man Cars

An unusual combination of car lighting and ventilation control is being installed. In replacing the old clusters by individual lamps wired with Crouse-Hinds condulets, the lamps are set close to the carline partitions (see page 566). With the light thus thrown downward, dazzle in the operator's vestibule is avoided and no curtain is necessary. The partitions will be used for publicity purposes. A rod passing through these partitions enables the operator to control all the monitor sash with the exception of the pair nearest to him. These he is able to control through the original mechanism.

Whatever the reasons, one-man operators are doing less damage to special work and using less energy per car-mile for more travel than in the old days. Thus for the period ended April 30, 1918, the cost of power per car-mile was 3.318 cents and for the same period of 1917, 3.588 cents.

OBJECTORS WERE WON OVER

Of course, the general introduction of one-man operation was by no means a walk-over. Labor is strong in Calgary, and its voice is potent in municipal chambers. But frankness and demonstrations won out in the end, as note the following quotation from *Fair Play*, a local critical review, for May 4, 1918:

"Mr. McCauley has been frequently criticised, some-

times with reason (that's when we've weighed in), sometimes without. But, 'to give the devil his due' (a most unfortunate quotation, but we can't think of another at the moment), he is certainly a competent official and succeeds in making both ends meet. He also makes the cars from both ends meet at the City Hall (see the schedule in the bright and witty bulletin suspended from the roof by a string), and if they don't meet, it isn't his fault.

"We were opposed to his introduction of one-man cars until we saw what a success they were. Now nothing would induce us to hazard our safety in a car controlled by a plurality of men. Mr. McCauley is welcome to make what use he likes of this unsolicited testimonial. (Other papers please copy)."

One of the amusing protests was that the rebuilt cars were not suitable for carrying baby go-carts. When this was brought up for a hearing by the Women's Council, Mr. McCauley asked them if they would indorse the one-man car if he made the desired changes. Their consent was a sad blow to certain disgruntled individuals who had tried to use the Woman's Council as a stalking horse.

CUT-RATE TICKETS PRODUCE RIDING

When a community of 65,000 to 70,000 people has 42,500 revenue riders a day during January, February,

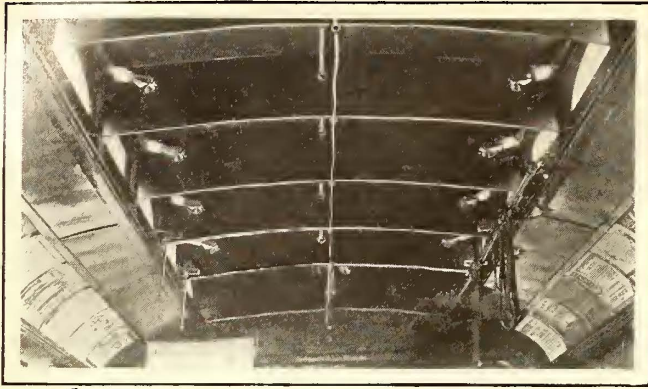


Unique Front Loading Door of Calgary One-Man Car

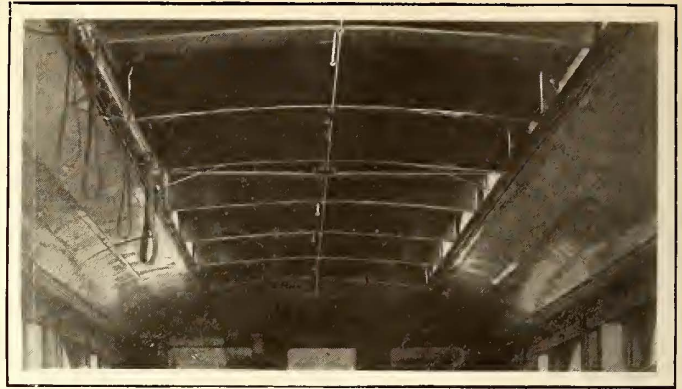


Front Vestibule of Calgary One-Man Car





Looking Forward



Looking Backward

Calgary Lighting Arrangement Prevents Light Reflection in Front of Motorman

March and April, with 45,000 a day in spring and summer, it is evident that some things are inducing the people to use the cars. One of these things is good service; the other is a low rate of fare that is making money for the municipality even in these days. Of course, only the operation of the cars by one man instead of two still makes such happy results possible.

About 80 per cent of the traffic comes from people riding 2½ miles or less. Owing to an agreement which brought the Canadian Pacific shops to Calgary, the steam shopmen going to and from Ogden travel at the same rates as in the city, although Ogden is 6 miles out and some of the men can get a 12-mile ride for one fare.

The proportion of people riding on tickets is at least 80 per cent. There are workmen's tickets at eight for 25 cents; regular tickets at six for 25 cents; books at twenty-five tickets for \$1, school and children's tickets at ten for 25 cents. Ten drug or cigar stores throughout Calgary and all car operators sell tickets gladly. In all cases the railway advances \$50 of tickets. The stores are known to be reliable; and as for the men, not a penny has been lost in years.

Mr. McCauley says that he would certainly oppose a flat 5-cent fare. The latter would eliminate the excellent mid-day travel, increase losses in fare collection and virtually make one-man car operation impossible

at the present schedule speeds. It should be the aim of an electric railway, he says, to give good service at a rate of fare that will keep people from buying automobiles or using them regularly for business if they already own them.

The only ticket now up for elimination is the eight-for-25-cents workmen's ticket, as this is for long-haul non-profitable peak riding which costs more than any other. Then, too, the shopmen who use it are earning more than many a clerk and commercial man. At a meeting held in June, the Calgary Trades & Labor Council protested against a fare increase on the ground that it was not needed to cover an operating deficit but was a scheme to tax the railway, the poor man's carrier, in order to relieve the rich taxpayer, who rides in automobiles over the public highways. They pointed out that the workman taxed on an average holding of \$2,000 would have to pay far more for extra fare than he would get back in lower taxes, whereas the gain to the rich man assessed on \$50,000 or more would be appreciable.

The odd point about the Council's proposal to take \$25,000 a year taxes instead of \$4,400 is that it could readily have taken much more money from the Municipal Railway's funds without raising any talk about taxation. The railway now has a surplus of \$94,000 and a fund of \$750,000 to cover depreciation reserve and sinking funds. It is credited by the city with 6 per cent interest on \$300,000 of the foregoing total.

TABLE 1—WAGE COMPARISON OF CALGARY MUNICIPAL RAILWAY FOR FOUR MONTHS ENDED APRIL 30, 1918

	Hours	Wages One-Man Operation	Wages Two-Men Operation	Saving
Motor-car hours	94,307	\$45,267	\$81,104	\$35,836
Trailer hours	4,358	1,874	1,874	
Total	98,665	\$47,141	\$82,978	\$35,836

The foregoing calculations are on the basis of the maximum rates in force to June 30, 1918:

One-man operation, 48 cents an hour  
Two-men operation, 86 cents an hour  
Trailer operation, 43 cents an hour

On the same number of hours the payment in wages since July 1, 1918, would be:

	Hours	Wages One-Man Operation	Wages Two-Men Operation	Saving
Motor-car hours	94,307	\$47,153	\$84,876	\$37,722
Trailer hours	4,358	1,961	1,961	
Total	98,665	\$49,114	\$86,837	\$37,722

The annual saving would be \$112,618 on the basis of the maximum rates which will be in force:

One-man operation, 50 cents an hour  
Two-men operation, 90 cents an hour  
Trailer operation, 45 cents an hour

The saving in supplies would be:

Caps, 130 @ \$3	\$390
Suits, 130 @ \$28 50	3,705
Overcoats, 60 @ \$25	1,500
	\$5,595

TRAFFIC ACCELERATORS INCLUDE WHISTLE SIGNALS

All cars with air brakes carry deep-toned air whistles for use in signaling to cars of intersecting lines. These signals save not only time and accidents for the cars, but also time and disappointment for passengers who wish to transfer. The code is as follows:

- One whistle: Wait for transfers.
- Two whistles: All clear; go ahead.
- One whistle from a waiting car: Have you transfer?
- One whistle in reply from approaching car: Yes.
- Two whistles in reply from approaching car: No.

People with sensitive ears are certain to make some objection to audible signals, but in view of the great number of automobiles now carrying all kinds of horns and sirens such complaints lack merit. In any event, the people of Calgary have long accepted this signal practice as a matter of course for their own convenience.

Another practice, and one made possible by the limited number of routes, is the use of colored disks and lamps to indicate the routes. These are mounted on



TABLE II—COMPARATIVE REVENUES AND OPERATING EXPENSES OF CALGARY MUNICIPAL RAILWAY FOR SIX MONTHS ENDED JUNE 30, 1917 AND 1918

	1918	1917		1918	1917
Car earnings.....	\$316,538.34	\$263,500.08	Rent of land and buildings.....	250.45	192.80
Miscellaneous earnings.....	3,855.27	4,148.83	Insurance.....	1,063.12	1,096.88
Revenues.....	\$320,393.61	\$267,648.91	Administration charges.....	1,993.98	1,993.96
Track and roadway.....	\$3,862.85	\$2,378.08	Bowness Park improvements.....	2,857.09	5.81
Electric line.....	1,851.28	1,019.81	Caretakers' salaries, Bowness Park.....	208.00	.....
Buildings and fixtures.....	354.51	10.80	Sarcee Line.....	290.42	859.82
Maintenance of way and structures.....	\$6,068.64	\$3,408.69	General.....	\$15,264.67	\$11,525.91
Cars, bodies and trucks.....	\$22,835.17	\$22,069.61	Operating Expenses.....	\$209,678.11	\$185,976.02
Electric equipment of cars.....	10,609.95	7,339.66	Balance.....	\$110,715.50	\$81,672.89
Miscellaneous equipment.....	178.49	89.44	Conduit rental.....	\$414.96	\$414.95
Shop expenses.....	1,880.29	1,401.44	Land rental.....	181.98	182.00
Maintenance of equipment.....	\$35,503.90	\$30,900.15	Debtenture, interest.....	55,091.40	55,091.43
Power.....	\$47,258.78	\$43,692.63	Sinking fund.....	22,253.94	22,253.93
Superintendence of transportation.....	2,230.00	1,356.13	Depreciation.....	17,838.24	17,838.25
Wages of conductors.....	2,826.17	28,761.24	Taxes on land.....	267.48	267.50
Wages of motormen.....	6.06	28,761.25	Taxes on line construction.....	1,209.96	1,210.00
Wages of motor-conductors.....	78,080.14	22,361.82	Bad debts.....	375.00	375.00
Wages of car service employees.....	73.76	.....	Contingency accident reserve, 2 per cent car earnings.....	6,330.76	5,270.00
Wages of car house employees.....	3,539.94	3,348.83	Overhead and fixed charges.....	\$103,971.82	\$102,903.06
Car service supplies.....	8,537.20	8,861.25	Surplus.....	\$6,743.68	†\$21,236.17
Miscellaneous car service expenses.....	153.04	294.08	†Deficit.....	.....	.....
Cleaning and sanding tracks.....	2,428.43	1,381.98	STATISTICS		
Removal of snow and ice.....	3,147.08	973.20	Miles operated.....	1,482,876	1,201,665
Operation of sprinklers.....	165.74	152.95	Hours operated.....	151,314	132,994
Wages of freight motor-conductors.....	2,094.56	195.91	Passengers carried.....	7,431,394	6,518,801
Transportation.....	\$152,840.90	\$140,141.27	Revenue per car mile (cents).....	21.606	22.273
Salaries of general officials.....	\$3,799.99	\$3,231.03	Operating expenses per car mile (cents).....	14.139	15.476
Salaries of clerks.....	1,707.00	1,455.00	Operating expenses per hour (cents).....	1.385	1.398
Printing and stationery.....	256.50	217.75	Cost of power per car mile (cents).....	3.187	3.636
Miscellaneous office expenses.....	225.82	280.13	Average fare per passenger (cents).....	4.106	4.001
Store expenses.....	923.43	782.18	Average daily receipts.....	\$1,770.13	\$1,478.72
Advertising and attractions.....	259.10	65.00	Average daily operating expenses.....	1,158.44	1,027.42
Miscellaneous general expenses.....	1,431.77	1,107.28	Average daily operating expenses, including fixed charges.....	1,732.87	1,596.02
Miscellaneous expenses.....	.....	238.00	Percentage of operating expenses to revenue (per cent).....	65.4	65.8

both the front hood and the sides; the sockets or bases are interchangeable. The indications per route are white, blue, red, red and blue, red and white, yellow, yellow and blue, blue and white.

Transfers are of simple directional type with paper and ink colored in the same way as the route signs. Obviously the car operator has no difficulty in rejecting wrong transfers quickly, for the red line does not take red transfers issued thereon and the same principle applies to the other lines. If the car operator does not use up all the transfers punched for a given date, he merely makes a punch for the following day, which then makes the transfer valid. All transfers also are punched for a.m. or p.m. hours and fractional hour limits.

An odd transfer, which is really a half-rate ticket, is that given to riders patronizing the city market. This transfer permits them to ride home free during the marketing hours.

The men pick their runs every three months. They are on the nine-hour two-swing basis, as on from 6 a.m. to 11 a.m.; off from 11 a.m. to 2 p.m.; on from 2 p.m. to 6 p.m.

Owing to the successful encouragement of mid-day travel, trippers get three hours in the middle of the day in addition to three hours each morning and evening. Overtime is paid as straight time, and there is no allowance for dead-mileage runs, make-ready time, etc.

On July 1, 1918, the wage schedule of 37 cents to 42 cents an hour for conductors and motormen was raised to a minimum of 40 cents for the first year and a maximum of 45 cents for the second year and thereafter. The only "conductors" are on a few trailers, freight cars and sprinkler cars. Even the combination baggage and freight car to Camp Sarcee, Bowness and Ogden is run by one man. So practically all men receive 45 or 50 cents an hour, a 5-cent bonus being paid for one-man service.

The railway is 26-cents an hour better off than with the two-man operation of 1913-1914, and 40 cents an hour better off over two-man operation at present wages. Car-hours average 836 a day for 365 days a year.

TABLE III—OFFICIAL STATISTICS OF CALGARY MUNICIPAL RAILWAY FOR LAST FIVE YEARS ENDED JUNE 30 AND FIRST HALF OF 1918

	1913	1914	1915	1916	1917	1918	Six Months Ended June 30, 1918
Investment.....	\$1,777,262	\$2,176,148	\$2,240,227	\$2,253,250	\$2,343,412	\$2,343,969	\$2,343,969
Miles of track.....	63	71.5	71.5	71.5	75	75	75
Cars operated—Regular.....	60	60	60	38	42	44	44
Cars operated—Trippers.....	5	18	20	23	24	32	32
Car-hours operated.....	307,980	366,367	298,185	250,556	277,525	301,768	151,314
Car-miles operated.....	2,647,674	3,213,132	2,189,804	2,524,860	2,573,993	2,900,042	1,482,876
Fare passengers.....	16,986,658	17,787,860	14,073,298	12,986,234	13,909,238	14,519,256	7,431,394
Passenger revenue.....	\$692,430	\$724,402	\$593,437	\$533,094	\$563,621	\$595,681	\$305,133
Average fare (cents).....	4.008	4.072	4.216	4.118	4.052	4.100	4.106
Earnings per car mile (cents).....	26.227	22.797	21.328	21.304	22.278	20.796	21.605
Wages paid motormen and conductors per car hour (cents).....	65.7	70.6	70.6	71.3	61.7	54.6	53.5
Wages paid motormen and conductors per car mile (cents).....	7.641	8.054	7.47	7.081	5.772	5.688	5.456
Operating expenses per car mile (cents).....	18.960	17.752	15.191	14.868	14.944	14.416	14.139
Debtenture interest.....	\$83,904	\$106,359	\$106,359	\$106,359	\$110,182	\$110,182	\$55,991
Sinking fund and depreciation.....	30,723	41,478	72,986	73,499	78,392	78,463	40,092
Surplus.....	64,942	8,769	8,894	4,980	21,794	16,848	6,743

NOTES.—1. One-man operation began on a few lines in 1915; the system was completely changed over in November, 1917.

2. Maximum wage to conductors on trailers and motormen on freight work cars, 43 cents from Jan. 1 to June 30, and 45 cents from June 30.

3. Maximum wage of motor-conductors to June 30, 48 cents; from June 30, 50 cents.

4. Time and a half holidays, with free uniforms, suits, overcoats and caps yearly.

5. Three holidays and time and a half caused the wages per car hour to represent 53.5 cents for the first six months of 1918; moreover, two men were occasionally used when double fares were collected on the Camp Sarcee and Bowness lines.



In addition to \$121,056 a year saving in platform expense, on the basis of the first half of 1918, the Municipal Railway also saves \$5,595 a year in the purchase of uniforms and other equipment for 130 men. Table I gives a detailed wage comparison for the four months ended April 30, 1918. Discipline is also easier, since there are fewer men to handle and the men are more content because of the higher wages, the variety of work and the absence of argument with conductors behind.

Tables II and III are detailed comparisons of revenue, operating expenses, fixed charges and traffic statistics for the years ended June 30, 1913 to 1917, inclusive, and the first half of 1918. They cover a period when both two-man and one-man car operation was used, and they indicate that the change and the continuance of ample service were rewarded. From Jan. 1 to June 30, 1918, the car earnings increased from \$267,648 to \$320,393. Hence in spite of larger allowances for maintenance and other expenses, a deficit of \$21,230 was turned into a surplus of \$6,743. The car-miles operated increased from 1,201,665 to 1,482,876, but the operating expense per car-mile decreased from 15.476 cents to 15.139 cents. The operating ratio in the face of rising prices declined from 76.69 per cent in 1914 to 65.4 per cent in 1918.

The wages per car-mile to motormen and conductors have decreased from 7.641 cents in 1913 to 5.688 cents in 1918. In 1913 fewer men were getting maximum wages, but in 1918 practically all would receive 43 cents an hour if two men were used and 45 cents after July 1, with 50 cents on one-man cars.

Up to the present one-man operation has taken care of increased service at the old fare, increased wages and better working conditions, and the higher material costs. Two-man operation would require a 25 per cent increase in fares to obtain the same results for the same traffic, but an increased fare would reduce traffic.

## Analysis of One-Man Car Possibilities.

*Data for Specific Case Show How Desirable One-Man Safety Car Operation Would Be in Connection With Rerouting to Save Walking and Transfers*

BY JOHN A. BEELER

Consulting Engineer, New York, N. Y.

**O**F AVAILABLE operating economies the modern light-weight one-man car with automatic equipment is most important in the extent of its applications, in the largeness of its savings and above all in the fact that it increases travel.

By "extent of its applications" is meant all the service in practically all communities of 75,000 or less; a large part of the service in cities of the middle size, and service on such lines of metropolitan cities as are not routed over the more congested streets.

By "largeness of its savings" is meant the reduction in power and platform expense aside from economies in track and car upkeep.

By "the fact that it increases travel" is meant the stimulation of traffic through increased service, which

has had the twofold effect of eliminating automobile competition and of encouraging short as well as long rides.

### IN A CITY BELOW 100,000

Let us consider the modern one-man car as applied to a specific case, say a city of less than 100,000. The community is served by 25 miles of single track. It should be a splendid electric railway town because of hills which are responsible for grades up to 10 per cent. Slow schedules, bad track, poor cars and two-man crews, however, have made the cost of operation equal 90 per cent of the gross revenues. That the town itself is prospering is indicated by the fact that the car-mile earnings rose from 20 cents in 1911 to 22.5 cents in 1916, with a further rise to 24.5 cents in 1917. Yet the small passenger earnings of \$1.66 per car-hour (due largely to slow schedules) and average annual earnings of but \$5 per capita indicate that the riding possibilities of this city are far from exhausted.

The reasons why the maximum riding possibilities have not been attained might be classified as follows:

1. Unsatisfactory routing and headways.
2. Low speeds.
3. Unattractive cars.
4. Financial impossibility of increasing service, in view of the low number of miles per man and car, excessive energy consumption and high maintenance.

### REROUTING OFFERS BIG SAVINGS IN TIME

Ordinarily the first thought in connection with improving service is to shorten the headways; the second is to raise the schedule speed, and the third (if considered at all) is to improve the routing. Yet in the present case rerouting was the most important factor.

Analysis showed that lines Nos. 1, 2 and 3 were satisfactory as to routing, since they brought the passenger directly to the business center. Line No. 4 not only passed at some distance from the center but was also at the bottom of a steep hill. It is true that a transfer to the center was obtainable, but transfers are an inconvenience at best. This circumstance, plus a ten-minute headway, doubtless tempted persons who lived a mile or two along this line from the business center to walk instead of ride.

The remaining three lines, Nos. 5, 6 and 7, did not reach the business center directly but relied on transfers. The headways on these lines varied from ten to twenty-five minutes. Since the one-way trip length of line No. 5 was 2 miles and of Line No. 7 only 1½ miles, it is obvious that people in their vicinity could not save much time by riding. As far as crosstown riding was concerned, three and even four transfers might be necessary to ride an equal number of miles!

Hence the basic recommendation was to route all of the lines via the center of the city so that riding would be encouraged by minimizing walking and transfers. To put the matter in another way: Five minutes saved a person in waiting for a connection or in walking from an offside line is in effect almost as good as cutting a ten-minute headway to a five-minute headway.

As this rerouting was considered in connection with one-man car operation, it is proper to mention that the concentration of all lines in the business section would be well below the saturation point for this character



of operation. The averaged combined headway would still be only two minutes, compared with less than one minute in cities where such cars are now in use.

The railway was found to be using summer and winter sets of rolling stock. The open cars were of ten-bench capacity, while the closed cars were of one-man car size, as they seated only thirty to thirty-two passengers each. Because of the duplication and age of the equipment only 40 per cent of the rolling stock, including trippers, was in use on any one day.

Energy consumption was high, ranging from 2.5 kw.-hr. per car-mile in summer to 3.75 kw.-hr. per car-mile in winter for cars averaging 25,000 lb. loaded. Thus while the cars were not so heavy as the over-sized cars of other properties, their age and antiquated design were figured as responsible for 200 watt-hours rather than the 125 watt-hours per ton-mile possible with modern, faster one-man cars over the grades of this city. Yet the old schedule speed averaged only 7.5 m.p.h. or little more than twice walking speed. The cost of car maintenance was 2.5 cents per mile.

To supersede this service the one-man safety car, which has since become increasingly popular, was recommended. Under the conditions then obtaining this would have reduced platform expense from 35 per cent to 18 per cent of passenger receipts after allowing a 3 cent differential in wages—an annual saving of nearly \$50,000. It would also have reduced energy consumption (the use of thermostats and coasting recorders being assumed) from 15 per cent to 8 per cent of passenger receipts by cutting the cost per car-mile in half—an annual saving of \$20,000.

Other possibilities of the one-man safety car in promoting economy and increasing travel will be noted in the following analysis of several reroutings:

In the case of two lines the present direct routing and the ten-minute headway were to be unchanged, but the round-trip running time was to be reduced from forty minutes to thirty-five minutes, so that seven cars

would do the work of eight. In light hours the round trip could be made in thirty minutes, with six cars instead of eight, or six men in place of sixteen!

A third line was to be lengthened from 4 miles to 6.5 miles, round trip, by being extended to the business center. Theoretically the headway was to be ten minutes as before, but actually the overlapping of another line (also on a ten-minute headway) would give the downtown part of the line a five-minute service, thus helping to draw the pedestrian off the sidewalk. The new schedule speed on this line would be 10 m.p.h. instead of 8 m.p.h.

The remaining lines were recommended to be so combined for through operation that on part of the route a twenty-minute headway per line would give a combination headway of ten minutes, while overlapping further downtown would give a two and five-tenths minute service that only a miser could withstand.

To go into further descriptions of the reroutings would lead to needless complexity. In general it was apparent that on the basis of lower operating costs alone it would pay to change over to one-man safety-car operation over the rerouted tracks without making any allowance for those increases in travel and popularity that have been noted in so many communities.

### *Passenger Increase in Liverpool*

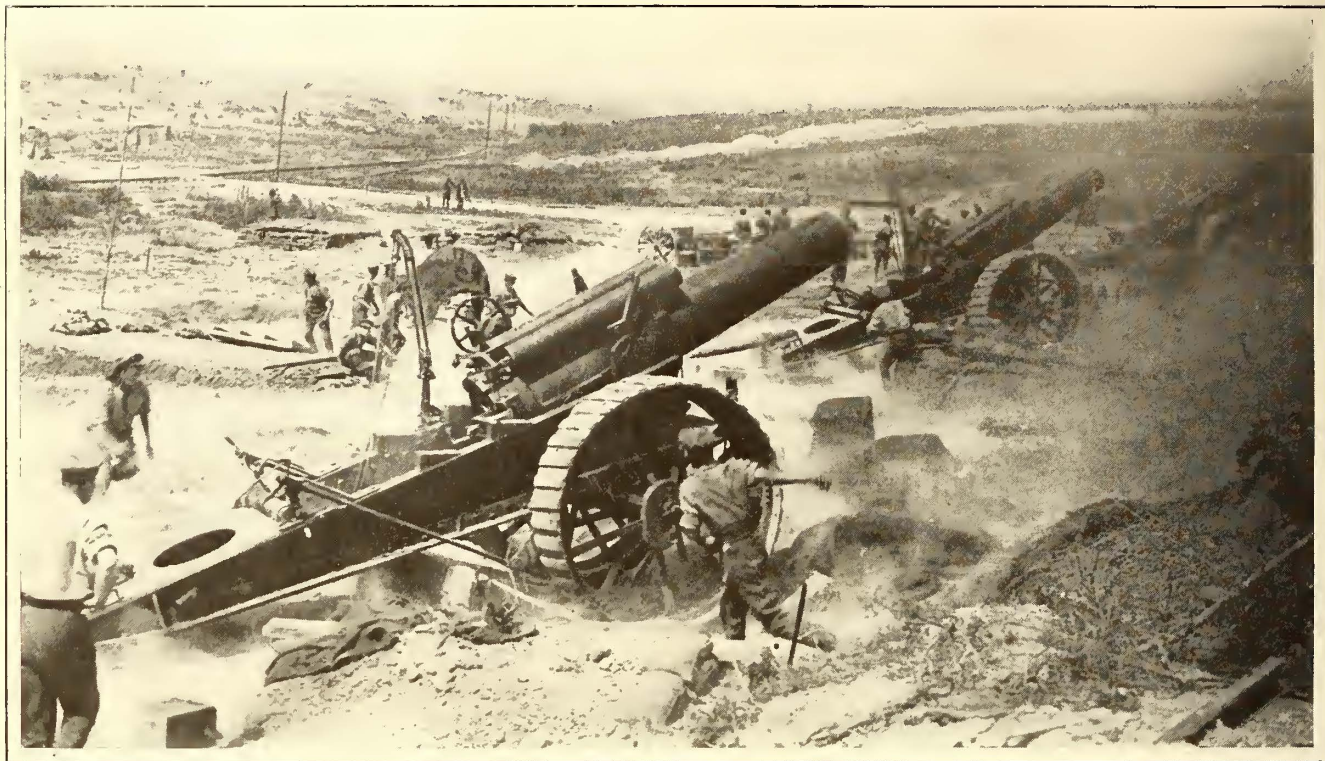
THE increase in the number of passengers who traveled on the Liverpool (England) Corporation Tramways during 1917 as compared to pre-war years amounted to 40,000,000, which is about equal to the total population of Great Britain. This enormous increase was brought about by various causes, including the increase of 50 per cent in steam railroad fares, the abolition or great reduction of steam railroad service, the diversion of shipping from other ports to Liverpool, and the great amount of munition, aircraft and other war work in and around Liverpool.



In Houston, Tex., the Latest Big City Convert to the Safety Car



# British Tramways Seriously Affected by War



*Wages Have Jumped 60 to 100 Per Cent and Costs of Material 100 to 200 Per Cent—Municipal and Private Lines Feel Urgent Need of Fare Relief—More Than Half of Employees Have Gone to the Front*



PRIVATE and municipal tramways in Great Britain and Ireland have not been immune from the ravages of war. No better proof of this is needed than the recommendation made a short time ago by a select committee of the House of Commons to the effect that the Board of Trade should be empowered to permit fare increases, in spite of statutory restrictions, in the case of companies injuriously affected by causes arising out of the war. Recognizing the urgent need of the local transportation utilities, Parliament has passed a bill authorizing rate increases sufficient to enable with due care and management a common dividend to be paid at three-quarters the maximum rate or three-quarters the pre-war rate, whichever is lower. The text of this act was published in the *ELECTRIC RAILWAY JOURNAL* of Sept. 7, page 418.

British authorities are unanimous in declaring that all tramways have been injuriously affected by the increased operating expenses caused by the war. Wages have risen from 60 to 100 per cent, and the advance in the cost of materials since pre-war days has varied from about 100 to more than 200 per cent. In particular, the increased cost of fuel and consequently of power, coupled with the restrictions on supply, has given rise to a serious problem, and an order in council with respect to tramway materials and plant has definitely indicated substantial interference with operation.

The larger revenue from war traffic obtained by many tramways has not compensated for the constantly advancing costs of operation. In most of the large cities, where the tramway systems are generally owned by the municipalities, a small margin has still remained, inasmuch as the fares charged have been in most cases lower



than the statutory maximum. In the case of the smaller municipal tramways, and in the case of most of the privately owned companies, which operate in less densely settled territory, the revenues have reached the vanishing point and fare relief is needed.

An additional burden upon British tramways has been the serious drain upon man-power. More than half of the male employees of the average tramway have entered military or naval service since the war began, and this has created the problems of substituting female labor, providing for the dependents of men in service, utilizing crippled soldiers and the like.

In all things, however, the tramways of Great Britain and Ireland have been eager to serve the nation's interests. Their trials and their patriotic efforts to endure these are well described in the following statements prepared from data before the select committee and also reviews by prominent tramway officials through the London office of this paper.

## Municipal Lines Have Suffered

*Municipal Tramways Association Reports That Small Companies in Particular Have Felt the Burden of Increased Operating Costs*

**T**HE Municipal Tramways Association includes eighty-seven undertakings—practically every municipality operating tramways in Great Britain and Ireland. The cities own about 1800 miles of line, representing nearly £56,000,000 of capital, and they carry 2,697,000,000 passengers annually.

In the large cities, according to C. J. Spencer, honorary secretary of the association, the practice has been to charge fares considerably lower than the Parliamentary maximum, the general rate being about a penny for 2 miles with correspondingly low rates for workmen. Municipalities are peculiarly sensitive to the wishes of the residents, and they have usually reduced the fares as much as possible, but not so much as to cause the tramways to become a burden on the taxpayers. The principle has been generally accepted that the tramway passenger must pay for the cost of his ride.

The large municipal tramway systems, with their heavy density of traffic, have in the past been fairly remunerative, but they have lately been getting into difficulties. Now the fares are being raised throughout

the country in order to meet the increased costs of operation. The usual method is to increase the fare per zone rather than to shift the zones, although in some cases the zones have been shortened. The general effect on traffic, it is said, has been to reduce traffic but to increase revenues. A common experience is for a 50 per cent increase in fare to result in a 25 per cent increase in revenue, but this depends largely upon the traffic characteristics of the district concerned.

### SMALLER TRAMWAYS HAVE BEEN HARD HIT

On account of the less density of traffic, the smaller municipal tramways have not been able to keep the fares down so much as the large undertakings have done, and they have charged well up to the Parliamentary maximum. Consequently they have not been so advantageously placed as the large tramways for securing fare increases. They have needed relief much more, however, for they are bound by the national awards of the committee on production to pay practically the same war bonuses and advances to their men as the large undertakings, and they bear the same burdens in regard to power expenses, cost of materials and the like. Eventually these tramways which are restricted by statutory fare limitations will upon proof of their case before the Board of Trade receive relief, for the act just passed by both Houses of Parliament authorizes an increase up to 50 per cent in the maximum fare for municipal tramways.

In the munition centers there has been in general a great increase in traffic and consequently in revenue. Had it not been for this fact, the municipal tramways would all have been in difficulty a year or two ago. Even in such sections, however, the expenses have shown a tendency to outrun revenues, and of late they have quite done so. No further increase in traffic is expected, for many systems, in munitions centers and elsewhere, are considered to have already reached the saturation point on account of overcrowding. They cannot carry more passengers without running more cars, but they cannot secure the cars. They might even have to curtail mileage in order to reduce the coal consumption.

On the other hand, some of the municipal tramways have been approached in regard to carrying parcels and freight to relieve the present transportation difficulties. In Mr. Spencer's opinion, the tramways could at the present time serve the nation with considerable advantage. With the present rates, however, it is impossible to do so without incurring a big loss. The Board of Trade, he feels, should have power to vary the rates so as to remedy this defect.

### EXPENSES WILL CONTINUE HIGH

One of the chief causes of increased expenses has been the increased cost of labor. Wages of motor-men and conductors have been increased approximately 70 per cent by the granting of a war wage. Some of the wages have been increased from 70 to 100 per cent. This, however, does not entirely represent the increase in cost, for the labor which must be used to-day is generally not so efficient as the labor employed before the war.

The cost of power has gone up on the average about



20 per cent over pre-war figures. A rough estimate of the increase in cost of materials would be from 100 to 200 per cent. The variations have been wide, but the things that are absolutely necessary, tires and rails, have advanced greatly. Rails have risen from £7 to £15 and £16 a ton, and tires have gone up even more than that.

There is no doubt in Mr. Spencer's mind that expenses will keep very high for some time after the war. As far as one can see, materials will cost as much and wages are not likely to go back. What will happen to revenues, however, is difficult to prophesy. It all depends upon the business of the country. Probably some systems will suffer decreases in revenues, while others may not.

#### RENEWALS HAVE TO BE NEGLECTED

The reserve and renewal funds have been built up in the majority of cases on the basis of a penny per car mile to meet the ordinary depreciation. With materials at anything like the present cost, however, this amount is altogether inadequate. The municipal tramways cannot undertake any but the necessary renewals during the period of the war, and they are obliged to look forward to a period when they shall have to renew at prices probably much higher than those existing before the war.

Ordinarily, it is conceded, this would be a bad policy, but the tramways cannot help themselves. They are breaking the old adage that one stitch in time saves nine. The tramways will have to make renewals after neglecting the undertakings to such an extent that increased renewals will be required, and in addition they will probably have to pay more for the material when it is needed.

The higher costs of materials and the shortage of materials have even made the carrying out of ordinary maintenance a matter of difficulty. As for new construction, this has been practically suspended by the war.

#### SIXTY-THREE PER CENT OF MEN IN SERVICE

Approximately 63 per cent of the men employed by municipal tramways in Great Britain and Ireland have entered military or naval service. Considerable female substitution has taken place as far as conductors are concerned, almost every tramway being largely operated by women conductors. The male conductors remaining are men who are unfit for military service on account of some medical disability or are beyond the military age. Returned soldiers have also been utilized both as drivers and as conductors. As nearly as can be estimated, about 80 per cent of the vacant places have been filled by women and other substitutes, the remaining 20 per cent being met by running fewer car-miles.

There has been very little substitution of men employed in the depots, with the exception of cleaners. In many undertakings the whole of the cleaning staff has been replaced by women, and in others by men above military age and men unfit for military service. Skilled and semi-skilled men in the depots, however, have not been taken to any great extent and are considered as being in a protected occupation.

Very few one-man cars are being used, and no increase has been noticed since the outbreak of the war. No great increase has occurred in the use of automatic devices, owing to the fact that it is impossible to secure the material on account of war conditions. Engineering firms are almost exclusively engaged on munitions of war, and the purchase of new apparatus is almost out of the question.

The extent to which a crippled soldier can be utilized in connection with tramway work is mainly dependent upon the disability. There are few jobs where a badly crippled soldier is of any use at all. Shell shock certainly interferes with a man's suitability as a motorman. As far as known, blinded men have not been utilized for the winding of armature coils, but men who have lost the use of one eye are being used at present for work of this sort.

Municipal tramway undertakings have been able to keep in touch with the men at the front by supplying various comforts and the like. No hospital cars have been built, but soldiers and sailors in hospitals are allowed to travel free on most systems.

## Revenue Gains Eaten Up

*Majority of Privately Owned Companies of Tramways & Light Railways Association Have Enjoyed War Traffic, but the Net Gain Has Been Negligible*

**I**N GENERAL—so says R. J. Howley, vice-chairman of the Tramways & Light Railways Association—there have been increases in revenue for the privately owned companies belonging to this association. In certain districts the increases have been considerable, and in others they have not been so great. In all cases, however, the greater part of the increases has been absorbed by the increased expenses. In some cases the increases have been wholly absorbed. In Mr. Howley's opinion, an estimate of doubled expenses as compared to pre-war times is conservative.

To a large extent the companies have been obliged to defer repairs wherever possible. Pole painting, repaving parts of track and a large amount of what is called ordinary repair work is now deferred on account of scarcity and cost of labor and materials. The deferring of these repairs will make them more costly.

In connection with permanent way at least £100 a year of what is ordinary maintenance work per mile has to be deferred—this is quite apart from renewals. Generally the cost of repairing permanent way in pre-war days varied from £130 to £200 per mile per year.

The present increase in wages, it is felt, is going to last. The present higher cost of materials may, and it is believed will, come down, but it will take a long time before normal conditions are revived. Just now the question of maintaining revenue to meet such increased costs is of serious concern to all the companies.

#### PRIVATE COMPANIES HAVE LOWER TRAFFIC DENSITY

The companies belonging to the Tramways & Light Railways Association operate very largely in the less populated areas and in the outskirts of municipalities, where the return per mile is much less than it is in



the cities or towns. This makes a big difference when one is considering the strength of the undertaking for resisting higher wages and material prices. Yet the investment does not vary in any such proportion as does the earning power, for the average cost per mile of the privately owned tramways compares quite well with the average cost of all the tramways in the country.

Many of the privately owned tramways are working on the outskirts of big cities which are growing outward. The traffic is continuing to grow, because of the extension of the population into the country areas and because of the larger amount of money which the workingman has to spend. In recent years a number of factories have been placed in the country at some distance from the cities, and they have produced traffic. The main reason for the increase in the long-distance passengers, however, is that the workingman to-day likes to live on the outskirts in the fresh air and does not mind the cost of a penny or 2d. or even 3d. a day so much now.

#### ABNORMAL REVENUES WILL NOT LAST, BUT EXPENSES WILL

Some private companies are securing a considerable abnormal revenue from special causes—munitions factories built on the outskirts of towns, and the housing difficulties experienced by munitions workers, which necessitate their traveling 3 or 4 miles in the morning and in the evening. Very soon after the war part of this revenue will disappear, and it will keep on disappearing for some time. Yet there will be a considerable lag in the reduction of expenses, Mr. Howley believes, and the effect on the companies due to causes brought about by the war is likely to last many years thereafter.

The privately owned tramways have not been affected by the traveling of soldiers to so great an extent as have the steam railroads. Most of the camps are not in close proximity to the towns, and there are really few soldiers quartered in towns. Early in the war, during the winter-time, the soldiers were billeted in towns, and then there was a large amount of soldier traffic. Now the travel is mainly between the larger camps and homes when the men go and return from leaves, and the steam lines handle this traffic.

#### FREIGHT RATES ARE TOO LOW

Typical freight rates are 2d. per ton per mile for coal, charcoal, sand or material for repairing roads, 2½d. for iron, iron ore and sheet iron; 3d. for sugar, grain, flour, etc., and 3d. for the first rate in the case of a 7-lb. parcel. It was impossible even before the war to carry goods at a profit, and with the increased expenses of to-day the situation is still worse. The difficulty arises from the fact that a haul of tramway or light rail-

way is short and the initial cost is high. It is said to be a great pity, from the national point of view, that the private tramways cannot carry goods at a profit, because there is a great scope for the hauling of goods and farm produce.

## Costs of Material Up 120 Per Cent

*Higher Operating Expenses Lead to Two Fare Increases in Manchester—Railway Has Kept in Close Touch with 2900 Men at the Front—Tokens Allow Wounded to Ride Free*

By J. M. McELROY

General Manager Manchester (England) Corporation Tramways

**I**N DECEMBER, 1917, the Manchester Corporation Tramways increased its revenue by reducing the lengths of the various zones by about 600 yd., discontinuing the half-penny zones and withdrawing workmen's fares. In the latter connection, it should be remembered that the ordinary fares remained less than the statutory fares for workmen of a half-penny per mile. This revision had the effect of improving revenues by about £50,000 a year. At the present time, the railway is putting into operation by degrees a further revision, adopting a 2-mile 1d. zone from the center of the city and adjusting all other zones in the same ratio.

The basic wages of drivers, guards, etc., have been increased by a bonus of 25s. a week. This is paid to all adult male employees, while a bonus of 13s. a week is paid to all the adult female staff engaged in the operating section of the department. The tradesmen and semi-skilled men in other branches of the service receive a bonus of 20s. per week, plus 12½ per cent calculated on wages and bonus combined. In ad-

dition the dependents of men in service receive generous allowances. More than £240,000 has been expended by the railway under this heading since the commencement of hostilities.

#### AVERAGE RISE IN COST OF MATERIALS 120 PER CENT

The increase in the cost of materials has been exceptional, the average rise being about 120 per cent. It should be borne in mind, however, that some articles have risen in price as much as 300 per cent, but for a flat rate to cover all, the figure first stated is approximately correct. The cost of electrical energy has advanced by 15 per cent. This is supplied by the electrical department of the municipality, and the generating stations are under the control of that department.

No additional track has been constructed since the



Tramwaymen To-day—Heroes To-morrow



war began. We have been able to keep up the maintenance of the permanent way, but not, of course, as efficiently as in pre-war days. This means much additional work when peace comes about, if material and labor can be obtained. These remarks apply, perhaps with added force, to rolling stock.

#### FIFTY-FIVE PER CENT OF EMPLOYEES IN SERVICE

The number of employees who have joined the colors is 2896, or 55 per cent of the total staff. The places of the conductors who have enlisted have been filled as follows: (a) By women, to the extent of 85 per cent; (b) by men unfit for military service, 10 per cent, and (c) by men discharged from the army and the navy, 5 per cent.

The places of many of the drivers who have joined the colors have been taken by male conductors who were called upon to qualify for the work. This enabled us partially to solve our difficulties in this connection. These men are putting in considerable overtime and sacrificing their usual days off. Moreover, holidays have been almost entirely suspended, so that on the whole our car service has been well maintained. We



Bringing Up the Field Artillery

have not as yet had recourse to the employment of women drivers.

The places of the employees hitherto engaged in the carhouses, etc., have been filled by women to clean the cars, etc. The male cleaners (who are not in the army for various and legitimate reasons) have, where suitable, been transferred to semi-skilled work in connection with car maintenance.

Up to the end of July last, 521 former employees had been discharged as unfit for further military service. In nearly all these cases work was found for them. Some were reinstated as drivers and conductors after they were proved capable of performing the work. When it was found that they were incapable of the duties they originally had, other and easier jobs were found for them. For instance, it was not deemed wise to put back on the front platforms men suffering or just recovering from shell shock, and we have up to the present refrained from doing so. We have had no experience of blinded men returning to us.

The railway has, from the beginning, kept in touch with the men engaged in the several theaters of war and sent periodically parcels of food, cigarettes, etc., through the medium of the Employees' Social & Ath-

letic Society. It intends to continue this practice in the future. Our efforts in this direction have been much appreciated by the men who are abroad and in hospitals.

We do not permit indiscriminate free riding by soldiers and sailors. Wounded men, however, housed in the various hospitals in Manchester and district are provided with tramcar tokens, made of celluloid, which permit them to travel free. These tokens are supplied on application to the hospital authorities, who undertake to distribute them and prevent their abuse. In addition, tokens have also been granted for recruiting purposes and in connection with war charities. The value of free tokens granted has amounted in the aggregate to £8,000.

## How Croydon Is Carrying On

*Material and Labor Costs Have Necessitated Two Fare Revisions—One-Man Car Operation Is Step in Right Direction but Time is Not Opportune in Great Britain*

BY T. B. GOODYER

Manager Croydon (England) Corporation Tramways

SIXTY per cent of the employees of the Croydon Corporation Tramways have left the service to join the naval and military forces, and each man has an understanding that his position will be open to him on his return to civil life. Allowances are made to the men's dependents according to their circumstances, this practice being general throughout the country.

By far the larger portion of men enlisting have come from the traffic staff, and the positions of conductors have been filled by the engagement of women. A large number of the vacancies arising in regard to motormen has been filled by training conductors unfit for military service, and by engaging applicants unfit for military service and, in a few instances, discharged soldiers.

So far as Croydon is concerned, we have not yet dealt with the question of women drivers, but on several systems, as shown in Table I and Table II, the experiment has been made and reported upon as satisfactory. The congested traffic conditions of the London area would undoubtedly have an important bearing upon the success of such an experiment in Croydon and other parts thereof. Another important point would be the difficulty of obtaining new equipment for cars, where existing brake power is considered insufficient for the less experienced handling of cars by women.

In a few instances, discharged soldiers have made very efficient motormen. If a man is seriously disabled, however, his chances of proving a success in the arduous duties of a driver are not considerable. I have had no experience with a man suffering from shell shock taking on the duties of motorman, but presumably the somewhat strict medical examination which all applicants have to pass before being licensed to drive public vehicles in the metropolitan area, would prevent any man in this condition from being passed as suitable for such work.

I have been much interested in the several articles which have appeared in the ELECTRIC RAILWAY JOURNAL relating to coasting and saving recorders. We



TABLE I—MEN AND WOMEN EMPLOYED AS DRIVERS AND CONDUCTORS ON TWENTY-THREE ENGLISH UNDERTAKINGS REPORTING IN APRIL, 1918

Name of Undertaking	—Drivers—		—Conductors—	
	Men	Women	Men	Women
Barking	7		7	
Bexley	39		3	45
Colechester	22			24
Croydon	79		9	104
East Ham	63		30	42
Erith	21		1	19
Felixstowe				
Great Yarmouth	25		21	4
Ilford	32		9	31
Ipswich	46		10	46
Leyton	105		27	95
London	2,067		1,047	1,474
Lowestoft	11	9		20
Southend-on-sea	33	9	7	39
Walthamstow	56		1	81
West Ham	85		62	173
Walton-on-the-Naze				
Luton	13		3	9
London United	297		48	270
Metropolitan Electric	413		45	448
Norwich Electric	52		(Boys) 9	50
Peterborough	(Boys) 4	7	(Boys) 1	13
South Metropolitan	52		1	52
Total	3,628	25	1,341	3,040
Per cent.	99.32	0.68	30.61	69.39

have used wattmeters for saving electrical energy on our cars for a number of years, with very beneficial results, and I am glad to know that many of the American systems are following along what amounts to similar lines.

I have not had time to read so carefully the other articles relating to the use of cars equipped with automatic equipment and capable of operation by one man as to be able to give an expression of my views in regard thereto. At the same time, however, anything along the line indicated is undoubtedly in the right direction.

So far as I am aware, no experiments have been made in this country in respect to one-man cars. It will hardly be possible to do anything in this direction at the present time, for the supplying of new cars is quite out of the question. The structural alterations necessary to existing cars would be considerable, and the car-repair employees now retained are fully occupied in handling the ordinary repairs arising out of wear and accidents.

It has been possible, up to now, to replace the most essential men enlisting from the depot repair shops by applicants generally over military age, but a considerable amount of work that was being carried out before the war has been greatly curtailed by reason of the shortage of labor and the difficulty of securing new parts. Where possible, mechanical devices have been installed to take the place of man power. This could

probably have been done to a still greater extent but for the difficulty of obtaining necessary new plant and material.

The chief advantage has been derived from the institution of the arc-welding process for the repair of many parts of the car equipment. Here again, however, we have not yet received delivery of plant which has been on order for a considerable time. We are, therefore, compelled to carry out this sort of work by improvised methods.

I have no knowledge of blinded men being employed in winding armature coils, but women are doing this work quite satisfactorily on some systems. They are also employed in cleaning cars and such other work as they can suitably perform.

DIRECT AID FOR MEN IN SERVICE

With regard to the organization of funds for keeping in touch with the men at the front, a large majority of the Croydon employees contribute weekly to a fund to assist in cases of need arising out of war service. Valuable assistance has been rendered in several cases. In one case a conductor who unfortunately lost a leg



Off to Rifle Practice—to Train Their Eyes for Huns

early in the war was, on his discharge from the army, set up in the boot-repairing business. He is now doing very well.

Early in the war it was the practice on most systems to allow soldiers and sailors and nurses in uniform to travel either free or at reduced rates. In view of the large number availing themselves of these privileges, the heavy financial burden imposed on the companies and the reduced services caused by the depleted car staffs, however, the concessions have in general either been withdrawn or considerably curtailed. As far as Croydon is concerned, at the present moment, the only concession in existence is that in respect to special constables being allowed to travel free to and from duty when in uniform.

I have no knowledge of hospital cars having been built in this country. It is possible that cars may have been used in the transport of wounded, in cases of emergency, but in general it may be taken for granted that the work is dealt with almost entirely by train and motor ambulances.

The question of fares is a very important one and has become acute on practically every system in the country. In Croydon during the last two or three years the con-

TABLE II—MEN AND WOMEN EMPLOYED AS DRIVERS AND CONDUCTORS ON TWENTY-TWO SCOTTISH UNDERTAKINGS REPORTING IN MARCH, 1918

Name	—Drivers—		—Conductors—	
	Men	Women	Men	Women
Aberdeen Corporation	100	6	10	111
Aberdeen Suburban	6	4		10
Ayr	5	16	1	20
Broughty Ferry	14		4	11
Coatbridge	4	9		20
Dumbarton	15	3		25
Dundee	95			105
Dunfermline	21			31
Edinburgh	254		73	244
Falkirk	7	11		18
Glasgow	1,276	230	253	1,435
Greenock	17	36	1	54
Kilmarnock	10	8		20
Kirkcaldy	23		3	24
Lanarkshire	17	104		105
Leith	32	21	10	52
Musselburgh	6	9		16
Paisley	59			77
Perth	15		15	
Rothesay	2	1		3
Stirling	4			4
Wemyss	16			18
Total	1,998	458	370	2,463
Per cent.	81.4	18.6	13	87



tinual rise in wages and material costs has rendered it absolutely necessary to increase the fares.

A revision, amounting to an advance of approximately 30 per cent, went into effect in August, 1916. As a result of the first year's working the revenue increased nearly 14 per cent and the passengers also showed a slight increase. The continued advance in operating costs, however, rendered a further review of the financial position necessary.

On May 1, 1918, a second revision of fares included the shortening of the existing stages and the withdrawal of the odd halfpenny fares (1½d, 2½d, and 3½d). The result, so far, has been the realization of the extra revenue required with no falling off in the number of passengers carried. This proves that the public has now become accustomed to the general all-round advance in the cost of living, and that it will pay the increased charges for traveling in much the same spirit as it does the general advances in commodity prices.

#### WAGES HAVE RISEN 70 PER CENT

The main cause for the increased expenses of tramway undertakings has been the increased cost of labor, which is now a very considerable portion of the total expenditures. Wages have increased by approximately 70 per cent, and in some cases even by 100 per cent. The quality of labor is not the same to-day as it was before the war, and, therefore, the real cost is considerably more than it would appear to be.

The demands for increases of wages have been met during the period of the war by means of bonuses. In the early part of this year, as the result of an award given by the committee on production, an increase of \$1 per week over pre-war rates was given to employees. Since that date a further application for an advance of 12½ per cent on existing rates has been granted.

The increase in the cost of materials fluctuates considerably. In the case of steel tramway rails and tires, for instance, the increase is from 100 to 200 per cent. In the case of coal, too, prices have been advanced considerably, in some instances as much as 100 per cent. Naturally, however, such increases vary greatly in different parts of the country, the price of this commodity being governed by the cost of haulage.

During the period of the war little or no capital expenditure has been incurred. In many respects even maintenance work has had to be curtailed considerably. It is quite obvious that at some future date the leeway must be made up, and when this work is undertaken it will undoubtedly have to be done at a cost much in advance of pre-war figures. It is vital, therefore, for all undertakings to review carefully their financial position from time to time in order that adequate provisions may be made, through the reserve and renewal funds, for the carrying out of the work.

The tramway men of Hull, England, are strongly opposed to the introduction of women drivers. The secretary of the tramwaymen's union recently supported the application of certain men for exemption before the local tribunal. He stated that 300 men had joined the colors and desired that the remainder should be retained in order to avoid the necessity of employing women drivers. The application was refused.

## More Than Half of Men With Colors

*Enlistment of 3000 Men of Glasgow Corporation Tramways Partly Met by Employment of 1947 Women—Railway Has Suffered Financially, but War Traffic Has Helped*

BY JAMES DALRYMPLE

General Manager Glasgow (Scotland) Corporation Tramways

WHEN Britain declared war on Germany on Aug. 4, 1914, many reservists, or ex-soldiers, were in the service of the Glasgow Corporation Tramways. Men who had resigned from the army with good characters had found tramway work attractive, and, as they had proved to be good and trustworthy servants, the railway had always been willing to give them employment. As a result, on Aug. 5 about 700 men employed as drivers and conductors were recalled to the colors. Moreover, many men enlisted voluntarily in Kitchener's army, and a battalion—the Fifteenth Highland Light Infantry—was recruited almost wholly from employees. Altogether, more than 3000 men enlisted from the Glasgow Corporation Tramways out of a staff of approximately 5400.

#### WOMEN FILLED THE GAP

Glasgow, I believe, was the first city to make the experiment of employing women on the car platforms. To test the capability of women for this work, two women employed in the head office were equipped with uniforms, and, with practically no training except the experience they had gained in long service in the department, they were put on cars. They acquitted themselves so well that it was deemed quite practicable to employ women in this capacity. The first women to be especially trained for the work started on April 12, 1915, and the number has been increased from time to time as men volunteered or were called up for active service.

The continuous enlistment of skilled motormen, and the difficulty of replacing them by men physically fit, suggested the question of trying women on the front platform. An appeal was addressed to the women conductors, inviting them to volunteer for training as drivers, and a ready response was made.

The course of training includes fourteen days spent in the motor school under tuition by a qualified electrical engineer, and on the road under the direction of specially selected experienced motormen. Thereafter each pupil has to work for thirty days on the regular service car without a teacher. During this time she is frequently visited by the motor inspectors, who report to the chief instructor regarding the progress being made. If this is satisfactory, and if the pupil passes successfully the oral examination on the rules for drivers, knowledge of car equipment and the practical tests on the road, she is passed as efficient and goes on regular duty as a motress.

The first women drivers started on Nov. 1, 1915. It has been found that many women are willing to undertake the work but find, after training, that it is too much for them. Indeed, it is often those least physically fit who are most anxious to try the work.



At the present time there are 3330 drivers and conductors employed on the cars, and of this number 1947 are women. More than 400 of these women are acting as motresses, and this total represents about two-thirds of the women employed in driving tramcars in this country. All these positions, prior to the war, were held by men. That women find the work congenial and healthy is proved by the fact that 170 are now wearing a badge indicating three-years' continuous service on the cars, and this number is being added to weekly.

In other branches of the service women have replaced men. The car-cleaning staff, for instance, is wholly composed of women. In the workshops, however, we have not been able to do much in the way of dilution, and the permanent-way work is still undertaken by male labor. In the power stations women have practically replaced men as switchboard attendants.

#### MAKING USE OF RETURNED SOLDIERS

A number of our employees, who were wounded or became unfit to continue in the army on account of sickness, have returned to our service. Where fit they have been put back to their old duties. If a man is not fit for the work at which he was formerly employed, the railway finds some suitable work for him. We have had applications from a few wounded soldiers who had not been previously employed on tramways. Some have turned out very well, but I cannot say that the average discharged soldier has proved to be a good motorman. Lately we have taken youths from sixteen to eighteen years of age and, after giving them a short experience as conductors, trained them as motormen. They are turning out very well. Indeed, these lads are in general more satisfactory than the discharged wounded men. Of course, the difficulty is that, on reaching the age of eighteen, the boys are immediately taken away for military service.

In some aggravated cases, shell shock has interfered with the efficiency of motormen, but most men who suffer from shell shock have been able to take up their work as motormen and continue at it with satisfaction. Blinded men are not employed by us in winding armature coils, but training in work of this sort has been carried out at St. Dunstan's Hospital for Wounded Sailors and Soldiers. We have tried crippled soldiers in substations, but not to any appreciable extent.

We have no one-man cars in Glasgow, and with our system of graduated fares they would not be satisfactory. We have dense traffic, and a conductor is almost continuously engaged in collecting fares and attending the platform. I fear that on account of the work—our average number of passengers per mile the last year was 16.4—we lose a considerable amount through the sheer inability of conductors and conductresses to take all the fares.

In connection with the battalion already referred to, we established a Comfort Fund. An energetic committee of ladies, composed of the wives of officials and wives and relatives of officers in the battalion, has been indefatigable in providing comforts for the men, and periodically boxes of socks, shirts, tobacco, etc., are sent to the battalion.

The staff of the railway has also raised considerable money for prisoners of war, for other battalion funds and for general war purposes. The total sum raised for these funds is about £52,050.

All sailors and soldiers wearing His Majesty's uniform travel on the cars at half fares. We have not built any hospital cars in Glasgow. There are few, if any, in this country.

#### TRAFFIC IS GOOD, BUT EXPENSES ARE HIGH

On the financial side, the railway has certainly suffered, as expenses have been much increased through advances in wages and costs of materials. So far, however, we have not done anything in the way of increasing the fares or reducing the length of the zones.

Traffic in Glasgow has been abnormal since the war broke out. The city is one of the most important centers for shipbuilding, engineering and munition work, with the result that trade has been exceedingly good. Traffic, as a consequence, has been heavy. The traffic revenue for last year reached the record of £1,404,110. Wages of motormen and conductors have been substantially increased. In pre-war days men started at the rate of 4s. 6d. per



"Ladies from Hell," Who Have Helped Put the Devil on the Run

day, or 27s. per week, and at the end of seven years they reached the maximum of 35s. weekly for a six-day week of fifty-one hours. The subject of wages was referred to arbitration, and in August, 1917, Sheriff Fyfe awarded the men an increase of 15s. weekly on pre-war rates. In December, 1917, a general advance was granted by the corporation to all employees, bringing the increase to 20s. per week. A further award of 5s. weekly has just been passed, making the increase 25s. weekly on pre-war rates. As a war measure, the hours were increased to fifty-four weekly, the three additional hours being paid at the rate of time and a half, so that the man who earned 35s. weekly—the top rate in pre-war days—is now earning 65s. 3d. weekly.

The wage for women employed on the cars is 29s. weekly, with a war bonus of 1s., making 30s. for a fifty-one-hour week, or 32s. 7d. for the present standard of fifty-four hours. After three months' service, this is increased to 42s. weekly for fifty-one hours, or 45s. 8d. for a fifty-four-hour week. All employees on the cars are paid full wages, according to scale, from the first day they enter the service.

The cost of materials has increased enormously. Iron and steel, in bars and castings, have fully doubled in



price. Bolts, nuts and tires cost three times as much, while fuel has been advanced by approximately 120 per cent. Plate glass and sheet glass is trebled. Timber of suitable quality cannot be got, and spruce and fir of poor quality are as dear as good pine was before the war. The last good quality timber we were able to secure was at an advance of about 300 per cent over previous prices.

#### NEW CONSTRUCTION IS STOPPED

The war has, of course, stopped all new construction of either routes or rolling stock and has deferred maintenance. In Glasgow the track was in excellent condition when war broke out, but at the present time there are many portions of it which are far from satisfactory. We cannot get the materials for putting this right, and things are so bad that there are some portions of the system which are no more than safe.

In January, 1918, we experienced the worst snowstorm in our history. The city cleansing department was short of labor and unable to do much in the way of clearing the streets. On Saturday, Jan. 19, a thaw set in, which made the thoroughfare very slushy. The salt, which had been laid to melt the snow, was churned up into the motor bearings, so that fully one-half of the cars in service were disabled. We have never been able to catch up with rolling-stock repairs since that date, partly on account of scarcity of labor but principally because of the lack of electrical material. We are, however, making more extensive use of the cars at our disposal, so that we have been able to maintain practically the same service we had in pre-war days. On some of our routes the service for workmen is run on a very close headway, eighty cars per hour being necessary in order to convey the workers to some of the large yards and works of this section.

### Advertising War Savings Stamps on Trolley Poles

**P**RACTICALLY every trolley pole in the business center of Portland, Me., is furnished with a white-and-blue tin sign, 10 in. x 16 in., advertising War Savings Stamps. These signs were placed with the consent

of the Cumberland County Power & Light Company.

Some of the more representative legends appearing on these signs are as follows:

"Soldiers are Dying for You—What are You Doing? Buy War Stamps."

"Quarters for Uncle Sam—None for the Kaiser."

"Which? Sacrifice or Security? Buy War Stamps."

"Four War Stamps Buy a Rifle—Help

Buy One."

"War Savings Stamps Will Save Soldiers—Buy Them."

"A Quarter To-day Means a Dollar Soon."

"Your Money—Uncle Sam Borrows It; Kaiser Bill Takes It! Buy War Stamps."

"A War Stamp a Day Keeps the Kaiser Away."

"Sixteen Thrift Stamps Buy a Soldier's Helmet."

"W. S. S.—Buy if It Does Hurt—It Will Hurt More if You Don't."

"Ten Thrift Stamps Keep a Soldier Fighting a Week."

"Women of America, Save Your Country—Save for War Stamps."

"Don't Talk War—Buy War Stamps and Win It."



Typical W. S. S. Sign on Trolley Pole, Portland, Me.

Buy One." "War Savings Stamps Will Save Soldiers—Buy Them." "A Quarter To-day Means a Dollar Soon." "Your Money—Uncle Sam Borrows It; Kaiser Bill Takes It! Buy War Stamps." "A War Stamp a Day Keeps the Kaiser Away." "Sixteen Thrift Stamps Buy a Soldier's Helmet." "W. S. S.—Buy if It Does Hurt—It Will Hurt More if You Don't." "Ten Thrift Stamps Keep a Soldier Fighting a Week." "Women of America, Save Your Country—Save for War Stamps." "Don't Talk War—Buy War Stamps and Win It."



Over the Top at Dawn on the Western Front





Dr. Wheeler Teaching Coil Taping to a Blind Boy



Blind Worker Taping Large Armature Coils

# The Disabled Soldier in Electric Railway Service

*Reclaiming the Disabled Soldier Is an Important Problem — Blind Men Wind Coils—One-Armed Men Do Oxyacetylene Welding and Shop Work*

**S**ALVAGING the disabled man-power of the country is another of the many important problems which the war has thrust upon us and which is demanding immediate attention. Facts are sometimes hard to face, but they must be faced, and much as we may dislike to think about the matter, a very large number of disabled men will be added by the war to the army of those disabled in industrial accidents who are already with us.

Now the reasons for rendering our disabled man-power useful are two-fold. In the first place, the terrific drain on our man-power necessitates the maximum industrial output from everyone not participating directly in the combat. In industry and elsewhere, others must to a greater or less extent replace the able-bodied men who have been called to the colors. The Germans boast that they have 20,000 oxyacetylene welders, all disabled men, now at work. The results obtained from the special training or re-education of the disabled soldiers of our allies likewise indicate that we as yet know little about what may be done in the way of developing the talents and services of those who, by reason of physical impairment, are not able to compete in all lines with the able-bodied worker.

Secondly, one of the greatest services that can be rendered a disabled man is to give him an opportunity to work on equal footing with other men at some-

thing which pays him well and saves his self-respect by rendering him independent of others. The general attitude toward the cripple, whether his disability be due to war or something else, is changing rapidly. The

old idea was that the soldier had performed his duty to society in the service which wrought his disability, and that it was the duty of society to support him in idleness for the remainder of his years. The industrial cripple was an object of emotional pity rather than constructive sympathy.

The new attitude is that disabled soldiers (and workers as well) shall receive just compensation to offset their handicap, but that in addition they shall for their own good, material and spiritual, and for the good of society at large, follow some productive occupation, that their jobs shall be with other workers, doing things that others do, producing things that have a value in the markets of the world and are not patently labeled as the work of the maimed, halt and blind — charity protegés — for which a market must be forged out of the sympathies of benevolently minded folk. Furthermore, it is felt that they shall be properly trained in a suitable occupation so as to remove their handicap as much as possible.

None of the countries at war, not even Germany with all her self-vaunted efficiency, had made any preparations for



He May Come Back Crippled



the proper training of disabled soldiers prior to the beginning of the war. In the different countries the problem is being attacked in different ways. In some, private institutions are initiating and carrying on the work. In others, it is strictly under government control, and in still others a combination of the two methods of control obtains. As a result, however, of careful studies made of the methods used elsewhere, our government, in a law enacted early this summer, has placed the responsibility for the training and re-education of disabled soldiers and sailors in the hands of the Federal Board of Vocational Education.

This board is making a careful study of the problem in all its aspects. It has already accumulated a vast fund of data and is busily engaged in providing means of instruction for those already on the disabled list. Not only must the men be thoroughly trained or re-educated, but also they must be properly placed if their employment is not to result in disappointment to both the employer and the employee. The various electrical industries, because of the stability of employment which they offer, seem a particularly attractive field for the handicapped worker.

WHAT THE RETURNED SOLDIER CAN DO IN RAILWAY SERVICE

A writer in an unsigned article in the *Electrical Review*, London, for June 7, 1918, comments that as long as the war lasts a returned soldier is a disabled soldier, and lists as in the accompanying table the occupations of interest to the electric railway industry, in which disabled men may be employed. The disqualifying disablements are also given. Presumably the list summarizes British experience in the matter.

There is some conflict among authorities as to what may constitute a disqualifying disablement. However, it is of interest to know that the skill gained in training for one occupation increases the ability to work in others that at first seem impossible. The bar of disqualification recedes as the process of re-education proceeds.

While this country has now made a national matter of the re-educational problem, much valuable pioneer work has been done in the last year by the Red Cross Institute for Crippled and Disabled Men, 311 Fourth Avenue, New York. This institute is now giving training in mechanical drafting, artificial limb making, printing, motion-picture operating, jewelry work, and oxyacetylene welding and cutting. Some photographs reproduced herewith, selected from the files of the institute, show the possibilities of the disabled man. The loss of a hand, or even an arm, does not necessarily disqualify a man from becoming a draftsman, oxyacetylene welder, machine tool operator or section hand. It does mean, however, that his remaining body members must be re-educated so that they may take over the work of the missing member, assisted, of course, in many cases by artificial helpers. In addition to giving actual training to crippled men, the institute is also training teachers for re-educational work, accumulating data and publishing general information on the subject for the use of those who may be interested.

Pioneer work along the line of rendering the sightless independent and productive units in the social com-

munity has been done within recent months by Dr. Schuyler S. Wheeler, president Crocker-Wheeler Company, Ampere, N. J. Here again the fundamental principle of getting the disabled person into actual industry has been followed. Dr. Wheeler organized what is known as "The Double-Duty Finger Guild," 22 Park Avenue, Ampere, N. J., in which sightless persons are trained for industrial service.

TRAINING THE BLIND

At first the training was limited to the taping of armature coils for motors and generators. Several photographs here reproduced show the method of training used and the type of work now being done. The sightless workers are started at a weekly wage of \$8, and after attaining some proficiency are placed with other workers, who are not so disabled, on piecework or at an hourly rate. The rivalry of piecework competition with seeing workers is most stimulating to the blind. If after two months' instruction the blind student shows no possibilities along the line of work in which he is being instructed, he is dropped. Usually, however, after one month's training, the blind worker does as much work in eight hours as the average "sighted" worker does in five hours, and at the end of a year does 90 per cent as much as the sighted employee working under similar conditions.

As to quality of the work done, a careful inspection of such work indicates a rather higher order of performance than that obtained from the other workers. The infinite patience and high finger sensitivity of the blind make this record possible. The experience at the Crocker-Wheeler works seems to be that those who have been sightless for the shortest time and have never been trained in the older forms of "blind" work make the best workmen, and those who have long been the recipients of charity, the worst.

As with other disablements, training in one occupation seems greatly to increase the ability of the worker to do satisfactory work in other occupations and to

BRITISH LIST OF ELECTRIC RAILWAY OCCUPATIONS AND DISQUALIFYING DISABLEMENTS

Position	Disqualifying Disablement
	Shell shock (steady nerves required)
	Heart bad (danger of electrical shock)
	Loss of arm (cannot work regulator handles)
1. Switchboard attendant.....	Loss of leg (cannot get about quickly when there is a breakdown)
2. Substation attendant.....	Loss of hearing (cannot detect things starting to go wrong by sound)
3. Air-compressor or hydraulic-plant attendant.....	Loss of smell (cannot smell machines or cables getting hot)
4. Battery attendant.....	Heart bad (hard work required)
	Loss of arm (cannot work regulators, etc.)
5. Engine driver.....	Loss of leg (cannot get about quick enough)
6. Greaser.....	Loss of arm (full complement of fingers required)
7. Stoker.....	Loss of eye (good eyesight required, and must be able to judge distances accurately)
8. Meter or instrument repairer....	Loss of arm (both hands required)
9. Armature and coil winder.....	Loss of hearing
10. Telephone work.....	Loss of leg, hearing, eye
11. Bell work.....	Loss of leg, hearing, smell
12. Signaling devices.....	Loss of leg or arm, hearing, smell, bad heart
13. Meter inspector.....	Loss of leg, hearing, arm
14. Motor inspector.....	Loss of leg, arm, hearing, smell, bad heart
15. Motor repairer.....	Loss of leg, arm, hearing, smell
16. Installation inspector.....	Loss of arm, hearing, smell
17. Installation complaints.....	Loss of leg, arm, hearing, smell
18. Heater and cooker inspector.....	Loss of arm, hearing, smell
19. Heater and cooker repairer.....	Loss of leg, arm, smell, bad heart
20. Mains fuse inspecting.....	Loss of arm, eye
21. Mains records.....	Loss of arm, eye, hearing, smell
22. Meter tester.....	Loss of arm, hearing, smell
23. Coal, water and oil tester.....	Loss of arm, hearing, smell
24. Gateman.....	
25. Timekeeper... }	Loss of hearing, arm
26. Clerical work.. }	



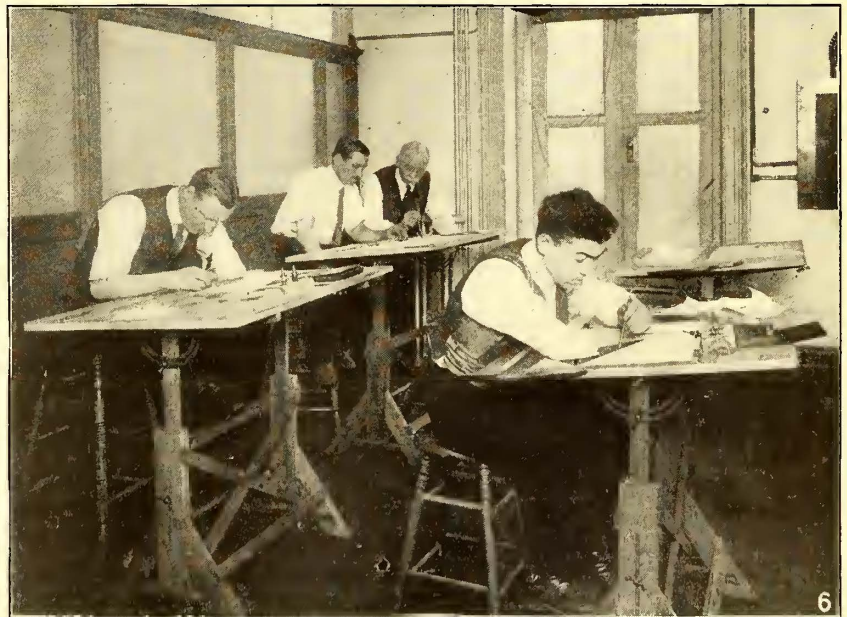
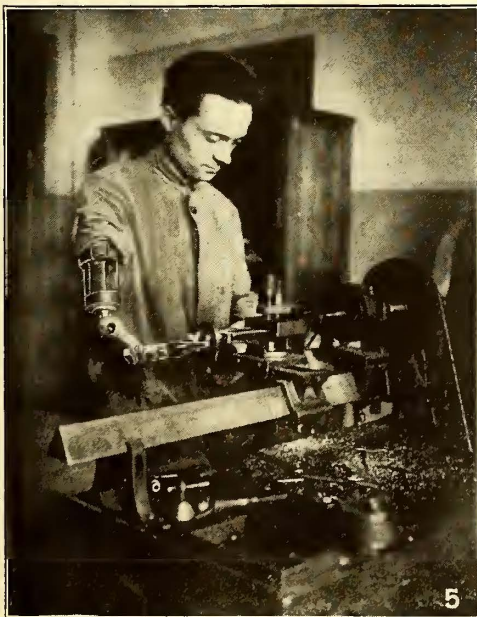
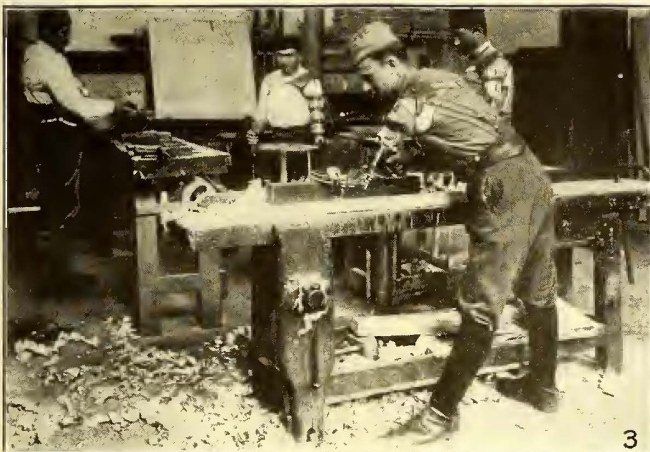
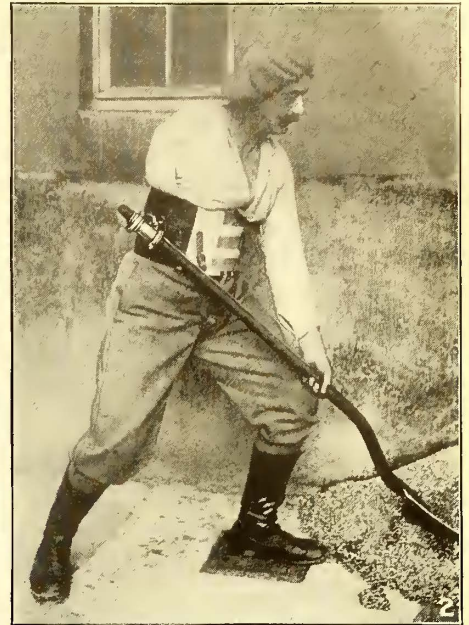


Fig. 1—Returned Canadians Learning of Oxy-acetylene.  
 Fig. 2—A French Peasant "Inutile" Using a Shovel.  
 Fig. 3—A Crippled Serbian Working in Wood.  
 Fig. 4—One-Armed Belgians Learning Bench Work.

Fig. 5—The Loss of One Arm Does Not Balk an Italian Machinist.  
 Fig. 6—Losing a Right Arm Not an Unsurmountable Obstacle in Mechanical Drafting.

How Our Allies Are Rehabilitating Their Disabled Soldiers



increase his self-reliance. Workers trained in the above-named guild are now doing such things as placing pins on cards in a safety-pin factory, twisting small wires for telephone construction, helping put strips on automobile tires, painting and polishing the arms and legs of dolls, etc. In the factory of the Crocker-Wheeler Company blind workers weigh and stack rotor cores, assemble and rivet pole shoes, sort rotor punchings and tape steel coils. The fact that most of their work has

who will return to us disabled. Donald C. McMurtie, director of the Red Cross Institute referred to, as the result of a study of European statistics so far available, estimates that for a force of 1,000,000 men in the field for one year, 30,000 permanent disabilities may be expected. D. H. McDougall, assistant general manager Toronto Power Company, in discussing the matter before the last convention of the National Electric Light Association, stated that of the 400,000 men who have



Sightless Workers Taping Coils for the Crocker-Wheeler Company

been going directly into machines for government service has been a great incentive to the blind workers in this factory. The rates of pay received in the above industries range from 15 cents per hour, with a piece-work bonus, to 30 cents per hour.

Recently, Dr. Wheeler was called to Europe by the English and French governments for advice in connection with their re-educational work for disabled soldiers. As a result of the institutional work established there, more than 100 blind soldiers are now employed and more than 500 are receiving special instruction at the works of the French Thomson-Houston Company. In England several industrial training schools for the blind have been started, and a number of blind soldiers are now employed at Golder's Green, the chief railway shop of the "London Underground." In both countries other companies engaged in similar work are employing blind workers as fast as they can be trained. In England the British Electrical & Allied Manufacturers' Association, through Hugo Hirst, president General Electric Company, Ltd., has agreed to foster the movement and give employment to all the blind who may be fitted for the work of that industry.

In order to make it possible for the blind to proceed to and from their work with ease and safety, some minor changes in the factory buildings are usually necessary, so as to provide separate entrances for the blind workers. It also must be pointed out that only those who are physically able otherwise can be trained successfully for service in any special industrial occupation.

It is difficult to estimate the number of fighting men

gone from Canada, 35,000 had returned disabled by April 1, 1918. Of these, 1230 were men with amputations, as follows: 520 above the knee, 320 below the knee, 259 above the elbow, 115 below the elbow. Also, fifty were blind. Considering the fierce nature of modern warfare, it is particularly fortunate that the blind are so few, numbering only one out of every 700 permanent disabilities.

Naturally, all of the disabled men are not what might be termed "industrially fit." In fact, a comparatively large number are suffering from such a complication of things as to render any occupation impossible. A great many others are able to go back to old occupations. The Canadian experience has been that about 10 per cent of the returned men have required special training. For these, 195 courses are being administered in twenty-five different schools maintained for the special purpose of giving this training.

Although we are hardly started in the war, the Federal Board of Vocational Education, according to press reports, is confronted with the problem of finding employment for about 1800 men whose claims of disability have been approved by the Federal War Risk Bureau. Only elaborate surveys of the industries will make it clear as to the possibilities in the various lines of work. Several electric railways are trying out men who have lost a leg or some fingers, and the experience seems to be that such handicaps are not disqualifying. Doubtless there are many other places in the electric railway industry than those mentioned, where disabled men may be employed with mutual advantage to both parties concerned.



## Shipbuilding in the Bay Cities

*The Key Route Facilities Are Heavily Taxed by War Traffic, Largely of Twice-a-Day Sort*

SHIPBUILDING on the Oakland and Alameda side of San Francisco Bay is advancing with leaps and bounds. The original shipbuilding plant at Oakland, that of the Moore Shipbuilding Company, is now employing 6000 men. The Emergency Transportation Company, a subsidiary of the San Francisco-Oakland Terminal Railways, has arranged with the Emergency Fleet Corporation to build a 2000-ft. spur from the Eighth Street line along Chestnut Street to give convenient service. This will afford 6-cent travel as elsewhere on the Key Route lines. At this and other heavy traffic points, front-end fare collectors are used. The spur of the Emergency Transportation Company is to include provision for a prepayment area.

A much larger project is that of the Union Iron Works (Bethlehem Shipbuilding Corporation) at Alameda, with which a housing plan is to be combined. About 5000 to 6000 men are already employed, and plans are under way for 20,000. Most of the travel is handled by the Key Route with about twenty-five extra single cars. There is a certain amount of staggering, owing to different shifts and overtime by many men.

Another Alameda project recently begun is that of the San Francisco Shipbuilding Company. This plant, which will employ about 5000 men, will be located on Government Island in Oakland Estuary. The site, including the necessary bridge, is within a half mile of the nearest Key Route tracks. No negotiations have yet been begun with the Emergency Fleet Corporation for financial aid in carrying out this extension. The Southern Pacific interurban lines are a few hundred

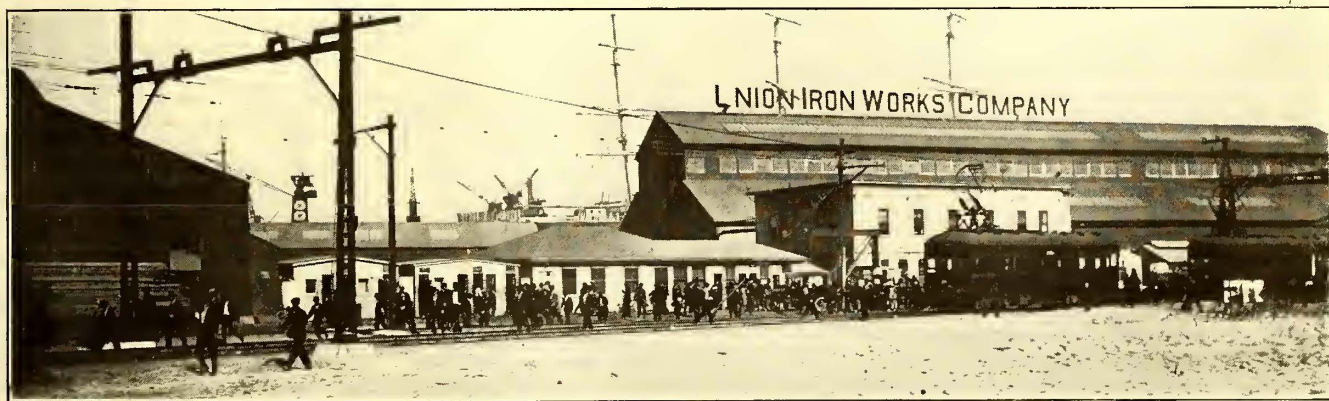
Nor are developments in the bay cities confined exclusively to shipbuilders. The Hall-Scott aeroplane motor is helping to make Oakland famous, while the waterfront has seen the addition of factories for braking and electrical equipment, of foundries, of warehouses, etc. Thus the car facilities of the San Francisco-Oakland Terminal Railways are being sorely taxed, but largely for twice-a-day travel.

## Pensacola Is Alive to War Needs

*Locomotive Train Service for Both Freight and Passengers Is the Feature of Service to Aero Station—Branch Being Built to Shipyards*

EARLY in 1916 the United States government built an aeronautical station 6½ miles from Pensacola, Fla., but not until June, 1917, did the freight and the passenger requirements to the place begin to become impressive. The station is across from Pensacola, on the opposite side of an inlet known as Bayou Grande, and it is reached only by the Bay Shore-Fort Barrancos line of the Pensacola Electric Company.

The freight business to the aeronautical station amounts to from twenty to fifty loaded cars a day, all being interchanged with steam railroads. The freight cars are hauled by means of electric locomotives. A year ago the entire service called for only one electric locomotive (four GE-80 motors with K-28B control to be replaced by K-35), four GE-80 four-motor equipments and seven trailers. To this there have since been added four steel railroad coaches, which are hauled by locomotive; eight double-truck open cars, and a combination passenger-and-baggage locomotive car, which carries four Westinghouse 306 motors with K-35 control and can haul six big coaches. On a recent occasion the smaller locomotive, geared 15:71, actually hauled to



Leaving Time on the Key Route at Union Iron Works

feet nearer, but they would be less used by the men through the lack of transfers and the 6-cent fare charge.

A smaller plant, employing 500 to 600 builders, is that of the Hanlon Shipbuilding Company. The Key Route's traction division cars are three blocks distant. Some workers also walk over to the company's Fourteenth Street line. At present, only a few extra trippers are required for this service. The Barnes-Tibbitts Shipbuilding & Drydock Company and the Union Construction Company are other plants requiring railway service. The latter is building four ways adjacent to the Key Route Mole. It expects to use 6000 men.

Pensacola fifteen Pullman cars carrying 600 marines with no other aid than the use of a steam dinky as a pusher at the start.

Through the use of these locomotives the company regularly hauls four coaches carrying 350 passengers with a crew of but three men. There is only one conductor for every two cars, as fare collection is simplified by the sale of twelve tickets, just a week's supply, for 90 cents (7½ cents each). When a motor car is used, it hauls, say, two trailers, thus calling for four men for 240 riders.

Ordinarily the headway is forty-five minutes, but as



many as eighteen cars are in use at once for the workmen's peaks in the morning and the evening. In the morning, from 800 to 1000 workmen come in on one train leaving Pensacola at 7:10 a.m. The laborers leave at 5.05 p.m., and at 5.30 from 200 to 1000 enlisted men probably want to go to Pensacola. In all about 1500 workmen go to and from the station. Single cars are run between 8.35 a.m. and 3.30 p.m.

#### SHIPYARD SERVICE REQUIRES 2000-FT. BRANCH

The same (Bay Shore) line is also carrying 200 men to the yards of the Pensacola Shipbuilding Company, which already has from 500 to 600 men preparing to build ten 8000-ton steel ships. The shipbuilding plant is on Chico Bayou in the extreme western part of Pensacola. To reach it the company is building a 2000-ft. branch with relay rail.

In fact, the Pensacola management is fully alive to war and peace-time needs. If funds were made available, it would add at least 1500 kw. to its power plant and purchase a dozen safety cars for operation on its North Hill and East Hill city lines.

### \$170,500 to Aid Shipbuilders

*Government Assists Development of Lewiston, Augusta & Waterville Street Railway to Provide Additional Transportation to Shipyard Workers*

**T**O IMPROVE the transportation facilities on the lines of the Lewiston, Augusta & Waterville Street Railway as needed by shipyard workers at Bath, Me., the Emergency Fleet Corporation recently executed a contract with the railway for work which is now taking place. Under the contract, dated July 15, 1918, the company receives a loan of \$170,500 for the necessary development of its system in the Bath-Lewiston district. The principal shipyards to benefit will be the Texas Shipbuilding Company, the Kelly-Speer Company, and the Bath Iron Works, all of which are engaged in war work for the United States.

#### DEVELOPMENT WORK UNDER WAY

The program of betterment is as follows:

1. The railway is to raise the voltage from 10,000 to 22,000 volts on the transmission line from Lewiston to Brunswick, and is to install 1500-kva. step-up transformers near Lewiston, at the point where it receives its service from the lines of the Androscoggin Electric Company. The railway will install 300-kva. step-down transformers at its Lisbon Falls substation and 1200-kva. step-down transformers for the substation at Brunswick and for the 10,000-volt lines to Bath and Freefort. It will reinsulate the present 10,000-volt line from Lewiston to Brunswick for 22,000 volts and construct approximately 2½ miles of new pole transmission line around Lisbon, in order to free the line from trees in this village, and will purchase tree-trimming rights at certain other points. It will reinsulate the 10,000-volt line from Brunswick to Bath, rebuilding this line at certain localities. The company will utilize the No. 0 copper wire salvaged from the Lewiston-Brunswick line to increase the capacity of the transmission line from Brunswick to Bath, replacing or reinforcing the present No. 6 copper now on that line. It will increase the direct-current feeder copper and track bonding on

the Bath local lines and the Bath-Brunswick interurban lines. The total estimated cost of the work north of Brunswick is \$42,500, of which the railway will repay 100 per cent, and for the work east of Brunswick \$21,000, of which it will repay 75 per cent.

2. The railway adds six new interurban cars seating fifty-two passengers each and a snowplow of the latest type used by the road. These purchases have been made in the name of the Emergency Fleet Corporation under priority rights, the cars being supplied by the J. G. Brill Company, and the cost is about \$14,000 each, equipped. Westinghouse motors are to be used. The transformers are to be supplied by the General Electric Company and the snowplow is of the Wason type. Deliveries of four months on the cars and forty-five days on the transformers and electrical equipment have been promised. It is expected that the betterment work on the road will be complete by Nov. 9. Of the total estimated cost of \$99,000 the railway is to repay to the Emergency Fleet Corporation the appraised value with a minimum of 75 per cent.

3. The company is to construct better facilities for car inspection and repairs at its Bath carhouse, and it is to safeguard the carhouse, pits and tracks. The total estimated cost is \$5,000, and the company is to repay 100 per cent.

4. The railway is to build a new turnout midway between Brunswick and Bath at an estimated cost of \$3,000. Of this it is to repay 75 per cent.

#### CONDITIONS OF GRANT TO COMPANY

The Emergency Fleet Corporation advances the money necessary to do the work above outlined, but not exceeding \$170,500 in the aggregate or the estimate for each part of the work. According to the contract, all money advanced shall be for the cost of only materials and work, and the word "cost" shall be construed to be the actual net cost (after deducting all discounts, rebates and refunds) of materials used and the sums paid to labor. It is expressly agreed that no general overhead expenses or legal fees shall be included.

Payment of all sums due from the railway to the Emergency Fleet Corporation shall be made in five equal annual installments, the first payment to be made six months after the termination of the war, as proclaimed by the President. The railway, however, must at once take steps to create a depreciation fund in the following manner: From all fares collected from passengers within Bath and on the lines between Brunswick and Bath, the railway shall deduct one-half of 1 cent for each fare, and at least once a month pay over the same to the corporation to be credited as partial payment of such amounts as are to be repaid. The semi-annual interest rate on the amount to be repaid is 5 per cent. The company is required to issue its first mortgage and refunding 5 per cent bonds to the amount of \$60,000 as collateral security for the repayment of all sums due to the Emergency Fleet Corporation.

The railway must at all times until six months after the war give complete and adequate transportation service to the shipyard employees. In the event of any controversy as to the adequacy of service the matter shall be submitted to the Director of Passenger Transportation, and his decision shall be final.



# News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

## Unified Terminals Proposed Plan Suggested by Railroad Commission Would Provide for Both Steam and Electric Lines

Unification of railroad passenger terminals in Los Angeles, Cal., by the concentration of all traffic in the Santa Fe station and the abandonment of the Salt Lake and Southern Pacific stations is urged by the State Railroad Commission in its report to Director-General McAdoo upon this subject. The plan proposed by the commission is contained in a volume by Richard Sachse, chief engineer of that body.

The report is the first result of the investigation that had its origin in July, 1916, when several civic organizations and the city of Los Angeles brought complaints as to grade crossings, particularly as to Alameda Street, the main route of access to and from the Southern Pacific Depot, and for the unification of terminals in a new union station.

To aid in the investigation the city of Los Angeles appropriated \$2,000 to the use of the commission. Litigation between the parties and the railroads resulted in the Supreme Court determining jurisdiction in the commission and put the commission under mandate to pursue its investigation, now under way nine months, under the commission's chief engineer, Richard Sachse, and a special staff.

The terminal plans affect both the steam roads and the electric lines.

As the Pacific Electric does not now reach the Santa Fe station, the report recommends a new two-track line to cost \$142,000. The recommended use of the Santa Fe site does not involve the abandonment of any industrial trackage, but only means its service by a different method.

The railroad engineers estimate that this plan will cost \$664,000 and the commission's engineer estimates the cost at \$381,000. The engineers are agreed to all items except the Mission Junction curve track changes at the Santa Fe terminal and Union depot construction. The engineers estimate \$250,000 for depot cost, and the commission estimates \$128,925; engineers cost of \$154,153 for yard track changes is reduced by the commission estimate to \$73,041 and Mission Junction curve is reduced from \$80,623 to \$34,579 by the commission.

While the separation of grades and union station demands were under investigation by the commission the federal administration took over all steam roads and put them under a different jurisdiction, but Director-General McAdoo, on July 22, 1918, asked the commission to complete its investigation and gave assurance to the Los Angeles civic interests that no action would be taken by him until a full report had been sent to him by the commission.

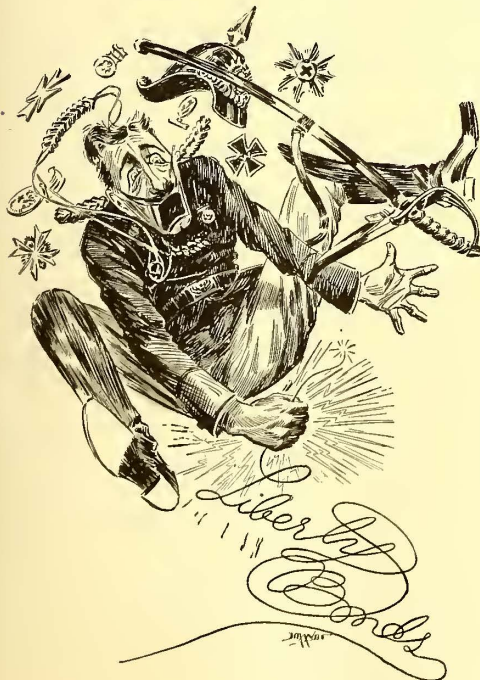
## M. O. Amendment Submitted

### San Francisco Starts Machinery in Motion for Taking Over the United Railroads

The proposed charter amendment that will make possible the purchase of the United Railroads by the city of San Francisco, Cal., was introduced in the Board of Supervisors on Sept. 16. After some discussion the matter was referred to the judiciary committee of that body.

Under what is known as the McNab proposal, the United Railroads has agreed to sell its system to the city at a price to be agreed upon on an installment plan. This would obviate the necessity of issuing bonds or adding to the debt of the city. But before this can be done the charter must be amended to give the Board of Supervisors the right to enter into such an arrangement.

The charter amendment simply proposes giving the supervisors the authority to undertake the necessary negotiations. For after the Supervisors and the company have come to an agreement regarding terms the matter must again be submitted to a vote of the people and be ratified by at least a majority. If the purchase of the railway should incur any indebtedness in excess of the annual revenues it would require a two-thirds vote to ratify the agreement.



## He Must Be Strafed

THE present plans of the German government in regard to Belgium show something more than the enormous insolence which has characterized every war utterance of the Hun. They reveal the dense stupidity of the German mind. They show how almost extremely difficult it will be to make Germany realize that the civilized world demands complete victory.

Little Belgium will fight on. She has not forgotten the "scrap of paper" and wants no more from an unconquered and still insolent Germany.

Little by little Germany may learn something, making her a little more amenable to reason. The complete success of the Fourth Liberty Loan would be a good lesson. It is a most necessary achievement, in any event, for the support of our military forces fighting the Hun.

## The Fourth Loan Must Succeed

The armies must drive on  
The Hun must be strafed until he ceases to be a Hun



## Women Must Go

Cleveland Investigators So Decide and Urge More Determined Effort to Obtain Men

Henry B. Deilman and Miss Margaret Rusanowska, special investigators of the Federal Department of Labor, rendered a decision, received in Cleveland on Sept. 23, to the effect that women conductors must be removed from the cars of the Cleveland Railway by Nov. 1. The company had employed about 250 women, 160 of whom have been handling regular runs.

### OPINION IN FULL

The decision of the investigators was as follows:

"In drawing their conclusions from the data obtained from both parties to the controversy and from their own observations, the undersigned federal investigators, in compliance with the agreement entered into on Sept. 4 between the representatives of the Cleveland Railway, division number 268, A. A. of S. and E. R. E. of America and A. L. Faulkner, acting as special representative of W. B. Wilson, Secretary of Labor, have found that the situation obtaining in Cleveland does not demand the employment of women on the cars of the Cleveland Railway, and therefore decide that no women shall be employed on the cars of the company on or after Nov. 1, 1918.

"It is true that the company will have to lower its labor standard somewhat, owing to the extraction of the best men from civil life into the military service of the country. However, every industry in the country has been forced to do likewise. But the excellent railway service of Cleveland will suffer no great detriment by the lowering of the strict standard adhered to by the company in the past.

"No special inducements of any kind have been offered to men; on the contrary, special consideration shown women applicants has deterred men from applying to some extent and induced others to quit the service of the company.

"If male applicants will be allowed a remuneration for the ten-day training period, and schools of instruction, which have proved a success with women applicants will be introduced for men, and the company's employment agent will make a more determined effort to recruit men from the fair labor market in Cleveland, there is no reason why the shortage should not be filled with men."

### RULING A HARDSHIP TO COMPANY

In an interview with a local paper J. J. Stanley, president of the railway, said the decision will work untold hardship on the riding public and may seriously affect the city's industries. Fielder Sanders, Street Railway Commissioner, said the decision will mean the worst service in the history of transportation in the city.

It may be said that the women made excellent conductors with very brief training. No complaints were heard in regard to them and their care of women

and children elicited favorable comment on many occasions. They took the late evening runs, the same as the men, and assumed the responsibility of their position in a way that insured success had they been allowed to remain.

The question went to investigators following a near-strike recently of union employees as a protest against the employment of women conductors. The union men denied the company's claim that a shortage of man power made the employment of women necessary.

## Chicago Ordinance on Ballot

Two petitions asking injunctions to prevent the printing of the traction ordinance question on the ballots for the Nov. 5 election were dismissed on Sept. 24 by Judge Frederick A. Smith in the Circuit Court. Both petitions assailed the right of the City Council to order the traction ordinance to be submitted to the voters, charging the ordinance as illegal. The court ruled that the ordinance was valid; that all legal steps necessary to submit it to the voters for their approval had been taken by the City Council, and that he saw no reason why the election commissioners should not place it on the ballot.

Upon the action of Judge Smith the position of all securities of the surface lines and the elevated railroads of the city has been much improved. Investment interests believe that chances favor an affirmative referendum vote, and with the City Council and the majority of the people of Chicago supporting the measure it is considered the Legislature will grant the necessary authority required by the ordinance.

## Winnipeg Arbitration Plans

Representatives from both the Winnipeg (Man.) Electric Railway and their employees have been chosen to form a conciliation board to hear the requests of the men and also to hear the reasons of the company for refusing to make the increases in salaries asked for.

Isaac Pitblado will represent the company, while R. S. Ward has been chosen to represent the motormen and conductors. No chairman had been nominated up to Sept. 12, but little difficulty is anticipated in coming to an agreement in this connection.

The men claim that owing to the constant increase in the cost of living their present wages are inadequate, while the company says the possibilities of increasing the wages as demanded are out of the question.

On Sept. 11 a board of conciliation in the dispute between the shopmen and the company concluded its report and the findings of the board are being forwarded immediately to the Minister of Labor at Ottawa. The chairman of this commission stated on Sept. 12 that owing to the board having been appointed by Ottawa, no announcement could be made as to the decision arrived at except from there.

## Seattle Transfer Oct. 1

Negotiations for Municipal Ownership Proceeding on Basis of Concluding Deal as of That Date

Oct. 1 is the date set by the Seattle city officials for taking over the local railway system of the Puget Sound Traction, Light & Power Company, by purchase, under the negotiations now under way. A. W. Leonard, president of the company, has submitted to the Council a statement of the conditions under which the city's offer to purchase the Seattle system for the sum of \$15,000,000, will be accepted. Following is the property included in the bill of sale submitted by Mr. Leonard:

All franchises, rights and obligations conferred on the company by ordinance or permit and in effect Sept. 1, 1918.

All of the rights-of-way owned by the company for the operation of the railway system.

Tracks, including trestles, ballast, ties and rail supports and all interest in spur tracks on premises of the company's freight customers.

All rolling stock, freight, passenger and miscellaneous cars, used by the company, including ten cars loaned to the Tacoma Railway & Power Company, and excluding thirty cars owned by other companies and operated by the Seattle company under lease.

Five automobiles, four trucks, one motorcycle, track grinder, track welder and tar wagon.

All trolley and span wires used in the operation of cars, and all feeder wires up to the point of entry into the company's substations.

The company's interest in pole lines used for railway purposes.

Signal and interlocking apparatus used in connection with the operation of cars.

All roadway and railroad tools and equipment used in railway operation.

Fremont carhouses.

Green Lake freight sheds.

East Jefferson Street carhouses.

Madrona freight terminals.

Madison, James and Yesler cable stations, power houses and carhouses.

West Seattle carhouse and yard.

Georgetown land and carhouse.

Ballard freight terminals.

Five hundred and sixteen cars.

The contract for the operation of the Tacoma and Everett trains provides for the payment to the city of 10 to 20 cents a car-mile, based on the character of the traffic.

The brick building at Seventh and Olive Street, located on an entire block, which now serves as offices of the company, is not included in the inventory. This property belongs to the light and power department. City officials are said to have expected that this property would be included in the deal.

### CITY COMMITTEE WORKING OUT DETAILS

The city has named Mayor Hanson, Councilman T. H. Bolton, president of the Council, and O. T. Erickson, chairman of the utilities committee, to work out the details of taking over the property. This committee has asked Peter Witt, Cleveland, Ohio, to make a survey of the traction properties and assist in the transfer. Expert accountants will check the company's books and inventories.

Unless there is some special action on the part of the Council, the railway property will pass automatically under the control of the Public Utilities Department of the city. The problem will then present itself of selecting the personnel to be responsible for the operation of the road.



## Increase in Chicago Traffic

### War Exhibition Brings Big Increase and Permits Only Approximation of Effect of Gasless Sundays

Traffic statistics for the Chicago Elevated Railroads show that the increase in the number of persons traveling on the system for the four Sundays of July, 1918, as compared with the corresponding Sundays in 1917 varied from -13 per cent to +4.8 per cent. The same figures for August vary between the limits of -4.1 per cent and +4.5 per cent. The total increase for the month of July and the month of August, 1918, as compared with the same months in 1917 is 7.1 and 8.1 per cent respectively.

#### 18.4 PER CENT INCREASE FIRST SUNDAY

On Sept. 1 the gasless Sunday order of the Fuel Administration went into effect, and the increase in traffic over the corresponding Sunday in 1917 was 18.4 per cent and over the last preceding Sunday 9.1 per cent. Then the gigantic Government War Exhibition opened in Chicago on Sept. 2, and for two Sundays, Sept. 8 and 15, traffic was increased 58.6 per cent and 27.5 per cent respectively. This is not surprising, as the total attendance at the exhibition for the fourteen days was 1,955,602 persons, and in one single day, 224,871 people attended. The average week-day increase in traffic from Sept. 2 to 7 was 15.3 per cent, and from Sept. 9 to 14 was 12 per cent.

The War Exhibition ended on Sunday, Sept. 15, so that Sept. 22 was again a gasless Sunday without added attraction. For the week of Sept. 16 to 21 the average daily increase in traffic over the corresponding week in 1917 was 2 per cent. The traffic figures for Sunday, Sept. 22, show a decrease of 4.4 per cent over the corresponding Sunday of 1917. As the last Sunday was fair and conducive to travel, it seems that the only reason for this is the approach of winter and the usual gradual decrease in pleasure traffic.

From the above figures it is difficult if not impossible to arrive at any conclusive decision as to the benefit the Chicago Elevated Railroads will derive from the gasless Sunday order.

#### HALF INCREASE DUE TO EXHIBITION

If all figures are taken into consideration, however, it would seem that perhaps 12 to 15 per cent of the increase for Sept. 1 might be attributed to gasless Sunday. The problem for Sept. 8 and 15 is more difficult. No doubt from 40 to 50 per cent of the increase for Sept. 8 was due to the Exhibition, but on the other hand it was also partly due to gasless Sunday, as many of the people would otherwise have gone to the exhibition in autos. Thus it might be assumed that 20 per cent of the increase on Sept. 8 was due to gasless Sunday and 12 to 15 per cent on Sept. 15. The decrease in traffic for Sept. 22 is unexplainable.

The Chicago Surface Lines report an

increase in gross revenue of 10 per cent over 1917 for the first gasless Sunday, 18 per cent for the second and about an even break in this respect on Sunday, Sept. 22.

## Wage Increase in London

The Board of Conciliation appointed by the Canadian Minister of Labor to adjust the wage difficulties between the London (Ont.) Street Railway and its employees has reported an award based upon a settlement agreed to and incorporated in a signed contract between the parties.

Under the agreement which expired on May 1 the men received 23 cents an hour while on the spare list, 25 cents an hour for the balance of the first year, 26 cents in the second year, 27 in the third and 28 in the fourth year and thereafter.

Their original demand was for a scale providing 32 cents for the first six months' service, 34 cents for the second six months, 36 cents for the third six months, and 38 cents thereafter, and in addition conditions and other considerations which the management announced would add \$80,000 a year to operating costs.

When called upon for evidence in the court of conciliation the men changed their demands, asking a minimum of 44 cents an hour, and a maximum not stated.

After several sessions the representatives of the company and of the men agreed to the following scale: First year, 30 cents an hour; second year, 33 cents an hour; third year and subsequent years, 35 cents an hour. The company also agreed to pay for a ten-minute "show-up" at carhouses, and to pay 10 cents an hour extra to motormen and conductors who continue at work after they have completed their scheduled hours of employment. Carhouse and other employees will receive advances of 3½ cents an hour and trackmen 2 cents an hour.

## Food-Saving Car in Massachusetts

A car formerly used by the president of the Bay State Street Railway, Boston, Mass., has recently been loaned by the company for service under the auspices of the United States Food Administration for educational work along food-saving and baby-saving lines, on the electric railways of Massachusetts. The car is being operated under the direction of the woman's committee of the Council of National Defense, with the co-operation of the child conservation committee of the division of hygiene, State Board of Health. The actual work of the car in the field is being managed by Miss S. Agnes Donham of the Garland School of Home Making, Boston. The object of the work which the car and its staff are to carry on is to illustrate the making of wheatless foods; the care of and food for babies, and the need for saving wheat for the Allied armies and people abroad.

## Additional San Francisco Ferry Loop

The construction of a third loop to relieve congestion of cars at the foot of Market Street, San Francisco, Cal., was tentatively agreed upon on Aug. 8 by officials of the United Railroads, the city and the State Harbor Commission. The cost of the additional loop, which will be about \$12,000, is to be divided between the Municipal Railway and the United Railroads.

Of the 289 cars an hour that now operate over the two loops during rush hours, 107 run on the inner and 182 on the outer loop. With a third loop the cars would be distributed equally. It has been suggested to the police department that vehicular traffic be diverted so as not to cross the Market Street approaches to the loops during the rush hours. The Belt Line Railroad is also to be asked to stop service across the ferry plaza at these hours.

The construction of a subway from north to south for vehicular traffic was favored as a permanent solution. However, the cost and the difficulty of agreeing on its apportionment are such that that plan was not considered for the immediate relief that was deemed necessary.

## Hearings on Power Station Bill

Hearings on the \$200,000,000 emergency power act were continued in Washington during the week ended Sept. 14 before the committee on interstate and foreign commerce of the House of Representatives. Among those who testified was Dr. H. A. Garfield, United States Fuel Administrator, who emphasized the saving in fuel which is accomplished by central station power distribution. The bill, he said, would also allow the government more easily to make extensions as well as control the purposes for which power is used and thus insure adequate power for war industries. Another witness was Howard R. Gans, counsel for the Treasury Department. In reply to a question, Mr. Gans explained that under the bill the government was empowered to take over the power plants operated by electric railways.

## Skip Stops Extended in San Francisco

Skip stops on all lines of the United Railroads and the San Francisco (Cal.) Municipal Railway west of Van Ness Avenue became effective on Sept. 15. The first skip-stop plan in San Francisco went into effect on Aug. 20, as announced in the *ELECTRIC RAILWAY JOURNAL* of Aug. 24, 1918, and affected only the Sunset and Park-Presidio residence districts. The recent order also eliminates the stops previously required in front of fire houses and which entailed many hundreds of non-productive stops daily. Since the advent of the motor fire truck, firehouse stops are deemed no longer necessary.



## News Notes

**Winnipeg Arbitration Board Complete.**—Chief Justice Mathers has been appointed chairman of the conciliation board which will investigate the wage dispute between the Winnipeg (Man.) Electric Railway and its men, referred to, elsewhere in this issue. Isaac Pitblado is the company's appointee to the board, and R. S. Ward is the member for the men.

**War-Time Operating Measure.**—As a war-time measure the Peoria Railway Terminal Company's electric line between Peoria and Pekin, on the east side of the Illinois River, has been united with the management of the Peoria & Pekin Union Railroad, a steam road. It is said that the motive power of the Peoria Railway Terminal, under the new arrangement, will be changed from electricity to steam, provided certain problems can be worked out.

**Doubt About Settlement Election.**—The Assistant Attorney General of Missouri has rendered an opinion to the chairman of the election board at St. Louis, Mo., to the effect that a question having only a municipal bearing cannot properly be voted on at a general election, but can be submitted only at a city election. If this ruling is sustained, it is said that it will prevent a referendum vote on the franchise settlement ordinance of the United Railways at the November election.

**"H" Operation Again in October.**—The Public Service Commission for the First District of New York has authorized the Interborough Rapid Transit Company to resume operation of shuttle trains over the cross bar of the H between the Grand Central Station and Times Square on or before Oct. 5. This service was started when the new subways were opened but was stopped on Aug. 3 because of the confusion that followed, due largely to the uncompleted condition of the stations. These have since been greatly improved.

**Detroit Railway Men in Archangel.**—An Associated Press dispatch from Archangel, Russia, reports former employees of the Detroit (Mich.) United Railway, now in Russia with the American forces as filling in there at their old jobs. The statement follows: "Recently, owing to a political dispute, the street railway system in Archangel was brought to a standstill. A squad of Detroit motormen immediately took charge of the situation and now the dinky little cars are running through the streets in true American style."

**Appeal to War Labor Board.**—Differences between the United Railways, St. Louis, Mo., and its motormen and

conductors, members of the Amalgamated Association of Street & Electric Railway Employees, who are asking for increased pay and shorter hours, has culminated in the men appealing to the National War Labor Board. An official of the company is quoted as follows: "I do not believe there is any real dissatisfaction among the rank and file of our employees. The union officials are simply trying to obtain all they can while the 'obtaining is good,' so to speak."

**Pittsburgh Men Reject Offer.**—The executive board of the local division of the Amalgamated Association at Pittsburgh, Pa., has voted to refuse the latest offer of the receivers of the Pittsburgh Railways. The receivers offered to grant the desired increase in wages of 3 cents an hour on the condition that the 50-cent premium on each extra tripper run be abolished and a premium of 3 cents an hour for every hour having been worked during any day when a tripper run be made be paid instead. The receivers wished also to be allowed to hire negroes and women on the cars if the need calls for them.

**Strike Threatened in Des Moines.**—The employees of the company have notice of a strike on the Des Moines (Ia.) City Railway unless their wage increase demands are met. The strike notice did not give the date on which it would become effective as the men are anxious to give the company time to try to meet their demands. Notice of the strike vote was sent to the War Labor Board and the board has fixed Oct. 3 as the date of hearing the Des Moines case. The formal demand of the men is for a maximum of 65 cents an hour, but it is believed they would be satisfied with an increase to 50 cents.

**New Albany Wage Question Unsettled.**—The Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company, New Albany, Ind., which refused to sign a contract giving the men 40 cents to 45 cents an hour for city service and 45 cents to 50 cents an hour for interurban service, with provision for an eight-hour day, have agreed to an increase of 1 cent an hour, making an increase of 13 cents since April 1. The wages would thus be 33 to 39 cents an hour for interurban service and 31 to 36 cents an hour for city service. The men say they will carry the case to the War Labor Board.

**Twelve Wage Cases Before Board.**—Controversies between employees and the electric railway companies in nearly a dozen cities will be reviewed at once by the War Labor Board, it became known on Sept. 24 when the board reassembled after a brief recess. A number of electric railway wage disputes were heard and decisions handed down in August, in the cases of Chicago, Cleveland, Detroit and other cases. These decisions were reviewed in the *ELECTRIC RAILWAY JOURNAL* for Aug. 2, page 207, but disputes in the following cities remain to be adjusted: Port-

land, Ore., Jacksonville, Fla., Dayton, Ohio, Atlanta, Ga., East St. Louis, Ill., Boston (elevated); Birmingham, Memphis, Cincinnati, Lynn, Mass., and Springfield, Ill.

**Lexington Wages Still Unsettled.**—The controversy between the Kentucky Traction & Terminal Company, Lexington, Ky., and its employees is complicated by the announcement made recently that the federal government had refused to send a conciliator to aid in settling the differences over wages. After the refusal of the union to accept Clarence U. McElroy as umpire, R. M. McWade, who had been in Louisville on a similar mission, was ordered there, but his instructions were countermanded. The union men sent a letter to the Secretary of Labor at Washington, giving their reasons for not accepting the appointment of Mr. McElroy. Since this letter was sent a statement has appeared in the Lexington papers to the effect that Hywel Davies, former business agent of the University of Kentucky, now a federal conciliator, would act as arbitrator of the troubles between the company and its employees. Mr. Davies was reported to be in Arizona, but it was said that he would take up the Lexington matter as soon as he has disposed of his present task.

**United Railroads Sue San Francisco.**—Damages in the sum of \$288,500 have been asked in a suit recently filed by the United Railroads against the city and county of San Francisco. Of this sum \$38,500 is asked to compensate the company for decreased earnings and increased cost of operation where municipal cars cross the private company's tracks, based on \$275 a month for the remaining tenure of the company's franchises, and \$250,000 to compensate for the operation of Municipal Railway cars on Market Street from Church Street to Seventeenth. The complaint also states that the tracks of the municipal line on Market Street are so close to those of the United Railroads that the lives of patrons are endangered. As noted in the *ELECTRIC RAILWAY JOURNAL* for June 15, page 1160, suit for damages amounting to \$856,250 has already been filed against the city, because of operation of cars on Market Street from Van Ness Avenue to Church Street. Further suits will be filed, it is stated, for damages alleged to have been sustained through the operation of municipal cars on Market Street from Seventeenth Street to the ferry.

## Program of Meeting

### National Lumber Manufacturers' Association

The meeting of the board of directors of the National Lumber Manufacturers' Association, originally scheduled for Oct. 8, will be held on Oct. 4 and 5 at the association headquarters in Chicago. The change in the date was made at the request of the West Coast Association.







### Pittsburgh Work Approved

Court Approves Setting Aside of \$374,668 for Improvement Considered Essential at This Time

Judge Charles P. Orr in the United States District Court at Pittsburgh, Pa., on Sept. 13 handed down another order on another phase of the Pittsburgh Railways receivership, approving immediate compliance with joint demands for better service made by officers of the Army and Navy and the State Public Service Commission and ordering that the receivers defer the payment of certain of the fixed charges.

#### PAYMENTS DEFERRED TOTAL \$72,495

Of the ten separate items of fixed charges presented by the receivers Judge Orr ordered five, totaling \$38,760, paid, and directed that payments be deferred in five items, totaling \$72,495, as follows:

ORDERED PAID	
Interest on mortgage, \$1,800, of the Duquesne Traction Company, held by Fidelity Title & Trust Company .....	\$540
Car trust account, Pittsburgh Railways with Fidelity Title & Trust Company, \$270,000 at 5 per cent for fifty double-truck closed cars..	2,700
Car trust account, Pittsburgh Railways with Fidelity Title & Trust Company, \$450,000 at 6 per cent, for fifty double-truck closed cars..	8,520
Car trust bonds, principal due on Sept. 19, at \$1,000 each.....	19,000
Rentals or tolls due city of Pittsburgh for use of Smithfield Street Bridge .....	8,000
Total .....	\$38,760

ORDERED DEFERRED	
Interest first mortgage bonds, \$500,000 at 6 per cent, Birmingham, Knoxville & Allentown Traction Company .....	\$15,000
Interest first mortgage bonds, \$135,000 at 5 per cent, Charleroi & Westside Street Railway.....	1,375
Interest first mortgage bonds, \$50,000 at 6 per cent, Coraopolis & Neville Island Bridge Company...	120
Interest first mortgage bonds, \$200,000 at 6 per cent, Suburban Rapid Transit Street Railway.....	6,000
Interest first mortgage bonds, \$2,000,000 at 5 per cent, Wilkensburg & East Pittsburgh Street Railway .....	50,000
Total deferred.....	\$72,495

Frankly admitting they did so on demand of the Army and Navy of the United States, and the Public Service Commission, the receivers, through Attorneys John C. Bane and George C. Bradshaw, appeared before Judge Orr and asked authority to set aside \$374,668. Of this amount \$201,400 will be used as follows: For bridge repairs, \$159,400; to finish a terminal loop upon which \$20,000 has been expended, near Hazelwood and Murray Avenues, \$10,000; to construct a new line of single

track in Wheatland Street, \$30,000, and to construct a connection between California Avenue and Wyndhurst Street, Northside, to improve operation of cars to and from the Woods Run section, \$2,000. In addition to this work there is an item of \$173,268 for "improvement, betterments and new equipment," which the court was informed had already been contracted for or were under way.

Judge Orr indicated a willingness promptly to authorize the expenditures, but pointed out that injunctions had previously been obtained against two of the improvements. Attorneys for the receivers set out immediately to have these injunctions waived and secured the withdrawal of one action the same day. The court then approved the expenditure.

The general principles governing the making of payments of fixed charges of underlying companies were referred to in the decision of Judge Orr abstracted in the ELECTRIC RAILWAY JOURNAL for Sept. 21, page 524

### Railway Income Slumps

Nearly Three Hundred Lines Report Loss of 74 Per Cent in Net Income for First Half of 1918

Reports received by the War Board of the American Electric Railway Association show that electric railways are in a critical financial condition. The accompanying income statement of 293 companies for the first six months of the current year, made public by the board, discloses a decrease in net income of \$8,926,929 or 74.4 per cent, compared with the same period in 1917.

The operating revenues of the reporting companies increased \$5,866,396 or 3.5 per cent during the period, but the operating expenses rose \$12,285,838 or 11.1 per cent. As a result the net operating revenue declined \$6,419,442 or 11.4 per cent. This loss was accentuated by a rise of \$1,235,853 or 10.6 per cent in taxes, so that the gross income fell off \$7,208,060 or 13.8 per cent. The deductions from income added to the decline by increasing \$1,718,869 or 4.3 per cent.

The decline in net income took place before the new scales of pay for employees, approved by the National War Labor Board, went into effect. By the end of the present year, it is estimated, the increase in pay of employees will add \$50,000,000 to the operating expenses of the railways.

### New Financing Medium

Bankers Announce Plan to Organize "Essential Industries Financing Corporation" to Aid Utilities

The Essential Industries Finance Corporation is to be organized to aid in financing utilities, according to an announcement just made in New York. The plan is the outgrowth of recommendations made some time ago by the bankers' advisory committee appointed by Governor Harding of the Federal Reserve Board. These recommendations provided for a \$100,000,000 corporation, but the proposals were abandoned because the United States Attorney-General held that the war finance corporation act would not allow that corporation to lend more than about \$50,000,000 to any one concern. The recommended \$100,000,000 corporation, it had been thought, would be able to borrow about \$300,000,000 from the War Finance Corporation.

#### INITIAL CAPITAL \$3,000,000

Organized under New York law, the Essential Industries Finance Corporation will begin business with \$3,000,000 of capital, divided between \$1,000,000 of stock, \$1,800,000 of ten-year debentures and \$200,000 surplus. Of the stock \$200,000 Class A shares will be limited as to dividend and will be sold at par. Class B stock, aggregating \$800,000 and having no restrictions, will be sold at 125, providing the \$200,000 surplus. As the business expands, it is planned to increase the capital, which will probably reach \$20,000,000 ultimately. On that basis the corporation will be able to borrow about \$50,000,000 from the War Finance Corporation.

Pending the flotation of the Fourth Liberty Loan the Essential Industries Finance Corporation will not do any financing. After the sale of the government bonds the corporation will be ready to consider propositions from utilities for financing extensions. It is purposed to make the resources of the corporation available to existing utility corporations which need aid in enlargement of plant for essential purposes, but not to undertake construction for new enterprises.

#### PERSONNEL OF COMPANY

Eugene V. R. Thayer, president Chase National Bank, will be president of the new corporation, and Frederick Strauss, of J. & W. Seligman & Company, and Gerhard M. Dahl, vice-president Chase National Bank, will be vice-presidents. The following will be represented on the board of directors: Chase Securities Company, Guaranty Trust Company, Central Union Trust Company, First National Bank, J. P. Morgan & Company, J. & W. Seligman & Company, E. W. Clark & Company, General Electric Company, Westinghouse Electric & Manufacturing Company and United Gas Improvement Company.

COMPARATIVE INCOME STATEMENT OF 293 ELECTRIC RAILWAYS FOR THE SIX MONTHS ENDED JUNE 30, 1917 AND 1918

	1918	1917	Per Cent	Amount
Operating revenues.....	\$173,077,841	\$167,311,445	+3.5	+\$5,866,396
Operating expenses.....	123,037,864	118,752,026	+11.1	+12,285,838
Net operating revenue.....	\$50,039,977	\$56,459,419	-11.4	-\$6,419,442
Net revenue from auxiliary operations.....	5,732,679	5,601,684	+2.3	+121,995
Taxes.....	12,911,593	11,675,740	+10.6	+1,235,853
Non-operating income.....	2,365,383	2,040,143	+15.9	+325,240
Gross income.....	\$45,217,446	\$52,425,506	-13.8	-\$7,208,069
Deductions from gross income.....	42,150,028	40,431,159	+4.3	+1,718,869
Net income.....	\$3,067,418	\$11,994,347	-74.4	-\$8,926,929



## Financial News Notes

**Another Road May Suspend.**—It is stated that steps will be taken soon to dispose of the physical property of the Bloomington, Pontiac & Joliet Railway, operating 20 miles of line between Pontiac and Dwight, Ill. The property is bonded for \$300,000. It is reported not to be meeting its fixed charges.

**Suspension and Abandonment.**—Abandonment of several miles of railway lines has been asked by the Los Angeles (Cal.) Railway of the City Council in the campaign to reduce the expense of operation of the system. The appeal to the city names eight lines. On three of these there would be permanent abandonment of tracks and operation. On the other five lines there would be temporary abandonment of operation only during the war.

**Virginia Railway & Power Common Dividend.**—The directors of the Virginia Railway & Power Company, Richmond, Va., have declared a dividend of \$2.51½ on the common capital of the company, payable on Oct. 21 to holders of record of Sept. 30. The dividend is payable only in stock of the Old Dominion Iron & Steel Corporation, at the rate of one share of stock of the Old Dominion Corporation of par value of \$3 for each share of common stock of the Virginia Railway & Power Company.

**Injunction Against Dismantling.**—A temporary injunction has been granted by Judge F. M. Spann of the Twenty-Seventh District Court at Temple, Tex., restraining the owners of the Tal-Coe Addition to the city of Temple from tearing up and removing the street railway and interurban tracks through this addition. The Southwestern Traction Company had discontinued service on this line and had begun to dismantle it and tear up the tracks when the residents of that addition sought relief in the courts.

**Government Takes Road.**—It is reported from Richmond, Va., that operation of the electric railway from that city to Seven Pines did not suffer any interruption because of the expiration of the Richmond & Rappahannock Railway's franchise, as advices from Washington stated that the government would, through the United States Shipping Board, Emergency Fleet Corporation, exercise its option to purchase and operate the line as an auxiliary to the munitions plant at Seven Pines. It is said that the Virginia Railway & Power Company will operate the line for the government until the war ends.

**Republic Passes Common Dividend.**—The directors of the Republic Railway & Light Company, Youngstown, Ohio,

which controls the Mahoning & Shenango Railway & Light Company, operating lighting plants and traction lines in Youngstown, Ohio, and vicinity, have announced the suspension of the common stock dividend. Heretofore the common stock payment has been at the rate of 1 per cent quarterly. The regular 1½ per cent on the preferred will be paid. The common stock payment was inaugurated in January, 1917, and paid continuously since then until now. The directors, in their explanation for the action taken, state that the feeling had developed that conditions now facing the public utilities require conservation of cash resources.

**Sale of Bonds Postponed.**—Because of the present unsatisfactory condition of the bond market and consequent inability to sell its bonds at 85 per cent of their face value, the San Diego (Cal.) Electric Railway has made application to the State Railroad Commission to extend the time in which the unsold portion of the bonded indebtedness should be sold from Oct. 1, 1918, to the same date 1919. The company under the order of the commission made in October, 1914, has issued \$3,920,000 face value, and has redeemed \$76,000 face value in accordance with sinking fund provisions. The maximum issue secured by mortgage to the Union Trust Company, San Francisco, is \$10,000,000 and the amount authorized to be issued was \$4,497,000. The time for selling the unissued balance has been extended from time to time heretofore by the commission.

**Common Dividend Passed at Louisville.**—The Louisville (Ky.) Railway has deferred action on the usual semi-annual dividend on its common stock. T. J. Minary, president and general manager, stated that no dividends could be paid on the common stock until the higher fare asked of the city was granted. The preferred semi-annual dividend of 2½ per cent was declared, payable on Oct. 1. The company has outstanding \$3,500,000 of 5 per cent preferred stock on which dividends have been paid regularly. It also has outstanding \$8,323,600 of common stock. In December, 1917, the Louisville Traction Company, the holding company for the Louisville Railway, was dissolved in order to effect a saving in taxes. Preferred stockholders exchanged on a share for share basis; holders of the traction common stock received seven-tenths of a share of railway common for each share of traction common. The common stock was reduced in this way from about \$12,000,000 to about \$8,000,000.

**Chicago City Reduces Dividend.**—The Chicago City Railway on Sept. 23 declared a quarterly dividend of 1 per cent, payable on Sept. 30 to holders of record of Sept. 26. The Chicago City Railway, Chicago Railways and other local surface lines in Chicago are operated as a unified system by a joint agency known as the Board of Operation of the Chicago Surface Lines.

The City Railway has \$18,000,000 of stock outstanding, of which \$16,971,900 is owned by the Chicago City & Connecting Railways and is deposited under that company's collateral bond issue. The Chicago City Railway has been an unusually successful property of its kind, with a financial history and continuous dividend record of twenty-four years that have resulted in it being very highly regarded. For the period mentioned dividends have averaged slightly more than 10 per cent. In 1917 the company paid 8¼ per cent.

**Arranging to Extend Bonds.**—The directors of the Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio, who have for some time been giving consideration to the maturity on Oct. 1 of the \$500,000 of first mortgage bonds and the \$1,131,000 of first consolidated mortgage 5 per cent gold bonds, find that it is practically impossible to refund such indebtedness at the present time and that the only course possible is to provide for an extension to Oct. 1, 1923. The board is having prepared for deposit with the Citizens' Savings & Trust Company, Cleveland, trustee, an agreement providing the terms, etc., of such extension and is preparing to apply to the Public Utilities Commission of Ohio for its consent. It is proposed that the company will pay 7 per cent interest upon the bonds from Oct. 1, payable semi-annually. Such extension has been tentatively agreed to by holders of all of the first mortgage bonds and a large number of first consolidated mortgage bonds, all upon condition that all holders of the first consolidated mortgage bonds likewise consent to the extension.

**Wants Receiver for Connecticut Line.**—Application for the appointment of a receiver for the Hartford & Springfield Street Railway, Warehouse Point, Conn., has been made to Judge W. S. Case in the Superior Court by counsel acting for W. C. Mason & Company, Hartford, who represent that they have a claim of \$2,500 against the railway for coal delivered to it. The hearing has been set for Sept. 30. The company operates about 48 miles of track. The road is bonded for only \$20,000 a mile, and its capitalization includes \$285,000 of preferred stock and \$500,000 of common. In 1917 an inventory by Sloan, Huddle, Feustel & Freeman, Boston, showed a total value of \$1,290,125, based on the prices of normal times. Last spring the company increased fares in each of its zones from 6 cents to 7 cents. At that time George S. West, treasurer of the company, said that the company was not then earning its interest charges and that no dividends had been paid on the common stock since the first year of operation. Unless earnings could be materially increased Mr. West said a receivership was likely. From 1901 to 1908 only about 6 per cent was paid on the preferred stock; from 1908 to 1912 less than 3 per cent, and since 1912 nothing.



# Traffic and Transportation

## Columbus Case Dismissed

New and Difficult Conditions Do Not Give Railway Right to Terminate Contract With City

In a written decision which reached the clerk of the United States District Court at Columbus, Ohio, on Sept. 21, Judge D. C. Westenhaver of the United States District Court at Cleveland announced that he had no jurisdiction to entertain the petition of the Columbus Railway, Power & Light Company, asking that the city be restrained from interfering with the company's practice of charging a 5-cent fare and 1 cent for transfer, instead of selling eight tickets for a quarter, as provided in the franchise. Judge Westenhaver heard the case recently at Columbus, and this decision operates as a dismissal.

### CONTRACT MUST BE UPHELD

The court in commenting on the case held that the new and difficult conditions which have arisen as the result of the war do not give the company the right to terminate its contract with the city. He said that contracts must be upheld and some other way must be found temporarily to aid companies affected by conditions which could not be foreseen at the time the contracts were made and over which the companies concerned have no control at the present time. Costs of materials and labor have increased greatly as a result of the war and insolvency may threaten, but such a condition was not sufficient to give the court jurisdiction, in view of the binding contract which existed. According to the court, prolonged operation under present conditions was manifestly impossible. If something was not done within a reasonable time, the President, by the power vested in him as commander-in-chief of the Army, must take over and operate the property at a fare yet to be fixed. The court added that such a proceeding would not be creditable to an independent, democratic city or a well-managed company.

### TO CONTINUE FIVE-CENT FARE

Samuel G. McMeen, president of the company, has announced that the 5-cent fare will be continued. Where passengers insist upon buying tickets at the rate of eight for a quarter, they will be allowed to ride free. However, application has again been made to the Council for an increase in fare.

City Attorney Scarlett is preparing to ask the United States District Court to dismiss the suit of the Eastern bondholders, who have asked for an injunction to prevent the city from forcing the company to accept the old rate of fare of eight tickets for a quarter. He

is said to hold the opinion that the decision already rendered covers this case also, but attorneys for the company say that this later petition contains several points that were not covered in the suit just decided.

The company served notice on Aug. 20 to the effect that it would increase fares to 5 cents with 1 cent for each transfer the next day, after having tried in vain for months to induce the City Council to grant an increase that would cover the additional operating expenses brought about by war conditions. At the same time the company declared its intention to surrender its franchises and a little later filed suits in the Federal Court to enjoin interference with the operation of its cars.

## Hearing on Chicago Fare Petition

The first hearing on the petition for a 7-cent fare filed by the Chicago Elevated Railroads on Aug. 30 was held before the Illinois Public Utilities Commission on Sept. 23 at Chicago. The chief witness for the elevated lines was Britton I. Budd, president. The city of Chicago and the Cook County Real Estate Board presented witnesses in opposition.

The company presented exhaustive exhibitions showing the increased costs of materials, labor, etc., together with a list of fare increases in other cities. Mr. Budd stated that in his opinion the 7-cent fare would result in an increase in gross revenue not exceeding 20 per cent or \$2,000,000, while the petition of the company as abstracted in the issue of the *ELECTRIC RAILWAY JOURNAL* for Sept. 7, page 436, showed that \$2,447,000 would be required. Testimony also brought out that, based upon the valuation of the property as made by the city, the company had earned 5 per cent during the past year, and that with increased costs, if no fare increase should be granted, the return on the investment for the present year would be only 0.9 per cent.

A feature of the hearing was the presentation of a resolution by a delegation of ten employees of the company stating that 5000 employees joined with the company individually and collectively in urging the commission to grant the increase asked. The employees are also actively using their influence with the public with whom they come in contact on the trains and in the stations to create a favorable attitude as regards the proposed 7-cent fare.

The cross-examination of the case will be held on Sept. 30, at which time the case will probably be closed. Argument for a motion on an emergency order will be held at Springfield the latter part of the week ending Oct. 5.

## Court Upholds Higher Fare

Sees the Urgent Need for Increased Rates for the Rochester-Charlotte Line

The New York State Railways, Rochester Lines, has won its fight for a higher fare between Rochester and Charlotte. Supreme Court Justice George A. Benton in Rochester has handed down a decision in the case of the municipality against the company, in which he holds that a 5-cent fare is confiscatory because the company cannot operate on that basis without a loss. The Public Service Commission, Second District, can determine what is a just and reasonable fare. An appeal from the decision will be taken by the city.

The city's attempt to force the Rochester Lines of the New York State Railways to carry passengers between Rochester and Charlotte for a 5-cent fare began in 1915 when the bill annexing Charlotte to the city was passed by the State Legislature. The bill became effective on Jan. 1, 1916, and provided that the fare should not be more than 5 cents. An injunction was granted later by Justice Sawyer in the Supreme Court of Monroe County which prevented the enforcement of a 5-cent fare. Since that time the company has been collecting a 10-cent fare and giving each passenger a 5-cent rebate coupon which would be cashed by the company providing the 5-cent fare was upheld by the courts.

In his opinion, Justice Benton holds that the claims made by the city in the rate proceeding are on their face fallacious and says "that the concrete question to be answered is: will the statute reducing the fare to 5 cents lessen the revenue below a fair and reasonable return? If the evidence shows that the result will be no revenue and an annual deficit unquestionably the statute is void. It takes property without compensation and denies to the New York State Railways the equal protection of the laws.

"The figures and calculations are pre-war experiences. Equity requires a court to make its decrees under conditions as they are at the time of trial. It is common knowledge and so a matter of judicial notice that while there is now congestion of traffic, there is also an increasing struggle for existence by railway corporations. Trolley stockholders lose their investments. Bondholders surrender to the company percentage of their holdings—bonds are harder to float even at higher rates or reduced quotations. There are receiverships, foreclosures of trust mortgages, actual or imminent, a constantly increasing cost of labor and material, and an increasing rate for both freight and passengers. At such a time a statute cutting rates in two can have but one effect. Manifestly, there should be a fair adjustment equalizing the rights of the corporation and the public."



## President McCulloch Another Zone Advocate

### Routs Hobgoblins of Precedent, Effect on Real Estate and Collection Methods, Causing Concern to System's Opponents

In a recent communication to the State Public Service Commission of Missouri the United Railways, St. Louis, Mo., made a report as to the financial results of the operation of the road for two months under the increased rate of wages and the 6-cent fare. It showed that, assuming the same riding conditions, rate of wages and rate of fare continued during the balance of the year, the company was piling up a deficit which would probably be considerably more than \$1,000,000 for the year of 1918.

The company dwelt on the need for increased revenues and suggested that these increased revenues might be deprived from a flat increase in fare or from the adoption of a zone system. A suggestion as to a zone system for the city of St. Louis, together with the advantages of the zone system, both from the standpoint of the company and the passengers, was set forth. The suggestion of the zone system resulted in considerable discussion of the matter, and some criticism. The principal points in the criticism are two: First, that the adoption of the zone system would upset present realty conditions; and, second, that such a system was not in common use in American cities, and would be difficult to put in operation. In this connection Richard McCulloch, president of the company, has made the following statement:

"As to the first criticism—it is a well-known fact that much of the growth in American cities has been spasmodic—one portion of the city growing at the expense of the other. It is a frequent complaint by real estate owners that there is no investment stability in residence property on account of the disposition of the people, aided largely by eloquent real estate agents, to abandon one part of the city for another. It may be desirable for those who wish to live with ground around them, to move far out where such property may be obtained. There are many, however, and this number is increasing, who desire to live in flats and apartments, and for these there is not a better or more convenient location than the territory just east of Grand Avenue, and similar locations in the north and south of the proposed first zone. Those who wish to live in flats gain nothing by going farther out, and any zone system which makes riding cheaper in the heart of the city will have the immediate effect of rehabilitating this portion of the city as a residence section. The dilapidated and abandoned condition of the heart of the city is properly a cause of humiliation to everyone interested in the city's appearance.

"The criticism that the zone system is not in common use in American cities has no weight. Every day we are do-

ing things differently from the way they were done last year, and many much more radical changes in our habits and customs will have to be made before the war is over. Many of these changes are distinctly advantageous and the advantage had been previously recognized, but it needed the pressure of war times to break down old customs and cause us to act. The world is moving rapidly at the present time, and he who gets in the way of progress is apt to suffer. Amazing changes have been made in much more important matters during the past few years, and if the zone system possesses merit, a mere question of the collection and accounting of fares should not be an insuperable obstacle.

"In order to put this system into effect a radical change in the method of collecting and accounting for fares would be necessary. The pay-as-you-enter fare system would probably be changed to a pay-as-you-leave system; in order to minimize congestion it might be desirable to use the pay-as-you-enter system in one direction of travel and the pay-as-you-leave system in the other. Many details would have to be developed, but we can state positively that the system is workable and has advantages, and we can further state that the United Railways organization has plenty of talent to put it into operation.

"The zone system has two self-evident advantages from the standpoint of the passengers and property owners. First, each passenger would pay for his ride in proportion to its length; and, second, it would tend to stabilize realty values, as one part of the city would not be built up at the expense of another."

### Seven Cents in Ogdensburg

The Ogdensburg (N. Y.) Street Railway has been charging a 7-cent fare between any two points on its lines and selling six tickets for 35 cents or four for 25 cents since last May under an order of the Public Service Commission for the Second District. The order also provided that special tickets presented between 6.30 and 7 a.m., or 5.45 and 6.30 p.m., be sold in lots of 1000 for \$50. It was still further provided that the latter tickets were good for use only by the purchaser, members of his family or employees. Children under five years, accompanied by parents or guardian, are carried free, children over five years at full fare, and only hand baggage is carried.

This determination and order, the commission said, might be reopened at any time after Nov. 1, 1918, if it be made to appear to the commission that the controlling reasons for allowing an increase in fares, in excess of those which otherwise would legally obtain, no longer exist.

Ogdensburg imposed no restriction by franchise or otherwise. The commission's memorandum, accompanying the order, reviewed the operating revenues, and operating expenses from 1913 to 1917.

The City Council passed a resolution recommending that the company be permitted to charge the rates of fare which the commission determined to authorize, for a period of six months from May 1.

The company's tariff met with the provisions of the managers of the St. Lawrence State Hospital relative to reduced fares for hospital employees.

## Twenty-four Fare Increases

Supplementary List Issued by American Association Shows This Number Since July

Revised figures of rate advances granted electric railways throughout the United States and Canada up to Sept. 15, compiled by American Electric Railway Association, show that twenty-four cities have granted the local railways higher rates since July 1, 1918. Figures do not include interurban lines. According to the association 246 increases had been granted up to July 1, and with the additions since that time, the total number of cities now paying higher rates for railway service is 270.

The majority of increases are to a 6-cent fare. Denver, Col., with a population of 260,800, is the largest city to go on a 6-cent basis since July. Oakland, Cal., Scranton, Pa., and Salt Lake City, Utah, only recently granted the local railways permission to charge 6 cents. With the addition of Troy, Cochoes and Watervliet, practically all the up-State cities centering about the capital city of New York are now paying 6 cents, including Albany and Rensselaer. Increases granted since July 1 follow:

City	Population	Rate (cents)
Norristown, Pa.	31,401	8
*Tacoma, (privately owned lines)	112,770	7
Edmonton, Alta. (municipally owned)	75,000	7
Alton, Ill.	22,874	7
Hattiesburg, Miss.	16,482	7
Grand Forks, N. D.	15,837	7
Denver, Col.	260,000	6
Oakland, Cal.	198,604	6
Scranton, Pa.	146,811	6
Salt Lake City, Utah	117,399	6
Troy, N. Y.	77,916	6
East St. Louis, Ill.	74,758	6
Berkeley, Cal.	57,653	6
Lancaster, Pa.	50,583	6
Macon, Ga.	45,254	6
San José, Cal.	38,902	6
Fresno, Cal.	34,858	6
Alameda, Cal.	27,732	6
Cochoes, N. Y.	25,211	6
Watervliet, N. Y.	15,546	6
Palo Alto, Cal.	.....	6
Richmond, N. J.	.....	6
Wildwood, N. J.	.....	6
Springfield, Mass.	51,550	†

\*Municipally owned lines in Tacoma now charge a straight 10-cent fare.

†Reduced rate tickets abolished. On Sept. 16 zone system begun with 6-cent minimum fare.

This compilation of the association supplements the list previously compiled and published in the ELECTRIC RAILWAY JOURNAL for Aug. 17, page 309.



## Two Points of View

Accountants Who Inquired Into Rochester Situation Reach Very Different Conclusions from Same Facts

Unless the New York State Railways, Rochester Lines, is allowed to increase the rate of fare in Rochester from 5 cents, the company will be forced into the bankruptcy court, according to a report made to the business interests of Rochester by Price, Waterhouse & Company, accountants, who have been making an investigation into the financial conditions of the company. The investigation was made at the instance of many of the largest and most influential retail merchants and manufacturers of the city, who believed that the investigation by the municipal authorities was unfair to the company and the business interests of the city. The report of the municipal authorities maintained that the present 5-cent fare provided a sufficient return on the company's investment.

The report of Price, Waterhouse & Company shows that there will be an estimated deficit this year in the operation of the New York State Railways of \$1,716,510 of which \$524,472 will be the deficit on the Rochester lines, which include the Rochester & Eastern, the Rochester & Sodus Bay and lines to lake resorts.

Copies of the report have been filed with the Mayor and the city law committee. In the communication to the Mayor, the city's businessmen say that the report is made in the spirit of fair play only and to arrive at the justice of the company's request for an increased fare.

### WAGE INCREASE \$693,000 FOR YEAR

In arriving at the conclusion with respect to the deficit, the new report has considered the cost of replacements, higher cost of labor through wage increases and other items not included in the Scudder report, made for the municipal authorities. The wage increase of the Rochester Lines alone, based on the payroll of April 30, 1918, amounts to \$693,000 yearly. J. F. Hamilton, general manager of the company in a statement says that \$500,000 should be spent immediately in replacements for the good of the service. He contends that the company is unable to meet the wage increase, let alone make needed replacements.

The law committee of the Rochester Common Council gave a hearing on Sept. 19 on the report of M. & L. W. Scudder, accountants engaged to examine the financial condition of the traction company. The Scudder report was denounced as unfair to the company by many of those who attended the hearing. Another hearing will be held at which the Price-Waterhouse report will probably be considered so as to determine the reason why such a big difference should be shown in the company's financial condition as revealed by the two reports.

The concluding paragraph of the report of the city's businessmen says:

"The only interest of the undersigned in any action to be taken by the city is their interest in the city as a whole, but that interest leads us to urge that the responsibility placed upon the city government by this situation demands a decision which shall prevent the collapse of railway service."

## Government Credit Urged

Massachusetts Commission Sees in Such Action by Government Aid in Handling Freight

Development of electric railway freight and express service through government credit was advocated by the Public Service Commission of Massachusetts in a report Sept. 19 to the United States Railroad Administration on "Railroad Conditions in Massachusetts Under Federal Control."

The commission's investigation led to the conclusion that through freight is being handled with better dispatch than formerly, although it has increased in volume. The railroad embargoes have caused severe financial loss to New England industries, and have also caused diversion of much business to express companies, producing incidentally an unfavorable effect upon passenger service. There is still much complaint that freight service is slow and unreliable, especially less-than-carload freight, the outstanding cause being the shortage of labor at freight houses and transfer points.

Considerable local freight is now moved by motor truck or street railway. Much more would undoubtedly be moved by electric railways, the commission states, if such companies were in position to supply the necessary equipment. On this point the report says:

"We believe that the authorities at Washington might well give consideration to the lending of government credit to these companies for the purchase of additional freight equipment upon a priority basis. Eastern Massachusetts is covered by a network of electric railways which often provide direct routes between important centers, where the steam railroad routes are circuitous and transfers are necessary. Days are frequently consumed on such routes in moving freight a comparatively short distance. Clearly the employment of freight cars in such service is wasteful and opposed to all standards of wartime conservation. If the electric railways were able to provide the needed service by the direct routes, much steam equipment could be released for service where it could be used more economically and efficiently.

"The report also touches upon the desirability of the electrification reconstruction and improvement of the passenger and terminal facilities in Boston, though it does not discuss this as a war measure."

## Co-operation in Grand Rapids

Grand Rapids Paper Helps Local Railway to Make Its Fare Case Plain

The City Commission of Grand Rapids, Mich., has passed an ordinance submitting the question of a 7-cent fare for the Grand Rapids Railway to the people at the November election.

A feature of the appeal of the company has been the unusual publicity given by the company itself to its own affairs and the spirit in which the appeal has been received by the newspapers. Among the statements was one containing three tables covering earnings, securities issued and taxes.

The statement of earnings showed gross receipts, operating expenses, taxes, amortization and sundries, depreciation charges, bond interest, total charges, net earnings and dividends paid from 1891 to 1897.

The statement of capital liabilities covered the same period. In every year since 1891 has the plant investment been in excess of the total of stocks and bonds. For instance, in 1917 the plant investment stood at \$8,114,925 while the total of stocks and bonds was \$7,700,000.

In commenting on this statement the *Grand Rapids News* said:

"The *News* presents herewith, in full, the Grand Rapids Railway's report to the City Commissioners, upon which it bases its claim for a 7-cent fare. We believe it fair to the city and fair to the company that every opportunity be given the citizen to understand the situation, to know how the railway was organized financially, what it has done under its franchise, what it costs to operate, what profits have been earned, and how the company stands to-day.

"This report contains facts from the past and estimates for the future. Compare them at your leisure, study them, as you would study your own trial balance or your house account.

"There is little difference between this report and a similar report or any other business in our city. There is a certain income and a certain outgo. As furniture is set aside and discarded, clothes worn out, depreciation is figured as a legitimate cost.

"Study these figures with an open mind. It takes a given amount to run this business, and it receives a fairly well-established income. It is entitled to a fair return on the investment.

"You may have to vote on this question, and the more you know about it, the more intelligent will be your vote. Keep these figures for comparison with statements for and against this increase.

"Within a few days the *News* will print two editorials based upon this report. One will be for the city and one for the company. They will contain arguments set forth by the most competent minds, who have had anything to do with the problem. You will need these figures for reference."



### Six Cents for Springfield, Mass.

Following conferences between representatives of the Springfield (Mass.) Street Railway, the Massachusetts Public Service Commission and representatives of municipalities served by the company, a new schedule of rates was placed in effect on Sept. 16 in which passengers on the city lines in the central zone will pay a 6-cent fare in place of the former 5-cent unit. In the second zone established by a recent decision of the commission the 6 $\frac{3}{4}$ -cent rate gives way to a 7 $\frac{1}{2}$ -cent rate (six tickets for 45 cents), and in the outer territory the former 8 $\frac{1}{2}$ -cent rate gives way to a new 9  $\frac{2}{7}$ -cent rate (seven tickets for 65 cents). On sections of the road where a rate of 2 cents a mile has been in vogue, a new rate of 2 $\frac{1}{2}$  cents a mile has been adopted.

These rates were agreed upon as a modification of the schedule proposed by the company in its tariff filed with the commission a few weeks ago, and in view of the compromise reached the commission has found it necessary to issue no formal approval of the rates now established by mutual agreement.

### Mr. Richey Will Study Boston Fare Problems

Albert S. Richey has been retained by the trustees of the Boston (Mass.) Elevated Railway to make a study of the various fare plans which might be applied to the business of that company. It is quite probable that a change must be made from the 7-cent flat fare, established by the trustees shortly after the road passed under State control. The feasibility of various modifications of the flat fare and zone systems will be determined, as affected by the applicability of various fare collection schemes and the characteristics of the several routes and systems of underground, elevated and surface transit. Definite recommendations will be made as to a system of fares which shall be properly applicable to Boston conditions, due consideration being given to the requirements, both of the company and the public.

### May Renew Transfer Charge Plea

Frank Hedley, vice-president and general manager of the New York (N. Y.) Railways, was the chief witness on Sept. 24 in the first session of the hearing before the Public Service Commission of the First District of the reasons why service on the lines of the company has been curtailed recently. Commissioner Ordway, referring to the suggestion that cars be kept in the carhouses in the early morning hours, asked whether the service would not be made more comfortable if fewer cars were run after midnight and more in the daytime. Mr. Hedley said he did not favor entire discontinuance after midnight, but that by diminishing the night service and putting more crews on in the day rush hours the

company could serve the public better and at the same time improve its finances.

James L. Quackenbush, the company's counsel, recalled that the company applied last year for permission to charge 2 cents for transfers and abolish certain transfer points. He believed that if this permission was granted now it would relieve the financial condition and postpone bankruptcy.

Commissioner Hubbell said:

"If the company thinks it advisable to revive that proposition it would be hospitably entertained by the Public Service Commission."

John Chandler Cobb, representing the income bondholders, said he had been trying to have the transfer project revived. Mr. Cobb was the originator of the idea that owl service be suspended entirely.

### Seven Cents for Public Service

The Board of Public Utility Commissioners of New Jersey on Sept. 27 issued an order permitting the Public Service Railway, Newark, to increase fares from 5 cents to 7 cents, with 1 cent additional for a transfer, from Oct. 15 to March 31 next, and then to charge a flat cash fare of 6 cents, with 1 cent for a transfer.

The company originally asked for a 7-cent fare, with 2 cents for a transfer and 1 cent for a transfer on a transfer. As a result of this application the company received permission to charge 1 cent for a transfer. It soon renewed its appeal to the commission and it is as a result of this renewed application that the decision of Sept. 27 was handed down. Under directions from the commission the company is now engaged in zone fare studies.

## Transportation News Notes

**Six Cents for Kankakee.**—The Kankakee (Ill.) Electric Railway has received permission to charge a 6-cent fare. Books carrying twenty rides will still be sold for \$1.

**Increase in Anderson, S. C.**—The Southern Public Utilities Company increased its fare in Anderson, S. C., from 5 cents to 7 cents on Sept. 16 with the approval of the City Council.

**Wants Sleeping Car Advance.**—The Illinois Traction System, Peoria, Ill., has filed a petition with the Interstate Commerce Commission asking for an increase in sleeping car fares between Springfield, Ill., and St. Louis, Mo., of 25 cents to 50 cents.

**Duluth Wants Relief.**—A petition from the Duluth Street Railway, controlled by the Duluth-Superior Traction Company, Duluth, Minn., for an

increase in fare was presented at the meeting of the City Council on Sept. 16. No rate was named.

**Fare Request Withdrawn.**—The Easton Transit Company, operating between Easton, Nazareth, Bethlehem and South Bethlehem, Pa., and several cities in Warren County, N. J., has withdrawn from the Board of Public Utility Commissioners of New Jersey its request for an increase in fares from 5 cents to 6 cents in each zone.

**Commission Suspends Increase.**—The Public Service Commission of Illinois, has suspended until Feb. 8, 1919, the proposed increases in interurban fares proposed by the Keokuk (Ia.) Electric Company from Keokuk to Hamilton and Warsaw on the Illinois side of the Mississippi River.

**Fare Increase Suspended.**—The proposed advances in fares from 5 cents to 7 cents, filed by the Tri-City Railway of Illinois and the Moline, Rock Island & Eastern Traction Company, affecting Rock Island, Moline, East Moline, Milan and Silvis, have been suspended until Jan. 29, 1919.

**Oakland Likes Tickets.**—On request of a large number of patrons the San Francisco-Oakland Terminal Railways, Oakland, Cal., will put 6-cent tickets on sale, as soon as arrangements can be made for doing so. The tickets will be sold in blocks of five for 30 cents, ten for 60 cents, etc., up to fifty for \$3.

**Six Cents Asked in Anniston.**—The Alabama Power Company on Sept. 16 filed with the Public Service Commission a petition for an increase in fare on the lines operating in Anniston and vicinity, from 5 cents to 6 cents. The commission decided to hear the petition on Sept. 30.

**Joliet & Eastern Fare Increase.**—The Public Utilities Commission of Illinois, has authorized the Joliet & Eastern Traction Company, Joliet, Ill., to increase passenger and freight rates to conform with rates charged by other carriers engaged in like service in the territory of the company. The order was effective Sept. 16. It will be continued in force until six months after the termination of the war.

**Increase for Vermont Company.**—At a conference between officials of the Barre & Montpelier Traction & Power Company, Montpelier, Vt., and the Selectmen of Berlin and City Councils of Barre and Montpelier held on Sept. 14, the Berlin Selectmen and the Montpelier Council voted to grant a raise in fares to the company from 5 cents to 6 cents in the cities and from 25 cents to 30 cents on interurban traffic. It is expected that the Council of Barre will take similar action.

**Skip Stops Extended in Philadelphia.**—The skip-stop system is now effective on the lines of the Philadelphia (Pa.) Rapid Transit Company in the central district of Philadelphia, in all of West Philadelphia and in the district be-



tween the rivers and from Spring Garden Street to Columbia Avenue. The extension into the latest district, between Front Street and the Schuylkill River and from Columbia Avenue to Lehigh Avenue, put into effect on Sept. 20, includes about one-half of the city under the skip-stop system.

**Six Cents for Trenton.**—An order was entered on Sept. 25 by the Board of Public Utility Commissioners of New Jersey, permitting the Trenton & Mercer County Traction Corporation to withdraw the sale of six tickets for a quarter and fixing an emergency rate of 6 cents to be charged on all its lines operating in Trenton and county. The hearings before the commission in this case were concluded early in July. The presentation of the last of the testimony was reviewed in the *ELECTRIC RAILWAY JOURNAL* for July 20, page 131.

**Mr. Witt in Youngstown.**—Peter Witt, formerly street railway commissioner of Cleveland, Ohio, is in Youngstown to assume the duties of the position to which he was recently appointed in connection with the inquiry by the city into the local railway situation on the lines of the Mahoning & Shenango Railway & Light Company. The ordinance under which the appointment was made is to become effective on Oct. 3, but Mr. Witt is engaged on the preliminaries in order that any recommendations made by him, if adopted for use, may be put into effect just that much earlier.

**Denver Interurban Increase.**—In addition to the authorization of a 6-cent fare for adults and a 3-cent fare for children on the city lines of the Denver (Col.) Tramway, in lieu of the former charges of 5 cents and 2½ cents respectively, the State Utilities Commission has also authorized the adoption on all tramway interurban lines of the rates contained in General Order No. 28 of the Director General of Railroads of the United States Railroad Administration. Under the latter order, the Denver Tramway is permitted to establish a flat rate of 3 cents per mile on its interurbans with a 10 per cent increase in commutation rates.

**I. T. S. Rate Advance Sustained.**—Judge English in the United States District Court at Danville, Ill., on Sept. 17, granted a permanent injunction restraining the State of Illinois from interfering with the Illinois Traction System in the proposed increased passenger rates above 2 cents per mile, with 3 cents as the maximum that can be charged. The evidence placed before Judge English in the passenger fare case was the same as that heard by the State Utilities Commission recently, when the electric lines were granted the same freight rates as those charged by steam roads.

**Increased Fare Ordinance Being Drawn.**—The Board of City Commissioners of Galveston, Tex., by unanimous vote has instructed the City At-

torney to draft an ordinance to be passed at a later date which shall permit the Galveston Electric Company, effective on Oct. 1, to charge fares at the rate of 6 cents instead of 5 cents, and 3 cents for half fares instead of 2½ cents, as now charged. The ordinance will also require the Galveston Electric Company to pay the city of Galveston a tax of 1 per cent on its gross income. The request for increased fares was presented before the commission by Alba H. Warren, general manager of the company.

**Schenectady Fare Hearing Postponed.**—The hearing before the Public Service Commission for the Second District of New York, scheduled for Sept. 24, upon the tariff schedule of the Schenectady Railway in which increased rates for passenger traffic are proposed on the various divisions of the road, has been adjourned to a date to be fixed later. The adjournment was at the request of the railway, which informed the commission that it would be impossible for the company to have its case ready for presentation on Sept. 24. The railroad suggested that in about two weeks it will be ready to present its proof. The tariff of the company has been suspended until Nov. 1.

**Solving New York's Street Traffic Problem.**—The street separation plan of Police Commissioner Enright, by which commercial and pleasure traffic are restricted to specified highways, has recently been applied in New York City. Henceforth passenger automobiles and carriages will not be permitted on streets given over to commercial traffic, nor will commercial automobiles or horse-drawn trucks be allowed on streets devoted to passenger traffic. Vehicles having business on streets from which they are barred under the new plan, must enter and leave at the nearest intersecting street. The rule does not apply to the following: Fire and police department vehicles, postal, hospital and military services, and newspaper trucks.

**Louisville Suburban Case Continued.**—After passing on several preliminary motions in the complaint of the Suburban Protective Association against the Louisville & Interurban Railroad, protesting against the increased passenger rates, the Kentucky State Railroad Commission, in session at Louisville on Sept. 18, adjourned to meet on Sept. 25 for further hearing. Chairman Laurence B. Finn held that practically the only question at issue was whether the increase was extortionate. The complainants are seeking to have restored the rate that was in effect before July 1, 1918. The company contends that there is no law to imply a contract between the company and the persons who have built homes on the various lines to require the road to maintain the original rate for all time to come.

**Sept. 30 Date of Houston Increase.**—At a special meeting of the City Council on Sept. 19 the ordinance prop-

viding for a 6-cent fare on the cars of the Houston (Tex.) Electric Company was finally passed. The ordinance becomes effective on Sept. 30. As noted in the *ELECTRIC RAILWAY JOURNAL* for Sept. 21, page 527, under the ordinance children's fare is raised from 2½ cents to 3 cents. At the same time Mayor Amerman issued a formal statement signed by all members of the Council, setting forth the reasons for granting the increase. Reference was also made to Lamar Lyndon's report on the condition of the company, showing that in placing the earnings at \$306,618 over expenses, no account had been taken of replacements, which it is estimated would bring the earnings of the company down to a return of only 3.6 per cent per annum.

**Missouri Fare Argument Nov. 7.**—By agreement of all parties concerned the court case affecting 6-cent fares in St. Louis and Kansas City, Mo., will be set for hearing in the Supreme Court of Missouri in banc on Nov. 7. The Kansas City Railways, the United Railways, St. Louis, and the Public Service Commission all filed motions asking the consolidation of the three appeals into one case. This will be granted by the court and one ruling will cover the entire controversy. In a verbal decision on Aug. 31 Judge Slate of the Cole County Circuit Court held that the Public Service Commission of Missouri exceeded its authority in permitting the United Railways to charge a 6-cent fare. His order would have restored 5-cent fares in both St. Louis and Kansas City, but Chief Justice Bond of the State Supreme Court on Sept. 17 authorized the companies to continue to charge 6 cents and to give rebate slips until the Supreme Court passes upon the case.

**Capital Traction Plea Presented.**—The application of the Capital Traction Company, Washington, D. C., to the Public Utilities Commission of the District for financial assistance was presented to the board under date of Sept. 23. The appeal says: "It is requested that the existing tariff for the transportation of passengers be amended, and the rate of fare increased in amount sufficient to give to the company an ability to operate to the benefit of the public, to maintain its credit and at the same time reasonably to preserve the rights of its stockholders. It is believed that on thorough investigation and fair consideration the commission will conclude that a uniform cash rate of 5 cents per passenger per trip, with existing transfer privileges, will be certainly required to meet present needs and conditions, and to place the company in position to respond fully to the growing demands of the public and of the government, under the stress of war conditions." As noted in the issue of the *ELECTRIC RAILWAY JOURNAL* of Sept. 21, page 526, an application for a flat 5-cent fare has been made by the Washington Railway & Electric Company.



## Personal Mention

F. C. Chambers, electrical engineer and engineer of overhead construction of the Des Moines (Iowa) City Railway, has also been appointed master mechanic to succeed M. M. Lloyd.

G. H. Garrison, treasurer, general manager and purchasing agent of the Cortland County Traction Company, Cortland, N. Y., has also been appointed secretary of the company to succeed H. A. Dickinson.

S. G. Strickland, federal manager of the Chicago & Northwestern Railroad, has had his jurisdiction extended to the Fort Dodge, Des Moines & Southern Railroad, Boone, Ia., and the Waterloo, Cedar Falls & Northern Railroad, Waterloo, Ia. F. W. Johnston, treasurer and auditor, has been appointed federal treasurer.

E. C. Sherwood has been appointed master mechanic of the Easton (Pa.) Transit Company to succeed W. C. Kline, whose appointment to the Lehigh Valley Transit Company is referred to elsewhere in this department. Mr. Sherwood has lately been superintendent of equipment for the Manhattan & Queens Traction Corporation, Long Island City. Before that he held the title of general foreman of equipment of the company. He was previously general foreman of the shops of the Coney Island & Brooklyn Railroad, Brooklyn, N. Y., now included in the system of the Brooklyn Rapid Transit Company. Previous to that time he was with the New York (N. Y.) Railways as general foreman in the mechanical department.

W. C. Kline, who has been master mechanic of the Easton (Pa.) Transit Company since July, 1917, has been appointed superintendent of equipment of the Lehigh Valley Transit Company, Allentown, Pa., which controls the system at Easton, to succeed the late R. C. Green. Mr. Kline entered electric railway work in the shops of the Metropolitan Street Railway, New York, under Thomas Mellen in 1901. In 1903 he resigned from that company to become general inspector with the Albany & Hudson Railroad, Rensselaer, N. Y. He continued with that company for several years and then engaged in shop work with the General Electric Company for two years. In 1908 he returned to New York with the New York Railways, the successor of the Metropolitan Street Railway, and served for four years as shop foreman and draftsman under William McIver, H. H. Adams and J. S. Doyle. In 1912 and 1913 Mr. Kline was connected with the Federal Storage Battery Company. From 1913 to 1916 he was with the Brooklyn Rapid Transit System as draftsman and general inspector.

### New Pacific Electric Vice-President

Herbert B. Titcomb, Long With Southern Pacific, Succeeds to Duties of Paul Shoup at Los Angeles

Herbert B. Titcomb, superintendent of the Stockton division of the Southern Pacific Company, has been elected vice-president of the Pacific Electric Railway, Los Angeles, Cal. Mr. Titcomb will be the executive in charge of the electric railway, as President Paul Shoup now has his office in San Francisco as operating executive of the Pacific system of the Southern Pacific. Mr. Titcomb has been an employee and officer of the Southern Pacific Company for the past twenty-nine years, working up from the position of agent and



H. B. TITCOMB

operator, through the engineering department, to that of superintendent of the Stockton division of the Southern Pacific, the position he has resigned to go to Los Angeles. As district engineer of the Southern Pacific Company in Los Angeles, Mr. Titcomb was in charge of construction of the Southern Pacific Railroad station. In announcing Mr. Titcomb's appointment, Mr. Shoup said that it would be impossible for him to deal personally with many of the problems that have heretofore come to him. Mr. Titcomb has announced that there will be no changes in the executive staff. He will make a survey of the entire system, partly to get better acquainted with it and partly to learn if any improvements are needed. He said that he hoped the new rates of the company, referred to at length in the *ELECTRIC RAILWAY JOURNAL* for Sept. 21, besides making up the deficit that has existed in past years, would yield sufficient revenue to provide for any improvements needed.

### Mr. Brush Leaves Boston

His Resignation from Boston Elevated Accepted—Made Vice-President of American International Corporation

Matthew C. Brush, formerly president of the Boston (Mass.) Elevated Railway, was elected vice-president of the American International Corporation at a meeting of the directors on Sept. 26. Announcement to this effect was made by Charles A. Stone, president of the American International Corporation. Mr. Stone said in part:

"Mr. Brush's association with the American International Corporation will be welcomed by the business men of both Boston and New York and it will bring him in touch with the New York business community and in turn tends to bring the American International Corporation, which has activities throughout the world, in closer touch with business men of Boston, with many of whom Mr. Brush is intimately associated.

"The public authorities of Massachusetts and the owners of the securities of the Boston Elevated Railway were all desirous that Mr. Brush remain in charge of the property after it had passed to public management and made him a most flattering offer to continue in charge of the property."

The resignation of Mr. Brush as president of the Boston Elevated Railway, which has been in the hands of the trustees since July 1, was accepted by them, at his request, at their meeting on Sept. 25, to take effect on Oct. 15, but he was granted a leave of absence until that date.

In the absence of a president, J. Henry Neal, vice-president, who has been more closely associated with Mr. Brush than any other officer of the company, has been designated as chief executive officer with the duties ordinarily devolving upon the president, until further action by the trustees.

## Obituary

Thomas J. Marlow, for thirty years superintendent of track construction for the Des Moines (Iowa) City Railway, died on July 20 from cancer of the stomach. Mr. Marlow was fifty-seven years of age. He lived in Des Moines for forty-five years.

Capt. William W. Baldwin, general passenger and freight agent of the New York, Westchester & Boston Railway, New York, N. Y., before he entered the army, was killed in action on Aug. 1. Captain Baldwin attended the Plattsburg Officers' Training Camp in the summer of 1917, and was commissioned a first lieutenant and assigned to a regiment in the Rainbow Division. He was born in Burlington, Ia., in 1883, and was graduated from Cornell University in 1905.



# Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

## Railway Lamp Market Favorable

Requirements Can Be Filled Without Serious Trouble If Advance Orders Are Well Placed

The incandescent lamp market is in an unusually satisfactory position at present to meet the requirements of electric railways planning to modernize their lighting installations. Last spring there was a serious shortage of lamps which was reflected in long deliveries on many sizes and types ordinarily carried liberally in factory and distributors' stocks. The central station companies were sharply restricted as to their orders, and for many months were supplied on little better than a hand-to-mouth basis. There has been an enormous demand for lamps from the Army, Navy and war plants, but this is being met by extraordinary efforts on the part of the manufacturers, and the whole electrical industry is benefiting from the increased productive and storage facilities lately placed in service.

Compared with the central station, the electric railway is only a modest consumer of lamps. This means that the requirements of the electric road as a necessary public utility can be filled without serious trouble if advance orders are well placed. The campaign against fuel waste is being waged on traction systems as well as elsewhere, and in their zeal to cut down energy consumption, some managers are overlooking their future lamp requirements. It is true that the provision of more switches for the subdivision and curtailment of shop and carhouse lighting service means that fewer lamps will be used, given the same standard of illumination, but there is to-day a need for improved lighting as well as for reduced fuel consumption in nearly all departments of the transportation business. In the shop the shortage of labor and high cost and scarcity of material dictate the utmost conservation of time and supplies, with minimum spoilage and maximum efficiency of repairs.

In the carhouse a greater degree of sectionalization than has formerly prevailed appears desirable in the face of present fuel demands, but with this sectionalization should go improved lighting from the standpoint of safety in carhouse movements, quicker inspection and cleaning. The cost of lamps is higher than has hitherto seemed normal, but it would be hard to point out any branch of railway service where a greater return is given for the expenditure than here. The attraction of traffic at the higher rates of fare now

generally prevailing is so important that it can scarcely be exaggerated as a merchandising measure, both for short-haul and long-haul service. With the coming of longer evenings, the pressure for better illumination is becoming more insistent.

The feeder market is in no condition to stand the purchasing demand of the electric railway as compared with the present lamp market; the time required for betterments to be analyzed and put into effect is nominal, and it is safe to say that not for many months has the opportunity been so favorable for the lamp buyer who confines his requisitions to standard sizes and who is willing to outline his needs reasonably in advance of their fulfillment.

## Coal Production Steady

Average Daily Tonnage Required for Remainder of Year but 2 Per Cent in Excess of Average for Coal Year to Date

Production of bituminous coal during the week ended Sept. 14 while considerably in excess of the week ended Sept. 7, due to the loss of time during that week on account of Labor Day, equaled the production during the week ended Aug. 31, according to the regular weekly report of the Geological Survey. Preliminary estimates place production during this week at 12,692,000 net tons, an increase over the week preceding of 13.2 per cent and over the corresponding week of last year of 15.7 per cent. The average daily production during the week ended Sept. 14 is estimated at 2,115,000 net tons, approximately the same as the daily average during the preceding week and considerably in excess of the daily average of 1,827,000 net tons during the week ended Sept. 14, 1917. The shortage for the coal year to date now amounts to 13,624,000 net tons and makes necessary an average daily production during the balance of the coal year of 2,379,000 net tons, or 2 per cent above the average daily production for the coal year to date.

Production of anthracite during the week of Sept. 14 is estimated at 2,088,000 net tons, 29.1 per cent above the production of the preceding week, and 4 per cent above the corresponding week of 1917. The daily average for the week of the fourteenth is estimated at 348,000 net tons against a daily average of 338,531 net tons for the coal year to date, and 334,290 net tons, the daily average for the corresponding period of 1917. Total production for the coal year to date is estimated at 47,733,000 net tons, an increase of 2.5 per cent over the same period of 1917.

## Competition vs. Co-operation

Washington Authorities Admit Soundness of Co-operation—Urge Pooling Among Industries

BY WINGROVE BATHON  
Washington Representative ELECTRIC RAILWAY JOURNAL

War throws into high relief many fundamentals. Our policy on big business has been to enforce competition. We could not dissociate co-operation from the probability of exploitation of the public. We admitted the economic soundness of co-operation, but our legislators were not equal to the task of establishing mechanism for securing the advantages and at the same time checking the predatory tendencies. The Sherman law and its successors were the best they could do. The shortcomings of these laws are now thrown into relief. Pooling—a crime hitherto under the law—is suggested by the government itself, while all manner of agreement between erstwhile competitors is urged by the authorities. The saving grace is price-fixing or the threat thereof if the co-operating producers are disposed to use their advantage against the public.

In other words, we have full co-operation, with just enough government control to protect the public. Germany learned how to do this years ago. It has taken a bitter war to force us to see the way.

So far, the clearest indorsement of pooling comes in an order from the Fuel Administration to the cement manufacturers. This is of particular interest to traction companies, due to the large increase in the use of this material. It is next to impossible to obtain steel now, and reinforced concrete is proving a valuable substitute.

The order provides, among other things, that if two or more manufacturers find that they can save fuel by using jointly their allotments, they may use, upon permission from the Fuel Administration, "at one or more of such plants to be operated by them jointly, sufficient fuel to manufacture 75 per cent of the aggregate of the average annual production of all such plants when operated separately, the manufactured product of such jointly operated plants being distributed to the individual manufacturers as may be agreed between them."

Attention is called to the last clause, regarding distribution of the product. Under this regulation, a company owning one of four mills in a given location could shut it down, disband its distribution organization and yet share in the



returns on cement to the manufacture and marketing of which it contributed only its coal allotment. It is just this sort of shutting down and pooling that the lime manufacturers have proposed to the War Industries Board, though their proposal includes also the restriction of distribution, to prevent cross hauling (such as is now enforced in the distribution of coal.)

These recognitions of the economic advantages of pooling and co-operation by a government which heretofore has

frowned on these practices are material gains to be put on the rather bare credit side of the war ledger. But if we hold the principles sound only for war-time, the gain will be slight. These practices should enter the structure of the remade laws that should follow the war. War has merely been the incident to show that we can secure the advantages of pooling and co-operation without also risking the assumption of the disadvantages that are incidental thereto.

## Efficient Scrap Marketing

### Present Conditions Warrant the Paying of More Attention to Discarded Material

The present high value of metal scrap and also of discarded equipment parts justifies vigorous efforts on the part of electric railway purchasing agents to see to it that the handling of such material is done efficiently. The problem of utilizing discarded material to the utmost is one for the superintendent of shops to solve, but better results can be attained where real co-operation exists between the maintenance and the purchasing departments than where the purchasing agent is interested only in the sale of scrap at the maximum price. Experience shows that there is more than one way in which to reclaim scrap and in the present state of equipment deliveries it is important to make sure that the company's own departments, and sometimes the manufacturer as well, cannot profitably use a given assortment of scrap in production or operation before letting it go to the junk dealers.

Well-operated roads are today keeping the flow of material to their scrap piles low, notwithstanding the temptation to yield to high prices. On such properties the purchasing department is keeping in close touch with the shops in order that wasteful sales may be avoided and material available for the scrap market disposed of at the most advantageous time. Observation of the handling of scrap on many roads shows that too little system is often employed in separating scrap material from that which can be salvaged and again in subdividing the contents of the scrap piles themselves. Assorted and segregated scrap almost always brings a much higher price than loose discarded material.

Better records of the kind and amount of scrap on hand, of what was done with scrap of different sorts in the past, the prices received and the parallel work of the purchasing department in procuring new materials to take the place of the old, are much needed. Duplicate records for the purchasing departments are quite as important in this connection as are the original data filed in the office of the shop superintendent.

As scrap material accumulates irregularly, arrangements should be

made for its inspection occasionally at local carhouses rather than to have routine examinations on a time basis. This can be done if the inspecting authority's route is scheduled on the basis of telephone reports or other information. By local examinations by a trained man, also, unnecessary transportation by scrap cars is cut out since a division can be made between those materials capable of being reworked at a central shop and those materials which should be sold. On a large system the proper accounting for scrap and the interchange of the necessary data between purchasing and maintenance departments justifies the attention of a skilled analyst of scrap conditions a good many hours a month.

#### IMPORTANCE OF KEEPING RECORDS OF SCRAP MATERIALS

Experience shows that unless a scrap record is arranged to secure a fairly extended degree of classification of material the data tend to become lost from sight in a mere mass of memoranda which is of little comparative value for subsequent use. A scrap record of the first order will show over a considerable period the classes of material running high and low in accumulation and sales value, and along with this goes the provision for a more extended bin classification than has hitherto been accepted as satisfactory. Progressive purchasing agents and shop superintendents no longer are content to dump scrap into heterogeneous assortments with little or no provision for the withdrawal of material which at the time being it pays to dispose of to the junk dealer.

In this connection there is a broad market for the use of electromagnets, for the manual handling of metal scrap is a relatively expensive job at the present high cost of labor. The interest on the investment in an electromagnet suited for electric railway yard and shop service is a small sum compared with the wages required to turn over scrap materials. As the season of severe tax upon equipment approaches it will pay to make a careful study of scrap conditions along the lines above indicated.

## Purchase of Rail Bonds a Little Below Normal

### Demand From the Mining Field Exceeds That From the Railway Industry

Bonding of track in preparation for the winter has evidently not yet begun in earnest as the manufacturers of bonds report normal or less than normal buying from the electric railways. One manufacturer reports very little railway demand for bonds, a second says that the demand is a trifle better than normal, a third gives 75 to 80 per cent as the proportion of normal buying, and so forth, but none reports any considerable increased activity. This is, however, very much in accordance with expectations, for it is an established fact that practically speaking there is no new track being built with the exception of extensions to shipbuilding works, munition plants and other war industries, together with a very few miles of other essential construction. This work is just enough to keep the sale of bonds up to a little less than normal.

All manufacturers of bonds, however, agree on the point that the demand from the mining field exceeds that of the railway industry. In other words the mine operators, especially in the coal districts, are going into the business of electric transportation of minerals on a large scale. The program of the Fuel Administration calls for an output of coal which had never been reached in peace times and, of course, the complete electrification of mines, has played its part in fulfilling this program. There has developed as a result a steady and comparatively large demand for rail bonds and, so far as the manufacturers are concerned, it has more than compensated for the decrease in railway buying.

In the matter of supplies, conditions also differ. Stocks being carried vary all the way from none at all to a larger supply than customary and consequently the time required for shipment ranges from immediate to three weeks. A period of four weeks is needed in which to fill orders for special rail bonds.

The supply of raw materials for the manufacture of bonds is of course limited but is said to be sufficient for all contemplated needs. As noted in previous issues of the Electric Railway Journal, the railways have been placed on the preferential list of industries, and materials therefore are quickly obtainable for the manufacture of bonds for essential construction and maintenance work.

The advance in the price of copper early in July advanced the price of rail bonds  $7\frac{1}{2}$  per cent. No authentic information is available as to how long the price of copper will remain as at present, but no further advance in the price of bonds is contemplated without another advance in the government price of copper.



## Franchises

**Mobile, Ala.**—The Mobile Light & Railroad Company has received a franchise from the City Commission to construct tracks on Conception, Texas, St. Emanuel, Delaware, Lawrence and Georgia Streets to the large shipbuilding plants which are being built in the southeastern part of the city. The necessary improvements in lines and cars with which to serve the plants will cost approximately \$110,000, of which 60 per cent will be loaned to the company by the Emergency Fleet Corporation.

**Waco, Tex.**—The Texas Electric Railway has asked the City Council for three new franchises on Austin Street, South Fifth Street and Washington Street.

## Track and Roadway

**Gary (Ind.) Street Railway.**—A loan of \$203,000 has been granted by the Government to the Gary Street Railway and the Gary-Valparaiso Railway for additional improvements.

**Louisville (Ky.) Railway.**—The Louisville Railway contemplates extending its Market Street line as soon as war conditions will permit.

**New Orleans Railway & Light Company, New Orleans, La.**—It is reported that arrangements will be made by the New Orleans Railway & Light Company with the New Orleans Belt Railway Company to operate street cars on the Belt line tracks. It is stated that extensions and improvements estimated to cost \$200,000 will be necessary.

**Butte (Mont.) Electric Railway.**—The Butte Electric Railway will lay a double-track system in Butte at once, to be ready for operation the latter part of this month. The new line will represent an investment of \$86,000, according to J. R. Wharthen, manager. It is believed the double track system will eliminate all traffic congestion and expedite transportation during rush hours.

**Cincinnati (Ohio) Traction Company.**—Anticipating the operation of the revised street railway franchise ordinance recently enacted by the City Council, W. C. Culkins director of street railroads, has taken preliminary steps to speed up the building of extensions provided for in the ordinance. In a communication recently addressed to the Cincinnati Traction Company Mr. Culkins requested detailed information as to the status of proposed extensions to the McMicken-Main, Sixth Street, and Warsaw Avenue lines, and to the suburbs of Pleasant Ridge, Kennedy Heights and Mount Washington. Legislation authorizing the first three named extensions has been enacted by the City Council and has been accepted by the traction company. The extension of the North Norwood line to Pleasant Ridge and Kennedy Heights was provided for in the former loop lease and revision ordinance held illegal by the Supreme Court of Ohio, and Mr. Culkins requests that it be considered immediately.

**Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.**—The construction of an extension is being considered by the Hocking-Sunday Creek Traction Company from its present terminus to the Court-house. It is estimated that the cost will be about \$35,000.

**Oklahoma Union Railway, Tulsa, Okla.**—The extension of the Oklahoma Union Railway from Tulsa to Keifer has been completed and operation will be begun at once. The line has been under construction for over a year. It will touch the Glenn oil field and the new Mounds oil district and will be essentially an oil field line.

**Lehigh Valley Transit Company, Allentown, Pa.**—The United States Housing Corporation has started the construction of 2100 houses just outside of Bethlehem, Pa., near the lines of the Lehigh Valley Transit Company operating to Easton. As soon as these are ready for occupancy additional service requiring about 2 miles of track will be necessary. The major portion of this will have to be double track.

Items under "Recent Incorporations," "Franchises," "Track and Roadway" and "Power Houses, Shops and Buildings" are classified under each heading alphabetically by States.

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

**Pittsburgh (Pa.) Railways.**—Judge Orr of the United States District Court of Pittsburgh has ordered the receivers of the Pittsburgh Railways to defer payment on certain of the fixed charges of the company and to divert the money to work of improvements and betterments. The sum of \$374,668 has thus been set aside. Of this amount \$201,400 will be used as follows: For bridge repairs, \$159,400; to finish a terminal loop near Hazelwood, \$10,000; to construct a new single track in Wheatland Street, \$30,000, and to construct a connection between California Avenue and Windhurst Street, \$2,000. In addition to this work there is an item of \$173,268 for improvements, betterments and new equipment already contracted for or under way.

**West Penn Railways, Pittsburgh, Pa.**—Plans are being made by the West Penn Railways for the construction of an extension from the west end of the track in the Sixth Ward, along West Otterman Street to the western end of the borough line.

**Tacoma (Wash.) Municipal Railway.**—The City of Tacoma has received a loan of \$237,000 from the United States Shipping Board, Emergency Fleet Corporation, for double-tracking its car lines to the shipyards, the purchase of new street cars and the construction of a new loop line within the city.

## Power Houses, Shops and Buildings

**Southern Pacific Company, Los Angeles, Cal.**—The Southern Pacific Company will erect a 60-ft. addition to its express warehouse at Beaumont, Tex., to cost about \$15,000.

**Pacific Gas & Electric Company, Sacramento, Cal.**—Plans are being considered by the Pacific Gas & Electric Company for increasing the capacity of its hydro-electric plant at Oroville.

**Danbury & Bethel Street Railway, Danbury, Conn.**—The Danbury & Bethel Gas & Electric Light Company is negotiating for the lease of the power plant and transmission lines of the Danbury & Bethel Street Railway, which it proposes to operate. In the event that the lease is effected, the railway company will purchase power from the lighting company.

**Connecticut Company, Hartford, Conn.**—A contract has been awarded by the Connecticut Company to C. A. Sibley, New Haven, for the erection of a two-story addition to its boiler plant, to provide for increased operations.

**Southern Railway & Light Company, Natchez, Miss.**—The installation of 500-hp. in boilers and other power equipment is reported to be under consideration by the Southern Railway & Light Company.

**Tidewater Power Company, Wilmington, N. C.**—Extensive additions and improvements, it is reported, are contemplated by the Tidewater Power Company including doubling the output of its power plants, installation of new equipment, etc.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—The Public Utilities Commission of Ohio has authorized the Northern Ohio Traction & Light Company to borrow \$750,000 from the B. F. Goodrich Company of Akron for the construction of a high-tension transmission line from Canton to Akron, over which energy will be supplied to the Goodrich company from the plant of the Central Power Company at Windsor, W. Va.

**Philadelphia (Pa.) Rapid Transit Company.**—Approval has been granted by the Public Service Commission of Pennsylvania of a contract entered into between the Philadelphia Rapid Transit Company and the United States Housing Commission, whereby the Government will finance a loan of \$1,740,000 to the company. The fund will be used for extensive additions and improvements to the various substations of the company, etc., and the purchase of additional rolling stock.

**Texas Electric Railway, Dallas, Tex.**—A contract has been awarded by the Texas Electric Railway to R. C. Cos, Dallas, for the construction of an addition to its station at a cost of \$3000.

**Wheeling (W. Va.) Traction Company.**—Plans are being made by the Wheeling Traction Company for the construction of a new carhouse 39 ft. 6 in. x 254 ft. and shops 125 ft. x 130 ft. The cost is estimated at about \$75,000.

## Rolling Stock

**Hull (Que.) Electric Company,** as noted in the ELECTRIC RAILWAY JOURNAL for May 18, has on order with the Ottawa Car Manufacturing Company a double-truck snow sweeper which is convertible into a locomotive by removing a specially constructed frame on ends of underframe. The underframe is all steel with wood cab. The dimensions are as follows:

	Feet. Inches.	
Length over all, when used as a sweeper	39	
Length over all, when used as a locomotive	24	
Width over all	8	8
Width of cab outside	8	1
Length of cab outside	12	4 1/2
Distance between bolster centers	12	6

Trucks, air brakes and motor equipment are supplied and installed by the railway company excepting air brakes, which will be installed by Ottawa Car Manufacturing Company.

**Mobile Light & Railroad Company, Mobile, Ala.**, has purchased seven double truck cars. These with the nine cars now being built in the company's shops and three under contract with the St. Louis Car Company make nineteen large cars that will be added to the company's rolling stock. Delivery is to be from one to six months. Improvements in lines and cars to serve the plants of the Mobile Shipbuilding Company will cost approximately \$110,000.

**San Francisco-Oakland Terminal Railway, Oakland, Cal.**—The ten trail cars mentioned in the Aug. 24 issue of the Electric Railway Journal, are now being manufactured in the company's own shops. Specifications for the one-man cars and the large street cars, mentioned in the same item, have been prepared and it is expected orders will be placed very shortly. The one man cars will be of the standard Birney safety-car type.

## Trade Notes

**Roller-Smith Company, 233 Broadway, New York, N. Y.**, has appointed as its agent W. G. Merowit, located at 716 Elliott Square, Buffalo, N. Y. Mr. Merowit will handle the Roller-Smith Company's lines of instruments, meters and circuit breakers in the western part of the State of New York.

**Railway Improvement Company, New York, N. Y.**, advises that it has received an order for Rico lightweight anti-climbers for forty-five additional new cars of the Philadelphia Rapid Transit Company's Hog Island service. All cars perviously constructed for this service are equipped with Rico anti-climbers.

**National Machinery & Wrecking Company, 1914-1918 Scranton Road, Cleveland, Ohio**, which has been in business for the past fifteen years, has incorporated under the name of the National Power Machinery Company. The company will continue to handle new and used power machinery. A contract has just been let for a new warehouse in addition to the three now

## New Advertising Literature

**John F. Godfrey, Elkhart, Ind.**: Circular descriptive of his coal conveyor. Standard installations of this conveyor are illustrated in a diagram.

**Worthington Pump & Machinery Corporation, New York, N. Y.**: Booklet D-702 describes vertical triplex power pumps, single and double acting.

**Indianapolis Switch & Frog Company, Springfield, Ohio**: Booklet on the subject of electric welding and shop repairs and conservation of track and roadway. Contains data and instructions for welding, and is well illustrated.

**Delta-Star Electric Company, Chicago, Ill.**: Four-page circular showing several types of construction of steel-tower outdoor substations. General specifications and material furnished with these tower stations are also given.

**British Aluminum Company, Ltd., 109 Queen Victoria Street, London, England**: Treatise on electric power transmission authorized "From the Falls to the Factory." This publication has been designed with special reference to American practice in transmission line engineering.