

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Number 5

Experiences of British Managers Should Be Helpful to Americans

SEVERAL months ago the managers of two important English tramways were requested to contribute articles to this paper, giving information about the effect of the war on their management problems for the benefit of American electric railway managers. They kindly consented, and the first of these articles, that by J. M. McElroy, general manager, Birmingham Corporation Tramways, appeared on page 623 of the ELECTRIC RAILWAY JOURNAL for Oct. 6, 1917. The second article, written by T. B. Goodyer, manager of the Corporation Tramways of Croydon, which geographically is a part of London, appears in this issue. We are sure that the American readers, who are now facing almost identically the same problems of labor and material shortage as were encountered in Great Britain two or more years ago, will appreciate the value of the information contained in these experiences.

This Idea May Help Motormen to Save Coal

MENTAL assent on the part of motormen and others to the principle that coal ought to be saved will not bring results unless there is individual and strong conviction in regard to the matter. In these days it is easy for any man to realize what a shortage of coal there is in the line of domestic requirements, but it is not so easy for the same man, if running a car, to visualize the shrinking coal pile (if there still is a pile) at the power plant.

As he watches the long lines waiting for a dole of coal at the neighboring coal yard, or as he scrapes the floor of his own bin at home, he needs no prophet to tell him that coal is scarce, but somehow it is different on the front platform of a car. If, however, he tries to associate in his mind the power plant coal pile and the supply in his own cellar bin, possibly it will be easier for him to save coal in both places. In other words, he must learn in some way or other to think of car operation in terms of tons or pounds of coal.

Energy consumption in kilowatt-hours per car-mile, or per trip, furnishes a good basis for comparative purposes, but in the abstract a kilowatt-hour is about as nebulous in a motorman's mind as the n th power of x . However, in an editorial printed in the ELECTRIC RAILWAY JOURNAL for May 26, 1917, page 947, it was shown that a motorman controls the consumption of at least 1200 lb. of coal per day. A careless motorman may waste several hundred pounds in addition, particularly with coal of the poor quality now being sent out from the mines. In the average case, at least 10 per cent of this coal can be saved and in extreme cases two or three times this saving is possible. If we estimate that a

moderate-sized house can be heated on 100 lb. of coal per day it follows that a careless motorman may waste enough fuel to warm two or more such dwelling houses. By wasteful action he is, therefore, causing suffering, directly or indirectly, to a dozen people more or less.

Fuel saving must result from voluntary as well as forced co-operation. The motorman's co-operation can only be of the voluntary character, and it seems to us that this co-operation is assured if he can come to realize that by operating his cars carefully he is keeping a dozen of his fellow citizens from freezing.

Why a Fair Rate of Return Is Necessary Now

NEVER has the question of a fair return on electric railway investment been more vital than now. The public does not altogether understand this point. A common idea is that as the financing of all new projects has been discontinued largely on account of the war, so that the government may sell its bonds more easily, the electric railway companies would not be in the market for new capital at this time in any event. Hence, the question of what would constitute a fair rate of return and one which would attract the investor to public utility securities is of abstract interest only.

Now, it may be true that no great amount of capital can be spared at present for new public utility construction, but this constitutes no reason why the existing utilities should be kept in a condition of near bankruptcy. Even if the companies do not expect to make new capital issues now, justice demands that they should be allowed to earn a fair and reasonable rate of return on the investment in their property, used and useful in public service, and that this rate should be one that would attract new capital if new capital was available.

But this is not all. Good financial credit is necessary even now for many electric railways. Some have maturing obligations which must be refunded. Others are being asked by the government to make certain extensions. Still others must buy cars and other equipment if they are to continue to give good service. Electric railways have been officially recognized as "essential industries," so that it is just as necessary that electric railway extensions or improvements should be financed as that any other allied part of the program of national defense should be undertaken.

Finally, a fair rate of return should be granted now so that when the war is over and the security market is open to all, electric railways will be able to put themselves promptly in an efficient and effective condition. There is no valid reason, therefore, why the grant of a fair rate of return should be postponed.

Making It Easy to Buy Thrift Stamps

THRIFT stamps to the right, thrift stamps to the left—their places of sale are almost countless. This is one sales campaign, however, that cannot be overdone. Even if there are local institutions by the score where such stamps can be purchased, every additional method for keeping them to the front in the public mind is a marked gain. Unfortunately, electric railways, unlike electric lighting and gas companies, cannot easily reach the individual patron. He can be approached in interurban stations and city terminals, of course, but, as a rule, he must be handled in his car-riding capacity. But conductors are generally too busy. Who, then, can act as salesmen?

An interesting answer to this question is given by the United Railways of St. Louis, which for the first time in its history recently granted the privilege of selling on its cars.

The plan is that on certain days volunteer speakers should board the cars at main transfer points, make one-minute speeches, distribute order cards for signatures, and then take the next returning cars to the transfer points. This is a way in which many city railways could co-operate with local committees, older Boy Scouts, and similar organizations, in helping the government. Letter carriers could follow up the cards, as they will do under a direct mail-order plan which the government is now completing.

Under such a plan as that used in St. Louis, the railway does not figure directly in the sales talk, but it furnishes the buyers and the opportunity. With such a commodity that's most of the sales battle.

Support the Committee on Increased Revenue

IT IS to be hoped that the subscriptions to the American Electric Railway Association for defraying the expenses of the Committee on Electric Railway Revenue, of which Joseph K. Choate is chairman, will be sufficient to enable the committee to carry through its very important work. The financial demands upon electric railways within the last few months have been unusual, but nothing can excuse the failure of any company to contribute to the work of the revenue committee. Important as are the other activities of the association, there can be no doubt that this committee has before it the greatest problem which has ever confronted the industry. We are afraid that a few companies are inclined to take a short-sighted view of the matter. They are asking how the work of the committee will redound to their own particular advantage. They argue that the same amount of money could be spent with greater profit in individual work at home. Experience shows that this view is fallacious. The electric railways in New York State struggled for years to solve the fare problem, each working individually. It was not until they combined and worked through a general committee that any progress was made.

The work of the committee involves not only organized publicity as to what is being done throughout the country, but, what is of much greater importance, comprehends the permanent solution of the entire fare question. The electric railway industry has a chance

which will probably not be duplicated in the lifetime of this generation. The public is convinced, or can be convinced, that the industry needs larger revenues. This involves a revision of rates, and while this revision is being made, the opportunity is presented to solve the whole question permanently, by working out a system of fares which will be not only equitable to the rider, but will be sufficiently elastic to produce reasonable earnings for the company both in periods of rising and falling prices.

This constructive work is something which no single company can do. It must be done by a committee representing the entire industry. Prompt response on the part of the member companies will make it possible for the solution to be found in time to place the business upon a sound financial basis.

Traffic Reports in Digestible Quantities

CHAIRMAN BROWNLOW of the Public Utilities Commission for the District of Columbia used his newspaper experience in good stead when he suggested that John A. Beeler present his report on Washington traffic conditions in small, typewritten sections from time to time instead of waiting to deliver one ponderous tome from the printing press. This homeopathic plan has many advantages, such as:

Maximum publicity.—The effectiveness of the report will depend in large measure on how much of it gets to the public through the newspapers. It is easier to get 100 per cent publicity for each of a dozen weekly installments than 20 per cent publicity for the entire report.

Digestibility.—When the report is published in small units many readers will peruse each one from beginning to end instead of merely scanning the headlines.

Revelation of public opinion.—As each section is published, interested citizens will forward comments to the newspapers, thus giving the commission some inkling on how the recommendations appeal to the man in the car. The railways affected also have the opportunity to put themselves on record while the subject is fresh in the public mind.

Easier handling of objections.—It is easier to break one stick at a time than to dispose of a bundle of fagots. On the same principle, it is easier to deal with the few objections to each unit as they arise, whereas if all objections were presented at one time the commission would be in a quandary.

Timeliness aids acceptance.—By presenting the findings while the original data are still fresh the probability of their acceptance is far greater. For example, the Washington public is far more likely to favor certain plans while knee deep in winter than it would if the same suggestions were made in walk-inviting May!

One other literary feature of the Beeler unit reports may be mentioned. While accurate in technical expression, they are written and captioned in a way to appeal to the interest of layman and engineer alike. After all, as the commission and its consulting engineer wisely realize, the extent to which public service recommendations are put into practice depends upon how well the public itself appreciates their justness. Many a splendid traffic report of the past stands on a shelf, unwept, unhonored and unsung, because no one knew how to advertise it, and thereby sell it, to the people.

Essentials to Skip-Stop Success

A THOROUGH understanding by the public, the whole-hearted co-operation of the trainmen, and care as to the selection of the initial day of the trial installation, are among the more important aspects of the problem of introducing the highly desirable but for the most part unpopular skip-stop service. These three contingencies were particularly emphasized on a fairly large size Midwest property in a very recent experience with the skip-stop system, by the avalanche of criticism which was immediately manifested.

In the first place, it is difficult to bring the public to a full understanding that under the system the taking off of a few cars does not mean a reduction in the service or seats per hour, but rather that the result of the skip stop is a saving of ten or fifteen minutes in the time required to get home at night or down to work in the morning. The company in mind had talked to the public along this line, but there was still a general feeling, it afterward developed, that there had really been a great reduction in service. The principal cause of the complaints in this case, however, was a combination of antagonism on the part of the men and a very unfortunate weather condition with concurrent service interruptions and delays.

The experience of this company affords a good example of the importance of winning the trainmen over to the new scheme. Here they were nearly all opposed to the adoption of the skip-stop. And on the day selected for the initial installations the rails were extremely slippery. Also the progress of certain construction work suddenly made it imperative for the company to cut off service on a certain portion of one line in the downtown district, necessitating rerouting of cars and an abnormal congestion and retardation of service. After waiting considerable periods for cars, passengers would get on and ask the conductor the cause of the slow service. He naturally, because of his attitude, blamed it upon the installation of the skip stop, and thus this valuable economy was given a knockout blow, and most unjustly, at the very outset.

The rail conditions and emergency rerouting were excusable and unavoidable causes of slow service, but the skip stop received the full blame as the result of the unfortunate day and the trainmen's antagonism. Incidentally, the company learned also that on another installation, it would be better to reduce the number of cars gradually on succeeding days, thus leaving a surplus of cars on the line for the first day or so until the new system was working smoothly.

An interesting side light on this company's experience for the first month of skip-stop operation was the effect it had on the accident report. The claim departments have sometimes opposed vigorously the permanent skipping of certain streets as stops, as they held that this would tend to result in the cars crossing these streets at high speed, with consequent increase in the number of collisions.

The record for the first month in the case in mind, however, showed exactly an opposite tendency. The boarding and alighting accidents were reduced in number, as would be expected from the smaller number of stops. But the accidents with automobiles and other vehicles also, quite unexpectedly, showed a decided

downward tendency. If the reports for one or two succeeding months continue to show the same tendency, the information will be released for publication in this paper. The various accidents are carefully classified and analyzed so that the results are quite conclusive and may serve to dispose of the apprehension which some managements have for the skip-stop service.

Now Is the Time to Act on Higher Fare Requests

ADDRESSING the recent convention of the Investment Bankers' Association, Orlando B. Willcox of New York made use of some figures as to rate decisions which should furnish a basis for thought on the part of those having the welfare of the industry at heart. An abstract from Mr. Willcox's report was printed in the Nov. 17 issue of this paper. Making the point that certain of the public service commissions are recognizing the necessity for increased rates to public utilities, the committee, of which Mr. Willcox was acting chairman, reported that in 462 rate applications announced up to date for the year 1917, increases were allowed in 401 cases. This meant that relief of some sort was given in 86 per cent of the cases presented.

To this extent the owners of such securities should feel encouraged. It develops, however, that the 462 cases referred to included only sixteen applications of electric railways, whereas the petitions from telephone companies numbered 184, and from electric lighting companies there were 145 cases. The further point is brought out that increases were granted in 91 per cent of the telephone cases, and in 82 per cent of the electric light cases, while electric railways were successful in only 68 per cent of the applications. It is probable that a study of decisions for the whole of 1917 would show that considerably more electric railways had sought and obtained higher rates. There is ground for suspicion, however, that this class of utilities has not yet fully awakened to the possibilities of getting financial relief through the public service commissions.

Surely the condition of the average electric railway is not more fortunate than that of the other utilities. The handicap imposed by fixed rates is everywhere apparent, and the injustice of allowing this to continue in the face of advancing costs cannot be questioned. Is it possible that we have men in this industry who, realizing the unhealthy condition of their properties, think the situation is hopeless and are too timid to apply for help? Or have they become disheartened at the unsuccessful outcome of other appeals for relief and abandoned themselves to despair?

This is not the time for timidity. War conditions have imposed unusual burdens, but they also offer unexpected opportunity to get the benefits of a changing public opinion. The people realize now if they never did before that the cost of everything has gone up—everything except electric railway fares and a few other items. Members of the public utility commissions, keeping their hand on the public pulse, are likely to realize more quickly than ever before the fairness of applications for a departure from fixed rates. Holders of such securities, of whom the "common people" constitute a considerable part, must arouse themselves and send for the doctor before it is too late.



Your newspaper

Some of our passengers have asked us to suggest that a newspaper, if folded once or twice is easier to read; besides it adds to the comfort of your neighbors.

INTERBOROUGH
Charles P. Howards, President

Falling on the Stairs

Nearly 200 persons fall on subway stairs every month.
Don't be careless.
Use the hand rails on the stairs.

INTERBOROUGH
Miriam P. Howards, President

Keeping Trains on Time

To maintain our schedule of one minute and 48 seconds between rush-hour trains, passengers should cooperate with guards and platform men all they can.

By getting on and off trains promptly they will do much to keep trains on time.

INTERBOROUGH
Charles P. Howards, President

All the Tracks will Hold

Nearly 1,500,000 persons ride on the Subway every day. Nearly half of this number are carried during the rush-hours—between 7 and 9 a. m. and 5 and 7 p. m.

We are running every rush-hour train the tracks and station facilities permit.

INTERBOROUGH
Charles P. Howards, President

Our Supreme Purpose

We strive to provide for the safety and convenience of every passenger.

During rush hours subway express trains run only one minute and 48 seconds apart.

We are running every rush-hour train the tracks and station facilities permit.

INTERBOROUGH
Charles P. Howards, President

Use the Locals

Local trains are generally less crowded during rush hours than expresses. Their running time is only a few minutes longer.


For passengers with a few extra minutes locals will prove more comfortable.

INTERBOROUGH
Charles P. Howards, President

A Little More Care

We can guard against accidents in train operation. Nothing but care on your part will prevent those accidents due to your not looking where you walk. That's why our Guards constantly warn you to watch your step. Please do.

INTERBOROUGH
Charles P. Howards, President



On Monday, June 25th, ten per cent. of all ticket sales on the Subway and Elevated will go to the Red Cross War Fund.

INTERBOROUGH

Were You One?

Last month 306 persons "took chances" and lost. On Subway platforms 69 of these did not "watch their steps." 237 were struck by car-doors. Carelessness causes accidents despite safety measures.

INTERBOROUGH
Miriam P. Howards, President

ABOUT STAIRWAYS

May we suggest that you always use the right side of the Stairway. Failure of some people to do this, especially at Brooklyn Bridge and Grand Central, causes unnecessary confusion and delay. Please keep to the right.

INTERBOROUGH
Charles P. Howards, President

It's Up To You

We have spent \$1,250,000 on appliances in these Cars to secure your safety. Won't YOU help us by being careful?

INTERBOROUGH
Miriam P. Howards, President

Caring For Your Safety

In ten years the Subway has carried one and a half times the world's population. Only ONE passenger has been killed during that time in a train accident.

This World Record of Railroad Safety is the result of constant vigilance.

INTERBOROUGH
Charles P. Howards, President

Room in End Cars

Many passengers take the crowded cars that stop nearest the stairs.

Frequently—when center cars are full—there are vacant seats in front and rear cars.

INTERBOROUGH
Charles P. Howards, President

Our Resolution

Our New Year's resolution is to continue to aid the Government in every possible way in the struggle for the only kind of peace that will make the world a better place in which to live.

Happy New Year!

INTERBOROUGH
Charles P. Howards, President

Getting On and Off

Passengers getting off have the right of way. Please do not attempt to board a car until the passengers leaving it have had a chance to get off. Much confusion can be avoided in this way.

INTERBOROUGH
Charles P. Howards, President

Save Your Own Time

If you will move away from the door on entering a car, you will shorten the time of your trip. Standing near the door adds to congestion and delays your train.

INTERBOROUGH
Charles P. Howards, President


Our Duty—and Yours

To back up our 1260 Men in the Service of Uncle Sam we have subscribed \$4,000,000 in Liberty Bonds. Won't You, too, Buy a Liberty Bond?

INTERBOROUGH
Charles P. Howards, President

For Your Sake—and for Others

Please—
Do your Christmas Shopping between 10 A. M. and 4 P. M.
You thereby avoid the crowded rush hours.

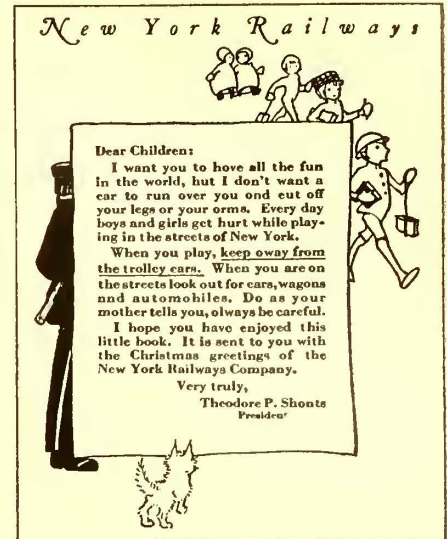


INTERBOROUGH
Charles P. Howards, President

Here Are Eighteen of the Twenty-six Interborough Car Posters Which in 1917 Made the New York Public Think



Interborough Publicity Sets Public to Thinking

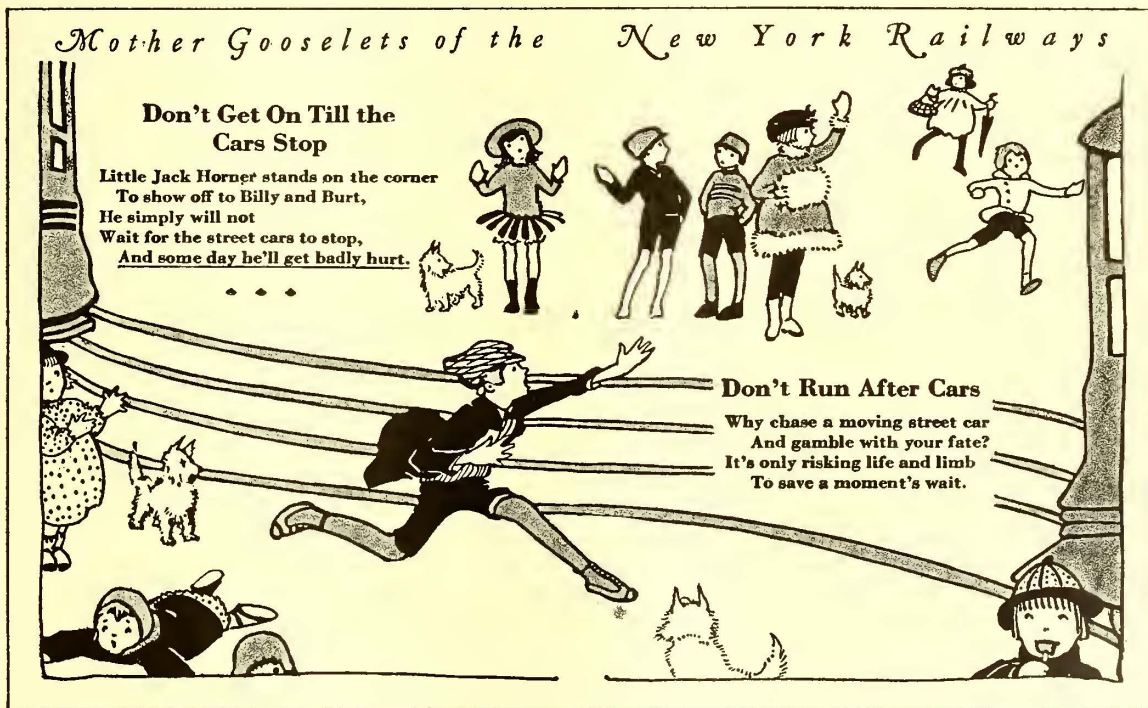


Result of Year's Work with Car Cards and Bulletins on the Rapid Transit and Surface Railway Lines Is Encouraging—Interest of Public Has Been Aroused

IT WAS just a year ago that the Interborough Rapid Transit Company, operating the subway and elevated lines in New York City, started its publicity campaign. In January the company placarded its cars with a poster asking the public for criticism. The company made a frank appeal for public assistance—the beginning of a definite campaign to secure an understanding of its problems by the public. The first few posters and the results of the complaint campaign were

portation. The cards used are reproduced in part with this article. Extensive as the campaign has been, it is really just starting.

It takes time to attract the public's interest. That the Interborough is making progress, its management is certain. These facts, in its opinion, so testify. In one musical comedy in New York the Interborough's cards are made the subject of a topical song. Every few days newspaper cartoonists work the cards into their



PAGES FROM BOOKLET OF SAFETY RHYMES, A CHRISTMAS GREETING TO NEW YORK CHILDREN

described in the issue of the ELECTRIC RAILWAY JOURNAL for April 7, 1917.

During the year twenty-six cards have been used. They have inspired thousands of letters to the management of the company, making it possible to develop a mailing list of people who are interested in local trans-

drawings. Newspapers make the cards the subject of editorial comment that has proved exceptionally helpful. Moreover, "letters to the editor" by the dozens have resulted. These agencies always treat of things about which the people are thinking.

People differ as to the way to approach the New York

Please

*look out
for the car on
the other track—
when walking
behind
this car*

*Theodor P. Howats,
President*

Courtesy

We instruct our employees to treat passengers as they themselves would like to be treated. Won't you put yourself in their place and treat them accordingly?

*Theodor P. Howats,
President*

PASSENGERS' COMFORT

Passengers sitting with legs crossed or feet extended into the aisle frequently cause annoyance to those who are standing in or moving through the car.

*Theodor P. Howats,
President*

Standing Between Cars is Dangerous

NEVER Try It Between Stepless Cars
They are wider than old-type platform cars

*Theodor P. Howats,
President*

Safety Zones



DON'T TAKE CHANCES!

Stand Inside—
They protect you from reckless drivers while you wait for the car.

*Theodor P. Howats,
President*

Walking Blindfolded



DON'T TAKE CHANCES!

Look—
to see what's coming before you step from behind a street car.

*Theodor P. Howats,
President*

WON'T YOU HELP?

The safety of passengers is our first thought always. When accidents do happen, we take steps to avoid similar ones. When you see an accident, won't you help us by giving the guard your name, so we can learn the facts?

*Theodor P. Howats,
President*

"Over There"

Our Service Flag has **1260 Stars**. That many Employees of our Companies are now in active service under the Colors of Uncle Sam.

*Theodor P. Howats,
President*

Patriotism

We are proud of our employees. **3,455** of the men working for this company voluntarily put their own savings into Liberty Loan Bonds. They are doing their part by their Country as well as by the public they are trying to serve.

*Theodor P. Howats,
President*

The Surface Line or New York Railways' Posters Also Had Messages Written to Awaken and Hold Public Interest

RAPID TRANSIT

No. 1
Interborough Rapid Transit Co., Inc. 125 Broadway, New York
Dec. 20, 1916

How New York Overtakes Its New Transit Facilities

- (1) Old facilities hold their own.
- (2) New lines develop new traffic.
- (3) And the travelling habit increases.

The Interborough Goes "Over the Top"

Twelve hundred and sixty employees of the Interborough and affiliated companies have gone to fight for Uncle Sam.

Forty 7,700 Interborough employees volunteered \$17,700 for Liberty Bonds.

The Company's subscription for the second loan was \$4,000,000.

By fitting the positions of those who have gone to fight, the Interborough gives preference to members of its families.

RAPID TRANSIT

No. 2
Interborough Rapid Transit Co., Inc. 125 Broadway, New York
Jan. 31, 1917

Keeping 2000 Subway Trains On Time

More than two thousand trains a day from the terminals to the cars and back again, on the Interborough Subway, are kept on time by the efficient operation of the Subway.

Between 1,000,000 and 1,500,000 persons ride each day on the Subway, and it is more than twice the number of passengers from the Interborough Subway than the number of passengers from the Interborough Subway.

The problem of keeping such a large number of trains on time is a most important one, and it is a most important one, and it is a most important one.

On Their Way "Over"

HOW FACTS WERE PUT ACROSS IN SPECIAL RAPID TRANSIT BULLETINS

public, and the Interborough's riders are giving their views to T. P. Shonts. One critic says that the cards would be more effective if they were more forceful. Others say that Mr. Shonts should inject a little more "please" into them. Some people want to know why the colored band is used on the cards. Some suggest that the cards be used to encourage knitting for the soldiers and sailors. Others say that they do not like the cards at all.

The main thing about all this is that the people are thinking about what Mr. Shonts is telling them. No man could do a thing in a way to please all of New York. If he can get the city to think about his company's problems, he will have accomplished much. That's what Mr. Shonts is trying to do.

The problems of the Interborough, the management feels, are quite different from those of most companies. The Interborough carries a traffic that taxes its facilities to capacity. Its cars are crowded, and no more trains can be operated on the present system, as the lines are completely saturated now.

The management wants its patrons to know that it is literally sitting up nights trying to think of ways to relieve the congestion on its lines with a view to making people more comfortable. In other words, the company's problem is to show the public that it is operated by men whose first thoughts in giving service is consideration of the passengers. To do this, it is believed that the human touch must never be absent.

PUBLICITY USED FOR THE SURFACE LINES

Some of the cards used during the year in the surface cars of the New York Railways, of which Mr. Shonts is also president, were the same as those displayed in the subway and elevated cars. Others, however, dealt with problems peculiar to the surface lines.

As a Christmas greeting to the children of New York, Mr. Shonts issued an illustrated booklet of safety rhymes. This was published by the New York Railways and distributed to children throughout the city. The main characteristic of the book is the action portrayed in the illustrations. Another feature is a note ad-

NEW YORK RAILWAYS SERVICE

No. 2
New York Railways Service, Inc. 125 Broadway, New York
March 3, 1917

Blockading the City's Streets

All the improvements in car service made in recent years are offset by delays to which the company is subjected at the present time. Cars today are capable of making better speed. They are designed to start and stop more quickly. They are more efficient and comfortable in operation, yet the net result of street congestion is that the speed of the city's traffic is slower than before.

New York traffic is slowing down each year. Or in other words, the speed of street cars in the congested zone has been reduced from an and a half miles per hour to one and a half miles per hour, and in some cases to five and a half miles per hour.

In the retail section of Fifth Avenue during crowded hours recent tests have shown that a pedestrian can beat the motor car. In one instance, to go by automobile from Forty-fourth Street to Fifty-fourth Street, exactly half a mile, took twenty-six minutes. In another instance, to go from Forty-fourth to Fifty-fourth by motor car took thirty-seven minutes, while to walk the distance took only twenty-five minutes.

The Fifth Avenue Association estimates that \$750,000 a day is lost through these increasing traffic blockades.

What congestion means to the New York Railways Company is shown in the figures of car delays for last year. From July 1 to November 30, 1916, service on our lines was lost on car lines was lost for five minutes 6,769 times or longer. Tabulated records kept of delays lost in blockades are at these times as follows: the total of interruptions for five minutes is certainly 27,000.

The time as recorded is lost that period was minutes, an amount of 3,275 minutes. These are initial delays.

NEW YORK RAILWAYS SERVICE

No. 1
New York Railways Service, Inc. 125 Broadway, New York
Jan. 25, 1917

A Crisis In Street Congestion

New York streets are suffering with the worst congestion in their history. Never have they been so blocked with building operations, subway construction, sewer and water-main excavation, repaving, etc.

It threatens to be worse. A snow storm adds fresh difficulties. Plans of snow and no increase traffic congestion. Urgent measures are needed at once to prevent conditions that will mean economic disaster and almost unworkable interruptions of street traffic. The situation is serious.

One heavy snow storm, that of December 15th, has given a warning. The Street Cleaning Department is suffering from a serious shortage in its snow fighting force. City officials can do much but not all. Until street conditions are more nearly normal, some form of suspension of all street-cars must be undertaken.

The main north and south thoroughfares are carrying an unprecedented traffic. Beside horse-drawn vehicles, there is an enormous and increasing number of automobiles.

The Secretary of State's registration of owners of one or more motor cars shows that there were in the metropolitan district:

Automobiles in Metropolitan District New York	15,448
December 31, 1916	15,448
December 31, 1915	15,448

This was an increase of nearly 200 per cent a year. To the New Jersey adds thousands more that increase New York congestion.

Although street-car companies are prepared, without the aid of the Street Cleaning Department, to remove snow from their tracks, they are first to suffer in a storm.

As an underwriter from the days of horse-drawn cars, companies are obliged by their franchise to do this, as well as to pay for pavement between the tracks.

Snow removal alone last winter cost the New York Railways Company \$149,021.65.

The reasons underlying these original franchise provisions exist no longer. It is not an issue that wear out the pavements, it is the automobiles and trucks that benefit largely from the cleared ice lines.

During the snow storm of December 15th, the cars of the New York Railways Company lost in average nearly 25 per cent. On that day motor cars were able to make with a full number of cars to operation, only 65.57 miles.

The New York Railways Company is fully prepared with sweepers and correct equipment to meet the most extraordinary storm conditions. It cannot keep up its service, however, without the use of its tracks. Its own traffic of nearly a million passengers daily cannot be kept up and at the same time provide for other traffic.

The company recognizes that part of the use of the streets by vehicles cannot be avoided. With full co-operation between its own and the city's snow fighting forces, with certain changes and regulations of traffic, it believes, however, that many of the hardships and delays may be avoided.

NEW YORK RAILWAYS SERVICE

No. 3
New York Railways Service, Inc. 125 Broadway, New York
May 7, 1917

A School for Public Service

The aim of this Company and its employees is to render the best possible service to the people of New York.

Upon them the company must depend, not merely for the efficient operation of passenger-cars, but for friendly co-operation with good-will.

The New York Railways Company maintains a special school for training conductors in all duties, general and special. All conductors attend this school before they are promoted to the position of conductor.

The next step in the training of conductors is the road for eight days in the bars and morning until five o'clock in the afternoon, morning. They have not only lectures in classrooms, but laboratory and road experience.

First, he is in charge of the safety of his passengers. Second, he is customer and accountant. Third, he is an information bureau for these duties must be performed under all conditions, and always with courtesy and consideration for the public.

New York Railways Company comes in contact with the public through its fare and motor men. They are, in fact, the face of the company's relations with the public.

EXPLAINING TO THE PUBLIC MATTERS OF SURFACE OPERATION

Meeting War Burdens in Croydon

Employment of Women Conductors Must Be Regarded as Success—Higher Costs of Operation Have Overbalanced Receipts—Companies Are Entitled to Demand Fare Increases to Maintain Service and Financial Stability

By T. B. GOODYER

Manager Croydon (England) Corporation Tramways

MORE than three years of war finds the Croydon Corporation Tramways, in the London suburban area, operated, like the majority of systems in Great Britain, under conditions which a few years ago would have been considered impossible. The fact that the country was unprepared for the gigantic struggle now in progress eased to some extent the difficulty with regard to labor. To set up the vast machinery now in operation for the successful prosecution of the war took time, and in that fact many employers benefited. The drain on labor was gradual, allowing new provisions to be made from time to time to meet the altered conditions. Whatever the result may have been from the military aspect, there is no doubt that the adhesion to the voluntary system of recruiting for some considerable time following the outbreak of the war tended to render less difficult the task of tramway managers in Great Britain.

Tramway employees have responded to the call of their country and civilization as readily as any section of workers. Following the declaration of war a considerable number of men were withdrawn from the tramway industry by the calling up of the army and navy reserve. The loss of these men in Croydon had

the effect of eliminating the margin of reserve men rendered essential by reason of the fluctuation in the service operated on five days of the week, and on Saturdays and Sundays.

For a time the loss of men was confined to the section mentioned, but as the magnitude of the task was gradually realized, men from all grades began to answer the call for volunteers. Then arose the proposition of maintaining the car services with a seriously depleted staff. Considerable help was rendered by the employees foregoing their "rest days," but before long the constant drain made it necessary to increase the hours of duty. As the system of payment at Croydon is on the hourly basis, no adjustment in respect to wages was necessary, the employees automatically benefiting financially by the altered conditions.

After pressure had been brought to bear by the management of various systems, the commissioner of police for the metropolitan area finally agreed to license women to act as conductors. There is no doubt that certain men held very strong views concerning the advent of women in this class of employment. Although the practice of employing women in this capacity had been in vogue for some time in the provinces, the innovation in the London area caused dissatisfaction among the union men. Eventually, however, they waived their objections when the women were offered the same terms as the men whose places they were to fill temporarily.

A small number of women conductors were engaged in Croydon at the beginning of 1916. The ill-feeling referred to above was probably the principal factor in connection with the strike of employees which occurred, firstly, in a neighboring company system, and secondly, on the Croydon undertaking in April, 1916. The Town Council offered to look into the men's grievances if they would return to work, but the men were obdurate. With the exception of a few of them who realized the mistake they had made and returned to work, a large number of strikers did not again take up service with the corporation.

The sudden withdrawal of 70 per cent of the motormen and conductors threatened to shut down the undertaking, but the men had little or no sympathy from the general public. Yet the management had to tackle what seemed an impossible task, that of providing a service to meet the convenience of a town of 180,000 inhabitants with but a mere handful of men.

Notwithstanding the labor shortage, the problem of resuming a normal service was solved in eight weeks. Inspectors and regulators were temporarily removed from their ordinary duties and placed as motormen. The conductors who had remained at work were trained and put on as motormen. Members of the official and depot staffs drove cars after the completion of their daily duties and also on Sundays. Several members

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dressed to the children and signed by Mr. Shonts. It is printed on the inside of the cover of the booklet.

Series of bulletins are being issued by the companies from time to time. Their effectiveness lies both in their typographical appearance and in the presentation of the material in a "different" way. Not long ago the Interborough published a bulletin on some traffic facts that were developed in a few hours spent with the trainmaster of the subway early one morning. There was nothing new about the material, but nearly every newspaper in New York published leading news articles based on the pamphlet. Copies of this were sent to 25,000 people in New York, a selected list.

An important step in the Interborough's publicity work during the year was the publication of a pamphlet on the completion of the third-tracking of the elevated railroad.

Another bulletin told of the patriotic work of the Interborough and its men. The company's and its employees' Liberty Bond subscriptions, the number of men in the military and naval service, the help given to the Red Cross—all were shown. The story was told mostly with illustrations. Just the bare facts were given in words. This, however, is typical of all the publicity work the Interborough is doing. It does not characterize its own actions. It states the facts and lets the public draw its own conclusions.

of the Town Council and other volunteers—one a magistrate—even took out licenses and thus assisted the management to meet the public convenience.

New applicants as motormen were gradually obtained, and the conductors' places were almost entirely filled by women. It therefore soon became possible for the inspectors and regulators to resume their ordinary duties. Except for a few days at the commencement of the strike, the local public suffered but little inconvenience.

WOMEN CONDUCTORS HAVE MADE GOOD

The employment of women as conductors must be regarded generally as a success, especially in consideration of the abnormal conditions under which they are working. The actual work of fare collection per conductor has considerably increased owing to the heavier loading of the cars. This has been brought about principally by the large number of women riders who have entered the industrial world to help make up for the shortage of man power.

The street lighting restrictions in the metropolitan area and in many provincial cities and towns have been very severe, and although there has now been a welcome withdrawal of certain conditions, for a long time the cars had to be operated in semi-darkness. This obviously was very trying to the women conductors new to the work, especially in regard to the correct punching of tickets and change-giving, and also at rush hours during the evening. Although the physical strain has proved too great in some cases, the women have in general been able to withstand the arduous duties and conditions much better than was at first anticipated.

While the women conductors accepted service on the same conditions as male employees of that grade, it has been necessary to grant certain minor concessions, including the provision of seats on the platform and the collection of top-deck passengers' fares on the platform upon boarding.

It has not yet become necessary at Croydon to use women as drivers, although the experiment is reported as being successful on a few systems in the country. Obviously local conditions will to a large degree govern the result of such a departure. In Croydon the narrow thoroughfares, together with the heavy vehicular congestion, will militate against the success of women drivers. Another important factor is the car equipment. Difficulty would undoubtedly be experienced at the present time in obtaining the necessary additional braking gear to render the cars more safe under the less experienced operation by women drivers.

FIFTY-FOUR PER CENT OF MEN WITH COLORS— EQUIPMENT DIFFICULTIES

Thus far 211 Croydon employees, representing 54 per cent of the pre-war staff, are serving with the colors. Their positions are guaranteed on return to civil life, and allowances are made to them or their dependents on such a scale that they suffer no financial loss by enlistment. Practically the whole of the fit men of military age are serving with the colors, only a few men of military age and in the lower medical categories holding temporary exemption from military service.

Of almost as great importance as the labor shortage is the difficulty experienced with regard to stores and materials. Many are the minor devices resorted to in the mechanical line to keep things going, without sacri-

ficing safety. While this may prove in the long run to be detrimental to the equipment, there is unfortunately no alternative when new material is not available and the services have to be maintained, especially for the sake of the large number of munition workers traveling to and from work.

Like the majority of systems in Great Britain, Croydon has experienced a marked increase in revenue compared with pre-war figures. No doubt a large portion of the additional traffic arises from the "out-of-doors" habit cultivated in the men by military training. This in the course of time affects their families. In both the national and tramway interests it is to be hoped that this habit may remain upon the conclusion of the war.

Against the increased income, however, has to be set the large advance in working expenses arising from increased wages, war bonuses, war service allowances, and the higher costs of stores and materials. These items became so serious in Croydon in August, 1916, that it was necessary to increase the fares to preserve the financial stability of the undertaking. Previously the Croydon fares had been among the cheapest in the country. Hence a somewhat extensive revision was possible, while at the same time keeping the revised charges below the general average for the country.

The first year's results of the revision have been satisfactory. It was estimated that an 8 per cent advance in revenue would be sufficient to cover the increased cost of operation and provide the necessary contribution to the reserve and renewals fund. This figure has been exceeded by a fairly useful margin. On the other hand, the operating expenses still continue to mount, and it is impossible to say to what level they may ultimately rise.

THE PUBLIC MUST PROVIDE ADEQUATE REVENUES

Many tramway systems in Great Britain—both municipal and private—have been compelled to revise their scale of fares in order to meet the greatly increased cost of operation. I have observed that the question of increasing fares on many of the electric railway systems in the United States has been engaging the most careful attention of operators over a long period. The matter has, in my view, long passed the doubting stage. It has become an acknowledged fact that if good service and increased wages are to be provided, together with money to meet the higher cost for all materials required in maintenance, the revenue must come from the only source possible—namely, the public. It is a practice which is now being followed in almost every other kind of business, but I fear we, in the tramway world, have all been somewhat late in putting it into effect.

While fare revision is bound to be unpopular with the traveling public, the interests of the ratepayers generally, where municipal undertakings are concerned, are best served by the maintenance of the financial stability of the concerns. The shareholders in privately owned companies have the right to expect, and are entitled to demand, similar consideration, even at the expense of a policy that may be unpopular for the time being. The abnormal period through which we are passing has compelled us to become reconciled to various changes, many of which are far more important than increases in tramway fares.

Present Situation Will Prove Blessing

Utility Service Better Appreciated—Relief Heretofore Deemed Remote Can Now Be Secured—Freight Handling and Distance Charges Advisable

BY HENRY L. DOHERTY

President Henry L. Doherty & Company, New York, N. Y.

IN these days of soaring prices for raw materials it is not a comfortable thing to be unable to fix your own selling price, but be forced to wait until a state commission or a municipal body is made to see the necessity for an increased price. When the railroad situation became desperately serious, ways were found to take care of it. Ways will be found to take care of the situation that now faces many of the public utilities. It will not require the drastic action which was necessary in the case of the railroads, for there are many methods whereby relief may be secured.

I think the present situation will in the end prove the greatest blessing to the public utilities of anything that has ever happened. The public established its right to have public utility charges reduced if they were unfairly high, and they must now be good sports and consent to have them increased if they are unfairly low. The people are already getting an appreciation of what public service means as never before. They realize that they are dependent upon these companies for the necessities and comforts of life, and no longer regard them as mere profit takers, and for many a year after this war is over the people will have a truer appreciation of what these companies do for them. Reforms can be secured under these conditions that have heretofore seemed very remote.

FREIGHT HANDLING SHOULD BE TAKEN UP

Street railway problems cannot be so easily and quickly corrected as those of the gas and electric companies. The electric companies have already developed a large power business, and the gas companies are now developing a large use of gas for industrial purposes. A similar opportunity exists for the street railways in the handling of freight, and yet practically nothing of any moment has yet been done by any of the street railway companies in handling freight, and it will require some time for the working out of suitable equipment and methods.

A few years ago it would have been idle to have asked most cities for the right to handle freight, and yet today it is only a lack of appreciation of what the railways might do for the city that prevents numerous cities from demanding that the street railway companies should handle freight. Our traffic problems are becoming so serious in the different cities in all parts of the United States that the quickest, and certainly the most economical, means of practical relief is to premiumize the street railway companies in the handling of freight.

It is axiomatic that freight can be moved more cheaply on steel rails and steel tires than with horse-drawn vehicles with steel tires on brick pavements, or motor-driven trucks with rubber tires on brick pavements. A street railway freight car moving on steel rails will make less noise, do less damage to the street, and interfere far less with other traffic, and in the majority of cases these cars could carry as much as ten wagonloads at a time. Sooner or later our electric railways are

bound to become the principal freight carriers in our cities.

I would like nothing better as a sporting bet than to take the street railways of New York City as handlers of freight and guarantee to do more to relieve the traffic conditions of the city than could be done by the expenditure of \$100,000,000 to relieve traffic conditions by other methods.

RATIONAL FARES BASED ON DISTANCE

Sooner or later the railway companies will also come to the matter of rational methods of charging. It is absurd to charge the same to carry a passenger ten blocks or 10 miles. Charges should be based on distance. The difficulties of establishing a distance system of charging are largely imaginary. It is remarkable how much intolerance there is to the mere suggestion of charging by distance, but it is largely due to the absurd and irrational zone systems that have been used. With a rational distance system of charging, both the public and the railway companies will be immensely benefited. Instead of causing congestion, it should tend to have an exactly opposite effect. I know of no man of skill in railway operation and management who condemns distance charging if he has given it serious and intelligent thought.

In one of our railway situations the Polish workmen in one of the factories ride to the extreme opposite corner of the city so they can live in a Polish settlement. Distance charging would be an inducement for them to find homes near the factory in which they work. Another of our railway properties operates through a suburban territory much of which is devoted to factories, and one terminal is in the heart of a congested city. The workmen in these factories largely reside in the congested city rather than in the beautiful suburbs which are close to the factories in which they work. Charging for transportation by distance will not tend to bring about congestion, but will contribute to more healthful and better living conditions.

The stockholders of railroad companies were punished for years by antagonistic regulation and legislation, but the public is now paying and suffering for this folly. Like treatment of the public utilities will inevitably bring like suffering to the people.

It is too bad that it requires such an awful crisis as this to make some men think, but this entire war situation will not be entirely without its blessings. The public, for its own good, should demand prompt and fair treatment for the public utilities. Unless they are given a fair margin of profit their credit will be crippled, and the public will pay the freight in the end.

I am more than satisfied with my public utility investments, and view the future with the greatest optimism.

One Hundred Years of Engineering

The Institution of Civil Engineers of London, England, on Jan. 2 completed the hundredth year of its existence, having been established in 1818 at a meeting of eight engineers at the Kendal Coffee House in Fleet Street. At the meeting of the institution on Jan. 8 a statement commemorative of the founding of the institution was presented, war-time conditions precluding more formal celebration of the centenary.

Relieving the Most Congested Point in the National Capital

First Section of Beeler Report on Washington Recommends 50 per Cent Cut in Stopping Places, Double Berthing, Front-End Fare Collectors, One-Way Traffic Streets and Other Means

THE first section of the report by John A. Beeler to the Public Utilities Commission of the District of Columbia on the steps necessary to afford immediate relief to the existing congestion on the lines in Washington, D. C., was made public in that city on Jan. 27. This section is devoted to the congestion in "the throat" of the Capital Traction Company system in Fifteenth Street, between Pennsylvania and New York Avenues, which the report considers the greatest in the city. Conditions must be improved there before any marked improvement elsewhere on the local traction system is possible.

CITY DID NOT GROW AS PLANNED

Unlike most cities, Washington was laid out by its founders according to a definite plan, but the principal development has been toward the northwest and latterly

The maximum condition of choking occurs on Fifteenth Street, between Pennsylvania and New York Avenues, where the cross currents of street car traffic converge from eight different lines and where 211 cars are scheduled to pass during 4.30 and 5.30 p. m.

Observations taken on Jan. 6, 1918, show that, even on Sunday afternoon when the most favorable conditions prevail, the average speed of cars near this point was only 6.86 m.p.h. This was for a distance of 2300 ft. On a week day in the middle of the afternoon the average speed of outbound cars was 6.12 m.p.h., while during the evening load on Jan. 11 from 4.30 to 5.30 the outbound speed averaged but 4.12 m.p.h. The lowest rate that was recorded occurred during 5.45 to 6 p. m., when the average speed was but 2.99 m.p.h. The traffic affected comprises two-thirds of that of the Capital Traction Company. The spacing also varied.

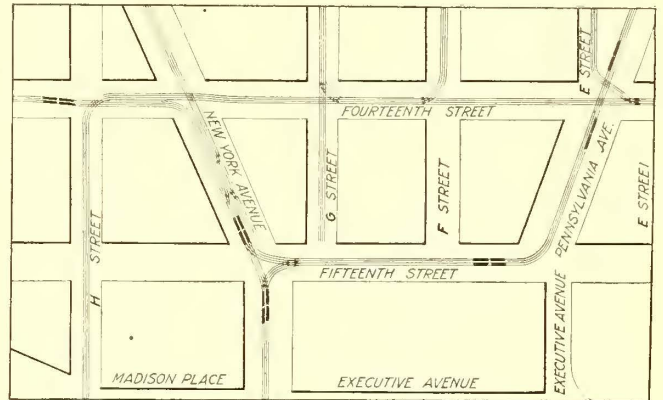
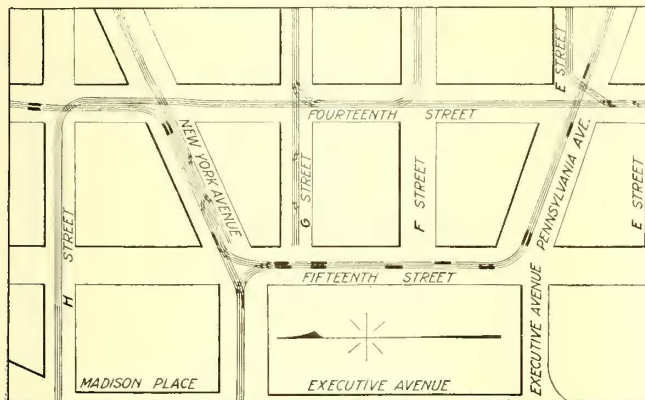


FIG. 1—THE BLACK SPOTS SHOW THE PRESENT STOPS FOR CARS IN THE CONGESTED THROAT OF TRAFFIC IN WASHINGTON. FIG. 2—HOW THESE STOPS CAN BE CUT TO HALF AS MANY

also toward the northeast. The Police Census of Nov. 1, 1917, showed a population of 395,947. There has been a large influx of people within the last year on account of the war.

The city is served by two traction systems, the Washington Railway & Electric Company system with 118.8 miles of track, and the Capital Traction Company with 52.5 miles. On the regular routes 271 all-day cars are scheduled to operate, with 304 added during the period of maximum load, making a total of 575. Of these, the Capital Traction Company operates 38.5 per cent, and the Washington Railway & Electric Company 61.5 per cent. The worst conditions are met while people are going to and from their work. In some cities this series is called the "rush hour," but the report suggests that in Washington it would be a misnomer, as the cars do anything but rush. A better name would be "the crush hour."

Ten measures for immediate relief were recommended as follows:

1. The stopping places should be reduced to one-half. At present a northbound car has six and a southbound car eight regular stopping places between these points, which are but 2300 ft. apart. Fig. 1 shows the present stops and Fig. 2 the proposed stops. This reduction will not only permit freer movement of the cars through the throat, but will also do away with the stops at certain danger points, such as on New York Avenue before the turn is made into Fourteenth Street, northbound.

2. Double berthing must be employed at all the stops included within this congested district. The first car to approach a stop should always take the forward position. When a second car arrives while the first is still standing, it should take the second berth, and when it goes forward after taking on and discharging passen-

gers, it must proceed without stopping at the forward berth.

3. Safety zones, amply protected by traffic stanchions, should be placed at each of the proposed stops, the length of zone being sufficient for loading two cars simultaneously. These platforms should be about 10 in. high and 6 ft. wide, and they will protect the public more effectively from street traffic than any other practical arrangement. For the present these platforms can be constructed of wood, but more permanent construction can be substituted if desired later. Wooden platforms are, however, less slippery in wet or icy weather.

4. Front-end fare collectors should be stationed on each of the principal loading platforms during peaks of heavy traffic. These men should sell tickets, collect fares and issue transfers. If properly carried out, the use of front-end collectors results in more even loading of the cars and reduces the time lost at stops.

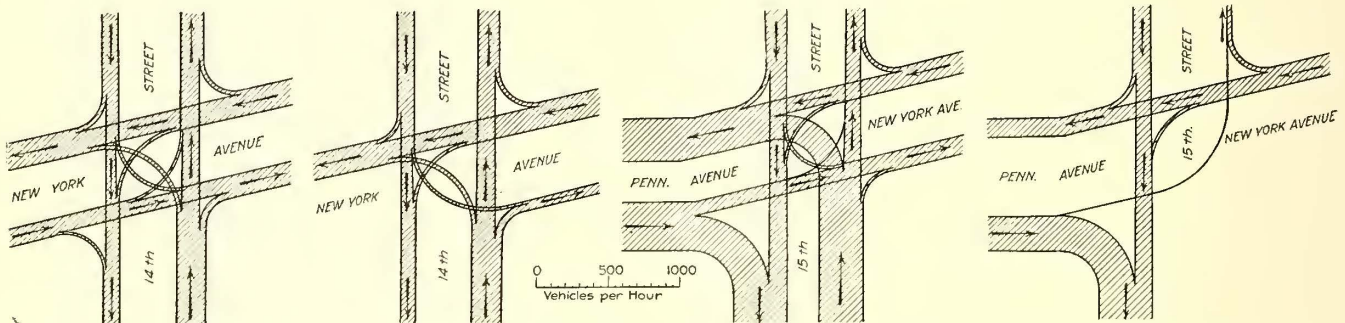
5. Street cars must be given preference by traffic officers. In other words, on the approach of a street car, the traffic officer must so regulate the other traffic as to permit the car to proceed at once to its proper stopping place unless the berth it should occupy is blocked by another car, or some other emergency pre-

8. Through routing of Chevy Chase cars. Certain changes are suggested.

9. The schedules should be changed so that cars will not be bunched when running on time, so that more uniform spacing of cars will be secured.

10. Introduction of the skip stop. The report says: "A general readjustment of the stopping points all along these lines should follow at once. An average spacing of not less than 660 ft. (eight stops to the mile) should be employed. Wherever safety stops are necessary, they should be combined, as far as possible, with passenger stops. Passengers will thus be afforded quicker service without any increase in the present free-running speed of the cars. There is no reason why a saving of from 15 per cent to 20 per cent of the time now consumed for a trip cannot be made by this means. A certain number of cars that are now running will be able to provide an increase in carrying capacity, because the cars can return more quickly for another trip."

In commenting on the advantage of diverting automobile traffic, the report says: "Each street car, when loaded, holds from eighty to 100 people, while the private automobile crossing its path usually carries but



FIGS. 3 AND 4—PRESENT RUSH-HOUR VEHICULAR MOVEMENT AND PROPOSED SIMPLIFIED PLAN, FOURTEENTH STREET AND NEW YORK AVENUE. FIGS. 5 AND 6—SAME FOR FIFTEENTH STREET AND NEW YORK AVENUE

vents. Traffic officers should endeavor always to keep the near-side berths empty and the far-side berths filled by passing two or more cars on one indication of the traffic sign. As the use of the conduit system makes it necessary for cars to coast over intersecting tracks or other special work, cars in pairs cannot proceed so close to each other as would otherwise be permissible.

6. Limited parking of automobiles. Between 8 a. m. and 10 a. m. and between 3.30 p. m. and 6.30 p. m. automobiles should be allowed to stop only long enough to take on and discharge passengers on Fourteenth Street, between H Street and New York Avenue, and on New York Avenue, between Fourteenth and Fifteenth Streets. At other times a slightly longer stop may be allowed, but never more than fifteen minutes. Other limitations on parking cars are recommended.

7. Certain streets should be devoted to one-way traffic. The graphs, Figs. 3 and 5, show the results of a vehicular count at Fourteenth Street and New York Avenue, Fifteenth Street and New York Avenue and Fifteenth and G Streets. If northbound vehicular traffic should be cut off on Fifteenth Street, between G Street and New York Avenue, and eastbound traffic on New York Avenue, between Fifteenth and Fourteenth Streets, there would be a minimum of interference to the cross currents of both street car and automobile traffic, as shown in Figs. 4 and 6.

two or three. By holding up the street cars for other vehicles, the many are delayed for the benefit of the few. The owners of automobiles should be the first to recognize this fact, and will no doubt be ready to contribute toward relieving the congestion of the streets, especially as many of them can do so with only slight changes of route and without loss of time. They should remember that street cars are confined to tracks and are obliged to have definite routes and stopping places, whereas automobiles are easily diverted and are elastic in their movements." It then suggests that vehicles from the east desiring to go north or west of the Treasury can do so best by means of Thirteenth Street, which is free of car tracks, or by the use of Executive Avenue, as it avoids all street car junctions, stopping places and traffic officers.

The next section of Mr. Beeler's report will deal with the staggering of working hours in Washington, relief to the Washington Railway & Electric Company's tracks, etc.

The Nashville Railway & Light Company, Nashville, Tenn., which for some time has been buying coal in car lots and supplying its employees at cost, is now hauling wood into the city from Glendale Park and distributing it among the employees for fuel.

Rate of 2.5 Cents a Mile Granted

Indiana Commission Decides that This Is Justified by the Emergency Confronting the Indianapolis & Cincinnati Traction Company

THE Indiana Public Service Commission has just handed down a decision of importance to interurban lines in that State. As announced in a preliminary note last week, it has allowed the Indianapolis & Cincinnati Traction Company to increase its rate per mile from 2 to 2½ cents. Although the commission cautions the interurban carriers of the State that every fare case must depend upon its own merits, the decision recognizes the principle that interurban lines can, for just cause, be freed from the restrictions of the Indiana 2-cent fare law.

COMMISSION CAN RAISE RATE

The commission first interpreted the State utility law as to power to increase interurban rates. It was decided that the Legislature intended to, and did, grant to the commission the power, in case of emergency, in order to prevent injury to the business or interests of any interurban railway of the State, temporarily to alter or amend any existing rates of such interurban line.

MORE REVENUE IS NEEDED

After an analysis of all of the evidence as to the increase in the costs of operation of the company's lines due to abnormal conditions, the commission was of the opinion that, conservatively estimated, the general increase in the cost of operation in 1918 would be from 20 to 25 per cent over the cost of operation for 1917.

The company has suffered a deficit for three years. Not only has it paid no returns on its common and preferred stock, but after the payment of only operating expenses, taxes, interest on bonded debt, floating debt and fixed charges, there were the following deficits: 1915, \$17,425; 1916, \$23,547; 1917, \$9,975.

If the company has, in 1918, gross earnings equal to those in 1917, which in this respect was the best year in its history, and if 20 per cent for operating expenses is added to the operating expenses of 1917, the company will, in the commission's opinion, face a deficit for 1918 of approximately \$76,000, not including a reasonable allowance for depreciation.

The company's business, the commission said, has been in the hands of competent and efficient officers. Economy has been practiced in the management and operation of the lines. The salaries and wages paid are, in many instances, extremely low, although it does not appear that this fact has resulted in inferior service or the employment of incompetent workmen. It is clear, also, that the actual operation of the company's lines is carried on in a reasonably efficient manner. The commission was unable to find where material reduction in the operating expenses could be made without consequential rendering of inadequate or improper service.

From the evidence at the hearing, and from the investigation and report of the commission's engineers, the commission found that the value of the property, actually used and useful for the convenience of the public, was in excess of \$3,500,000. Under normal conditions (without considering at this time the matter of allowance to cover depreciation) the company would be

entitled at least to a 6 per cent return on \$3,500,000, or \$210,000. The commission believed that, in order to prevent injury to the business and property of the company, it is necessary to provide a means of payment of \$179,850, which represents only a payment of 5 per cent interest on the outstanding first mortgage bonds and that preferred stock which is an underlying and contractual security, and the payment of 6 per cent interest on the floating indebtedness carried in bank. This amount does not provide for any return on the \$2,000,000 of common stock, or on the \$1,000,000 of overlying preferred stock.

The commission remarked, however, that in meeting the needs of utilities in emergencies it would not in such periods underwrite usual dividends. In this instance, the company did not pray for anything except that the corporate life and the standard of service of the company should not be impaired. The commission took occasion to state, however, that this is a period of national sacrifice in which each must bear his burden. From these burdens the commission will not relieve utilities while carrying out the intent of the Legislature to keep utilities intact through such chaotic times.

The business of the company is almost entirely interurban in character, and the income derived purely from passenger revenues constitutes approximately 86 per cent of its total revenue (record of 1916). The remaining 14 per cent of its income is derived from the transportation of express, mail, milk, freight and dispatch freight.

In the judgment of the commission, an increase in passenger rates from 2 cents to 2½ cents per mile, together with an estimated \$15,000 freight rate increase already allowed, would increase the company's 1918 revenues approximately \$77,000. This is practically equivalent to the approximated deficit for 1918.

The commission, therefore, ordered the existing passenger rate schedule to be suspended, and new rates, effective on Jan. 23, to be used until further order of the commission. The emergency rate structure follows:

1. A rate of 2½ cents per mile with a reduction of 5 per cent for round-trip tickets.
2. Commutation books as follows: Twenty-five times the increased one-way fare for forty trips within a calendar month; thirty times the increased one-way fare for sixty trips within a calendar month.
3. In lieu of the present interchangeable 1000-mile mileage book, a book containing 2000 1-cent coupons, which book shall be sold for \$17.50, the coupons therein to be accepted at face value for passenger fares.

LETTER TO PATRONS PUBLISHED

After the decision, Charles L. Henry, president of the company, published in all the newspapers along the company's lines a friendly letter giving the main points of the commission's remarks. Mr. Henry closed his statement as follows:

"We fully realize, as will you, that the increased fares and rates we are permitted to collect will barely take care of the increased expenditures now in sight, and may not be enough to take care of those which will unavoidably come. We confidently rely upon your further co-operation in all efforts to keep down unnecessary expenditures and demands upon the company during these perilous times. All street and other improvements which will call for expenditures by the company should

be deferred, as they cannot be made without further increased charges for passenger and freight service.

"With your assistance, we will bend all of our energies not only to the keeping up of our present standard of service, but to a constant increase of its efficiency, so that your communities will all be more than ever benefited. This is especially necessary during such times as the present when steam railroad service is so seriously affected as to deprive the communities of what they have heretofore had at their hands."

A Frank Statement to Patrons

Fort Wayne Company Supports Fare Application With Explicit Explanation to Its Patrons—Fundamentals of Railway Economics Also Set Forth

WHEN the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., recently made application to the Public Service Commission for the discontinuance of six-for-a-quarter tickets, the company at the same time issued to the public a sixteen-page pamphlet telling in detail its story. A total of 15,000 of the pamphlets were printed and distributed by means of boxes in the cars.

The pamphlet is noteworthy not only because of the frank way in which the company explained to the public the reasons why it must ask for increased revenue, but also because of the painstaking manner in which the general problems confronting all electric railways were set forth.

In introducing the pamphlet the company stated that it was furnishing transportation for less than cost, and that it could not continue to do so and give adequate service. The problem had been studied for the last nine months, and the company was outlining the facts and what appeared to it to be the best solution. Satisfactory service, however, was said to be a problem which could be worked out only in co-operation with the patrons, and the company expressed the hope that the patrons would help it in rendering such service.

The pamphlet then proceeded to describe the financial conditions of the Fort Wayne company, the meaning of current tendencies and the outlook. It then took up the basic economics of electric railway transportation, the meaning of the automobile, the possible future of electric railways, the steps taken by the company to solve the problem and immediate moves which should be made.

In closing, the company stated that the importance to the community of electric railway service was so great that too much care could not be taken to have the problem fully understood. If it were possible to operate an electric railway on a 5-cent fare in Fort Wayne, it should be done. The company would continue to give its best efforts to do this and wanted the help and suggestions of patrons to make the effort a success.

The comments of the company upon the future of the industry, noted above, are worth quoting. They are as follows:

"The general plans for the future development of electric railways have been advanced. The first plan contemplates the use of the light-weight one-man cars with frequent operation. This method it is claimed would improve the service, reduce expenses per car-mile and might offer a solution of the problem. The

Service-at-Cost Plan Approved

F. J. Macleod Says that Gross Revenues Must Be Increased, and Plan of Massachusetts Investors Seems Most Practicable Means

A SERVICE-AT-COST PLAN should be adopted for the electric railways of Massachusetts. Such is the belief of F. J. Macleod, chairman Massachusetts Public Service Commission, as expressed before representatives of the Boston Stock Exchange at the Algonquin Club, Boston, on Jan. 31. This plan seems to him to be the most practicable one under the present system of private ownership and operation.

RAILWAYS NEED MORE NET INCOME

The additional net income which electric railways now need, Mr. Macleod remarked, can be obtained only through a reduction in operating expense, taxes or fixed charges, or through an increase of gross revenue. The companies have already been forced by the pressure of hard times to do their utmost in effecting operating economies, and no further substantial relief is in sight from that source until they are enabled to obtain additional capital for the rehabilitation of their properties.

Decrease of operating expense is also possible through reductions of service, but it would appear that the companies in general have already gone far enough, if not too far, in that direction. Another possible means of retrenchment in certain cases would be the entire abandonment of unprofitable lines. Such action would involve the wiping out of a large part of the investment already made and would in many cases be a real hardship to the communities served. But a railway, Mr. Macleod said, is not primarily an eleemosynary institution. Unless the public is willing to assume the burden of this unprofitable operation, the companies may be forced in some instances to abandon service.

From the present outlook, Mr. Macleod continued, no decrease of fixed charges seems practicable through obtaining lower interest rates. Such rates have steadily risen, and it is doubtful that the end is in sight. As for taxes, however expedient it might be under present emergency conditions to provide for the remission of the local property and the corporate franchise taxes in whole or in part, it is extremely doubtful if any such

second method suggested is to use the electric lines largely for long hauls and rapid transit and have the short-haul business taken care of by motor vehicles which are more flexible of operation in congested districts. This latter plan would mean that electric railway tracks would be laid only on streets where the electric cars could be granted practically full right-of-way. In the larger cities it would take the form of subway and elevated construction where absolute free car movement could be had.

"In cities of moderate size, the first of the plans outlined appears to be more feasible. Either plan will require the expenditure of considerable money for change in equipment or track and roadway, and they have only been advanced by operators as possible future solutions of the problem to be studied and tested. During what might be called the transition period every company will be obliged to make such adjustments as the special local conditions demand."

scheme is practical in the absence of some general revision of the present system of corporate taxation. The commutation tax on earnings, however, which practically makes the companies pay for paving work twice, should be abolished. This the commission recommends not as a remedial measure, but as a simple act of justice.

In the main, however, if the financial condition of the railways is to be substantially improved, the result must be accomplished through an increase in gross revenues. The commission, Mr. Macleod said, believes that it is possible to obtain some increased revenue without an increase of fares by stimulating additional traffic through the operation of one-man cars on a more frequent headway and by using every possible effort to attract short-haul riders. The effective carrying out of such a program would, however, require additional capital which is not now available. The only other method of increasing gross revenue is by a readjustment of fares.

Mr. Macleod then mentioned the service-at-cost plan proposed by Homer Loring, president of the Street Railway Investors' Association, as noted in the *ELECTRIC RAILWAY JOURNAL* of Nov. 17, 1917. Briefly stated, his plan contemplates the issuance of additional capital for the purpose of creating a reserve fund which may be drawn upon temporarily to meet the necessary interest and dividend charges if the company's current revenues are insufficient to meet the cost of service. Fares are to be adjusted up or down as occasion may require, in order to prevent any substantial increase or decrease of the reserve fund.

It is proposed that the commission shall approve or establish a sliding scale of fares which shall automatically fluctuate up or down whenever the reserve fund falls or rises more than 30 per cent. The commission is also required to determine for each company the amount of its capital investment and the proper amounts to be set aside annually for depreciation and other reserve funds. Companies shall be prepared to undertake a reasonable program of rehabilitation satisfactory to the commission, and the commission shall be equipped to exercise a more thorough supervision over operating methods and practices of all companies accepting the act.

SERVICE-AT-COST PLAN SHOULD BE ADOPTED

The commission, Mr. Macleod stated, has already given its indorsement to this plan in principle and believes that it should be enacted into law. Continuing, he said:

"In its main features the service-at-cost plan is similar to plans which are in successful operation in Dallas, Des Moines, Kansas City, Cleveland and other cities. The principle upon which it rests appears to be sound and equitable, and, in so far as it may tend to impress upon the public mind the necessary relationship between cost and service, it should make for a better understanding of the issues involved, for greater public confidence and co-operation, and for smoother administration of the present regulatory system.

"It should also make possible a more ready and flexible adjustment of fares to changing financial conditions and the revenue requirements of the companies than is possible under the present system. In so far as this result can be accomplished without sacrifice of the

public interest, it will tend to place investments upon a more stable basis and to eliminate the delays which are such a frequent cause of complaint against the present system of public regulation.

"The chief misgivings which the commission entertains in regard to the complete success of this plan is the uncertainty as to whether the revenue needs of the companies can in all cases be adequately met by a readjustment of fares. Much experimentation is still necessary before it is possible finally to determine the exact method of fare increase which is best adapted to the special traffic conditions of each company and will give the largest revenue results from the increases allowed.

"The traffic possibilities of the territory served by certain electric railways are insufficient, under any scheme of fares that might be proposed, to meet the cost of operation. Neither the service-at-cost plan nor any other plan based upon a readjustment of existing fares will prove adequate for that situation. For these companies the outlook seems hopeless unless the communities which they serve are prepared by some form of subsidy to bear a portion of the burden of their operation.

"The service-at-cost plan, however, seems to be the best remedy that is practicable under the present system of private ownership and operation. It is important to bear in mind that any plan which will bring about the restoration of credit so essential to any satisfactory solution of the present problem must be one in which the investors themselves have confidence. The service-at-cost plan is recommended by the fact that the investors themselves have proposed it and have given it the support of their expert opinion that it will accomplish the desired result."

OTHER AID MAY BE NECESSARY

In Mr. Macleod's opinion, however, it is possible that no plan which can now be devised will enable the companies, unaided, to meet the conditions with which they are confronted in the present extraordinary situation. If such proves to be the case, the only other remedy is for the State to come to the relief of the companies. As Mr. Macleod had suggested before, this might be done by having the State furnish the companies with needed rolling stock and power apparatus upon the installment plan of purchase, thus giving the companies the benefit of the State's better credit and the lower rate of interest which it is able to command. This, Mr. Macleod said, is only one of several suggestions of a similar character which might be made.

Cost of Preparing Company Publication

The cost of publishing *Triangle Talks*, a weekly organ devoted to the upbuilding of the employees' service and *esprit-de-corps* of the Bay State Street Railway, Boston, Mass., is \$150 a week. This has been published weekly for ten months. From the letters to the company and other evidence, the management feels that the magazine is profitable, especially when the small individual cost of dealing with 6000 men is considered. These facts were brought out by Robert S. Goff, vice-president of the company, at a recent fare hearing before the Massachusetts Public Service Commission.

New Tentative Accounting Classification for New York

Second District Commission Adapts I.C.C. Classification to Its Use—Proposed Classification Requires Depreciation Accruals and Other Changes

THE Public Service Commission for the Second District of New York has prepared a tentative classification of accounts for electric railways and distributed it to the various companies for constructive criticism. The new classification, which, when formally adopted, will supersede the now-effective classification approved in 1908, is intended to bring the accounting requirements of the New York commission into closer correspondence with those of the Interstate Commerce Commission. The proposed effective date for the new classification is Jan. 1, 1919, and criticisms are desired not later than Oct. 1.

The executive committee of the New York Electric Railway Association has filed with the commission a copy of its report on the classification. This committee criticises certain features of it, principally the instructions with reference to accounting for depreciation, and asks for an opportunity to present its criticism more fully. This opportunity will be given, but up to the present no date for a hearing has been set.

POINTS OF DIFFERENCE

Because of the special needs of the New York Second District commission, it has been deemed necessary to subdivide some of the primary I.C.C. accounts and to modify the general instructions in some particulars. The important respects in which the tentative New York classification differs from that of the federal classification may be summarized as follows:

1. The proposed system requires depreciation accruals on all classes of depreciable property at a rate to be stated in terms of a percentage of its cost or book value. The I.C.C. system requires depreciation to be accrued only on equipment, but allows it on other classes of property. Both systems leave to the individual companies the selection of adequate depreciation rates, subject to commission review.

2. The proposed system modifies somewhat the general instructions of the I.C.C. classification with reference to accounting for depreciation and retirements. It also modifies or makes more definite the accounting for rental of equipment, specifically requiring that rent for equipment held under a long-term lease shall be chargeable to income deductions and not to operating expenses.

3. The proposed system requires greater detail in the accounts for power costs, both operating and capital, and subdivides the I.C.C. accounts to make them comparable with the commission's classification of power accounts for electric light, heat and power companies.

4. The proposed system allows a corporation which conducts a general electric light and power business as well as an electric railway business to keep the primary power accounts of an electrical corporation. To the commission it may show the operating power costs as operating expenses of the electric railway department in reports made for that department, and as operating expenses of the electric department in reports made for that department, in each case showing the other department's proportion of such costs through

a transfer credit entry in the reported operating expenses.

5. The proposed system provides for certain subdivisions of other accounts—that is, the substitution of several primary accounts for one account of the I.C.C. classification. For example, "Organization," "Miscellaneous Construction Expenditures" and "Miscellaneous Intangible Capital" are substituted for the I.C.C. road and equipment account No. 550, "Miscellaneous."

The foregoing summary relates to differences between the proposed classification and the I.C.C. classification upon which it is based. There are a number of instances in which the tentative classification differs from the now effective classification of the New York commission, but these are comparatively unimportant.

OPINION OF RAILWAY MEN

The report of the executive committee of the New York Electric Railway Association, mentioned above, was based on a report of a special committee of accounting officers. In its resolution to the commission the executive committee commended the adoption of so many salient features of the standard I.C.C. classification. It criticised the provisions for depreciation accounting, however, as follows:

"With respect to the proposed requirements of the New York Second District commission in the matter of depreciation accounts, we are strongly of the opinion that, at this time, they are too drastic and burdensome upon the carriers. The proposed classification requires depreciation accruals on all classes of depreciable property at a rate to be stated in terms of a percentage of its cost or book value. The Interstate Commerce Commission's system requires depreciation to be accrued only on equipment, leaving it optional with the carriers to accrue, or not to accrue, depreciation on way and structures, and power plant and equipment. The proposed system by suggestion, amounting almost to mandate, attempts to establish the rates of depreciation to be accrued, using the following language in a note: 'Under normal operating conditions depreciation accruals should amount to at least 2 per cent and not more than 5 per cent per annum on the average total cost of all way and structures, or to at least 2 per cent and not more than 10 per cent per annum on the average total cost of all equipment.'

"We believe that the policy of the Interstate Commerce Commission in not requiring depreciation accruals on classes of property other than equipment is wise, since experience has demonstrated that many of the more costly units of other property rightfully may be held as not depreciable, for the reason that safe and economical operation necessitates constant maintenance of these units at a point approximating original physical condition, and original, if not enhanced, value.

"We do not believe that the New York Second District commission should undertake to set either minimum or maximum limitations as to the rate of depreciation to be accrued by carriers. Operating conditions in different localities of the State differ so widely that it is manifestly unfair, inequitable and unwise to attempt by dictum to establish uniformity of rates in depreciation accruals. In reserving to itself the right to disapprove any rule or rate established in a particular case by a carrier, the commission has ample

President Brush Favors Six-Cent Fare Instead of Zone System

In Testifying Before the Connecticut Public Utilities Commission in the Hartford Six-Cent Fare Case He Outlines a Number of Fundamental Considerations Affecting the Establishment of Zone Systems

MATTHEW C. BRUSH, president Boston (Mass.) Elevated Railway, testified before the Public Utilities Commission of Connecticut recently in connection with the Hartford 6-cent fare case, and expressed his belief that the 6-cent fare offers a better solution of the problem of increasing revenue on city lines than does the zone system. Mr. Brush was called as a witness by the Connecticut Company to present his views upon the urban street railway revenue problem in general, and incidentally discussed Boston conditions from the standpoint of remedying present unsatisfactory conditions.

The situation in Massachusetts to-day is such that with practically one exception—a small road in the southern part of the State—there is not a property in the State that can raise any capital or make any additions or improvements. A substantial portion of the companies are paying no dividends. There has been very little development in the Massachusetts properties in the past few years, due to the fact that net earnings have been insufficient to permit the issue of securities at par, no issue below par being permitted by the Massachusetts laws. Practically all street railway securities in the State are selling at less than par, with the result that it has been impossible to issue any securities whatever. The maximum price at which Boston Elevated stock has ever been issued was \$155 per share. Taking the entire capital stock of the company, the average paid-in price is \$112.50, and the stock recently closed at about \$29. The last dividend was passed. In 1917 3.5 per cent was paid. The decrease in the value of the stock is attributed to the decrease in the dividends, and the latter is due to decreased net earnings resulting from increased cost of labor and material.

"There will always be an element of risk in the street railway business," said Mr. Brush, "due to its rapid development. The average layman may not realize it,

but four years ago we installed a 15,000-kw. turbine which was the finest thing the art had produced. Within the last twelve months we have installed a unit of 35,000-kw. rating, which will generate power at about 20 per cent less per kilowatt-hour. This makes the unit of five years ago at least semi-obsolete. I doubt if there is any other business where the development is as rapid. The same is true in the development of the type of car used. To-day we run in the (Cambridge) subway the biggest electric car in the world. It carries from 250 to 300 people, makes a run in eight minutes through a \$9,500,000 subway, and the car costs about \$17,000. That may be contrasted with the horse car. The opportunity for initiative on the part of the board of directors has been gradually taken away by regulations and restrictions, so that the man in charge of the property is practically subject to the judgment of some one as to what he shall do. Almost every labor case becomes a matter of arbitration. The very nature of our business does not permit us to regulate the price of our commodity or the expense we must go to to manufacture it."

FIVE-CENT FARE INADEQUATE

Mr. Brush said that the 5-cent fare was never enough to enable a road to take care of depreciation and obsolescence. Material costs anywhere from 60 to 700 per cent more than it did two years ago. The Boston Elevated recently signed a contract for brakeshoes which was 83 per cent higher than last year and 263 per cent higher than two years ago, and the lowest bid was accepted. A Cambridge subway car originally cost \$10,500, compared with \$22,500 to-day. One hundred surface cars recently purchased at \$8,500 would now cost about \$11,000 each. Wages are increased by the agreement with the union expiring in May, 1919, amounting to \$450,000 the first year.

UNIT FARE PREFERABLE TO ZONE SYSTEM FOR CITIES

J. F. Berry, counsel for the Connecticut Company, asked the witness his opinion of the suggestion that a line be drawn around the city of Hartford $2\frac{1}{2}$ or 3 miles from the center, and that the charge be on a mileage basis outside. Mr. Brush said that there is no question in his mind but that a unit-fare system, whether it is 5 or 6 cents, or more, has done more to develop this country than any other one feature. At Boston, with a system covering 80 square miles and thirteen municipalities, the unit-fare system has caused development in the outlying districts, and it has been an asset to the community and to the merchants of Boston. People are likely to endeavor to locate themselves with reference to their downtown work on the basis of time rather than distance, and this has been one of the difficulties of the company. The building of \$35,000,000 worth

(Concluded from page 228)

power and scope, and, with all of the facts, both physical and financial, in any particular case before it, can prevent any carrier from either under-accrual or over-accrual of the element of depreciation."

The executive committee, therefore, expressed its dissent to the depreciation requirements of the tentative New York classification and recommended the substitution therefor of the depreciation accounting requirements as set forth in the I.C.C. uniform system of accounts. The resolution was signed by Wilbur C. Fisk, Edward A. Maher, Jr., W. O. Wood, James E. Hewes, T. C. Cherry, H. B. Weatherwax and William F. Stanton.

of subways merely extended the average ride from 2½ or 3 miles to about 5 miles, which has made a 5-cent fare prohibitive. On the average, the company cannot carry people 5 miles for 5 cents.

"If you established a zone system around Boston," said Mr. Brush, "you would immediately congest every district you have tried to relieve. The practice in Massachusetts, with the exception of a straight inter-urban independent line, has been, when making a modification of rates, not to change the fare limits at all. The Public Service Commission has maintained that it is unfortunate, where people have, say, for twenty-five years, arranged their domestic and business life in a way to get to and from their work at a certain price, to treat one part of that district differently than another. In our case, if you tried to establish a zone scheme in lieu of the 6-cent fare which we think is the proper solution, you would have to bring the zone line so close to the heart of Boston that one-half of your passengers would have to ride the other side of it, paying, say, 5 cents inside and 2 cents outside; and to get the equivalent of a 6-cent fare, one-half the passengers would have to ride at 7 cents. If you undertook to do that, entirely aside from the equity of it or the good of the community, there would be created an impossible condition. We could not possibly collect the fares.

"In Cleveland and Milwaukee that zone line occurs at a point where the patronage on the line is practically nil, so that the collection of fares in those cities is a different matter. If that idea were applied around Boston you would have to have the zone line so far out in the country that the earnings would not be increased, the distance for 5 cents still being too great."

Mr. Brush emphasized the injustice of placing a zone line through suburban territory so as to discriminate between home owners who have located in neighborhoods on the understanding that equal fare treatment is to be accorded. It is impossible to segregate the different classes of traffic. If the Washington Street tunnel and the Cambridge subway should be filled with sawdust for ninety days the Boston stores would be forced into the hands of receivers. The witness held that zone fare collection is impossible on an elevated line.

Mr. Brush said that he had recently gone over a study of the zone system as it might be applied to the Boston Elevated Railway, and the best that could be shown for the zone system was a yearly increase of revenue of \$750,000. The company actually needs about \$3,000,000 more per year. A zone arrangement which would yield \$3,000,000 would present a condition which would be impossible from the standpoint of fare collection. Further, it was figured that to obtain \$750,000 additional revenue by the zone system the company would have to spend \$250,000. Mr. Brush said that if the company had the authority it would advance fares to 6 cents at once. Regarding the question of having city lines pay for the outlying lines, the witness said that he believes in considering a community as one unit. Any attempt to make the lines in Brookline (Boston district) self-supporting, for example, would be ruinous. It has even been suggested that a community as a whole should subsidize the property rather than to have the tracks taken up.

The solution of the whole street railway question, the witness said, is the "service-at-cost" scheme. Public service commissions throughout the United States were

created for the purpose of assuring to patrons service at cost. "There is no question in my mind," said Mr. Brush, "but that the commissions, or most of them, have succeeded in seeing to it that the public got service not only at cost, but at less than cost. The difficulty lies in the fact that the public does not believe it. The patrons do not think that they are getting service at cost. The investor knows that he is not getting the service of his funds at cost. The service-at-cost scheme has been tried at Cleveland, and recently it has been introduced in Dallas, and is now in effect in Toledo, and, I think, in Kansas City. Other places are considering it. The present commission appointed by the Massachusetts Legislature of last year at present is preparing a report, and is considering at this time a scheme for service at cost which provides a graduated scale of fares, to go up and down automatically as the rehabilitation fund is increased or depleted. That is exactly the Cleveland scheme, with the exception of avoiding the setting of a maximum. The Cleveland scheme will be a failure if the time comes when the maximum in the scale is reached." Mr. Brush deprecated the ordering into effect of tickets in 6-cent-fare decisions in view of the increased cost of living and the justice of paying more for transportation. Many commodities have increased from 50 to 100 per cent, and it is to the credit of the management of the railways that so small an increase as 1 cent will save them.

Mr. Brush said that 100,000,000 free transfers are issued yearly on the Boston system, and that if a charge should be levied against these it would be impossible to withstand the pressure for the establishment of through lines which would be the result. No community can afford to support a subway out of the car rider the witness stated.

Manufacturers' Night at New England Street Railway Club

"MANUFACTURERS' NIGHT," a regular annual event, was celebrated by the New England Street Railway Club on Jan. 24 at the Hotel Somerset, Boston, Mass. President A. H. Ford of Portland, Me., called the meeting to order after the usual dinner, and nominated Charles C. Peirce, General Electric Company, Boston, to serve as master of ceremonies. A toast was drunk to the health of the men at the front and a vaudeville entertainment was enjoyed during the evening, about 250 members and guests being present. The committee in charge of the evening's entertainment consisted of: John W. Belling, General Electric Company, Boston, chairman; L. P. Morris, Westinghouse Electric & Manufacturing Company; W. W. Field, Barbour-Stockwell Company; J. W. Nason, Frank Nason Electric Company; A. A. Hale, Griffin Wheel Company; G. W. Denyven, E. P. Sanderson Company; and W. L. Boyer, Bemis Car Truck Company.

Cars of the Louisville Railway which leave Louisville for Camp Zachary Taylor, the federal army cantonment south of the city, are now stopped at the entrance to the camp where guards require all who fail to produce passes to leave the cars. On the first Sunday that the cars used the extension into the camp the guards, with orders to stop people but not cars, let several thousand into the cantonment before the orders were amended.

Unprecedented Operating Difficulties on Electric Railway Properties

Canvass Made by This Paper Discloses Conditions, an Understanding of Which by the Public, Would Insure Sympathetic Co-operation—Reports from Various Sections Analyze the Situation

THE war and the weather have combined with previously acting agencies to render the operation of electric railways more difficult during the past few weeks than ever before in the history of the business. To learn just what the conditions are the editors of this paper have secured telegraphic and other statements of the situation in typical cities and an attempt is made here briefly, but graphically, to reflect it.

COLONEL KEALY WIRES DETAILS OF THE SITUATION IN KANSAS CITY

In a telegram just received from Philip J. Kealy, president Kansas City, Mo., railways, he states that local service has been delayed very little by severe weather, but that the revenues of the company have been severely affected. A number of trips have been lost during the severe weather due to crews failing to report rather than to weather conditions preventing operation. About 6 per cent of the trips have been lost on account of labor shortage. The labor turn-over is now approximately 8 per cent per month, as compared with a corresponding turnover in normal times of about 3 per cent.

It is exceedingly difficult to get competent trainmen and repairmen. The government has been taking out extra repairmen by trainloads for government work, principally shipbuilding in the West. As a result of the difficulty of securing men, both trainmen and repairmen, employment standards have been lowered, resulting in most careless operation of cars and an unusually large number of "pull-ins" daily on account of defective equipment. The number of "pull-ins" has increased 300 per cent, and the number of collisions over 200 per cent in the past four months.

The labor shortage could be relieved considerably by the employment of women, especially on trailers, but the local men have taken the position that they will strike if any women are placed on the cars.

The most serious trouble is fuel shortage. From August to December service was cut from 10 to 25 per cent daily in the maximum rush period in an effort to conserve fuel, but the fuel situation is becoming worse instead of improving, and only the coming of more clement weather will relieve it.

LARGE LABOR TURN-OVER DECREASES EFFICIENCY

J. H. Hanna, vice-president Capital Traction Company, Washington, D. C., wires that the company's service has suffered many delays due to weather conditions, particularly since Dec. 26. Since that date from ten to forty-six trips daily have been omitted on account of illness of trainmen. Nothing like this has occurred in the company's experience. The normal weekday schedule calls for 1914 trips. From Jan. 1 to 24 124 trainmen were employed, 88 leaving the service during

this period. The average per month for 1916 was 32 in and 30 out. The company has had to make the qualifications for trainmen much less severe than formerly.

Labor conditions on the Lehigh Valley Transit lines, according to H. R. Fehr, president, are similar to the above. Many employees have left, attracted by offers from munitions and other industrial plants, so that the force as a whole has decreased in effectiveness. The transportation department has remained nearly normal, but in other departments the present monthly turn-over of labor is 50 per cent as against a normal turn-over of 10 per cent.

The quality of the coal which the company is receiving is not up to standard, making it difficult at times to keep up steam in the power house. Not only are deliveries of material for maintenance much delayed, but practically all the materials have increased in price and decreased in quality.

Mr. Fehr also mentions that from Dec. 15, 1917, to date there have been ten snow or sleet storms accompanied by unusually cold weather and frequent high winds. These conditions have taxed the equipment so heavily that the percentage of "pull-ins" has doubled, and tripper service has been curtailed from 50 to 75 per cent. Early in 1917 twenty-four double-truck cars, with seating capacity of fifty-seven, were ordered, but at present just two of these cars have been received, the delay being due to the priority of war orders on which the car-building plant was working.

Another trouble has been that due to the obstruction of tracks by vehicular traffic it has been impossible to maintain schedules.

The company serves the Bethlehem Steel Company, with its 28,000 employees, of whom probably 25 per cent use trolley service under normal conditions. At present, in order to facilitate the transportation problem, the Bethlehem Steel Company, in co-operation with Mr. Fehr, is studying the question of staggered working hours. The company has also presented to the City Council of Allentown a plan to abolish twenty-seven half-block stops, and has been assured of co-operation in every possible way toward bettering present existing conditions.

ALBANY, N. Y., IS MORE FORTUNATE

An exception to the rule as to operating difficulties, presumably due to its location, is furnished by the United Traction Company, Albany, N. Y. H. B. Weatherwax, vice-president, reports that service has been little interfered with by weather conditions, and that labor shortage has caused no loss of trips. The labor turn-over is less than usual, and there is no difficulty in keeping competent platform men and repairmen.

There have, of course, been traffic delays due to weather conditions, but no trips have been lost. There

has been some difficulty in keeping competent repairmen, but applications for platform jobs have, for the past two months, been above normal.

STATEMENT BY PRESIDENT T. E. MITTEN
OF THE P. R. T.

To put the situation clearly before its patrons, the Philadelphia Rapid Transit Company has issued the following statement signed by Mr. Mitten:

This company, in common with all steam and electric railway carriers of the country, has been suddenly confronted with a super-normal demand upon its facilities at a time when the scarcity in the labor market and the delays in the delivery of materials have made impossible the immediate securing of additional equipment or even the full maintenance of usual standards in the repair and operation of the present facilities.

At this time also the United States Government and the State Fuel Administration are imposing upon public utilities the strictest conservation of coal and recommend all possible saving in the schedules and heating regulations.

The company has thus far avoided actual reduction in the schedules but it has been greatly hampered in maintaining the full schedules by cars being held in the barns because of shortage in such material as armatures, wheels, bearings, etc. All of this material has been on order for several months but the manufacturers are unable to make deliveries either because of the demands upon their own plants or because of the congestion in transportation.

This management is now in consultation with responsible representatives of the government looking to the bringing about of needed relief including the granting of priority orders on equipment and material required in meeting the present situation.

While preference in the assignment of available cars must be necessarily given to those lines serving the shipbuilding and munition plants in various sections of the city, the company is exerting its utmost not to discommodate any of its patrons unavoidably. To this end it bespeaks the continued patience and co-operation of the public in its endeavors to maintain the best service possible under the unprecedented circumstances now existing.

HOW SNOW AFFECTS ELECTRIC RAILWAY OPERATION

A typical picture of the ways in which snowfall interferes with service is furnished by a report sent in by L. S. Cairns, general manager Eastern Pennsylvania Railways, Pottsville, Pa.

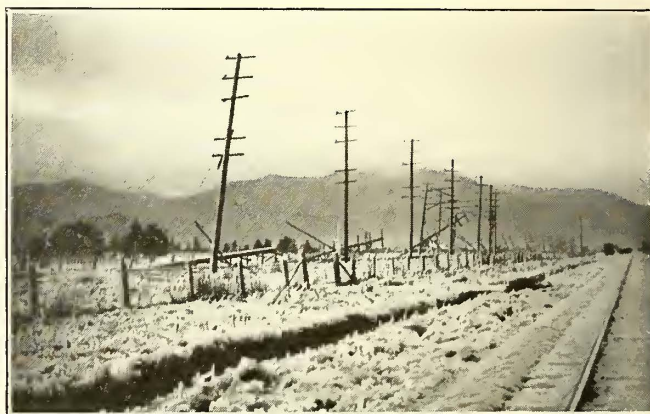
The effect of the 14-in. fall of Dec. 13 and 14 was that all operation was discontinued at about 11 p. m. on Dec. 13. Five divisions, or perhaps two-thirds of the cars operated, were put in operation at some time during the day of Dec. 14, and four divisions, or practically the remaining one-third, during the following day. One division with one car operating on the end of one of the lines was not in operation until the morning of Dec. 16. In other words, 50 per cent of the lines were opened and operated within twenty-four hours, 40 per cent more within forty-eight hours, and the remaining 10 per cent within the next few hours.

On Jan. 15 the company experienced some delays due to a 5-in. snowfall. On Jan. 26 3 in. of snow fell and on Jan. 28 6 in. additional of snow fell. These later snowfalls did not seriously inconvenience the general operation, although cars were operated late and in a few cases delayed due to snowdrifts at some outlying points.

This company has not as yet suffered any special inconvenience due to shortage of labor, as far as platform men are concerned, although some handicap to the work is felt in regard to shortage of skilled mechanics and lack of track men.

Strenuous Days for Repair Force on British Columbia Electric Railway

A SEVERE storm which lasted for three days recently caused a great deal of damage to the Fraser Valley Branch of the British Columbia Electric Railway. Heavy rain fell, freezing as it came in contact with wires, poles, rails, etc. The ice formed to a thickness of 4 in. and 5 in. on standing objects, and this weight, together with the wind, caused many poles containing high-tension trolley and telephone wires to fall. On one 2-mile stretch of track 146 poles fell and 106 on another. Wrecking equipment, consisting of three steam locomotives, one steam derrick, two line cars and three work trains, was rushed to the scene of trouble and proceeded with clearing operations without the aid of electrical energy. Ice formed almost as quickly as it could be removed and in many places the poles had



TRANSMISSION LINES FELLED BY ICE AND WIND

fallen across the center of track, making progress very slow. At the end of three days milder weather and a "Chinook" wind took the ice and snow. This caused exceeding high water in all streams and rivers, washing out the tracks in many places, at one point leaving a gap 65 ft. long and 20 ft. deep, other washouts being $\frac{3}{4}$ mile long and 1 to 4 ft. deep. Train service was operated to the point of clearing, part way by trolley and the balance by steam power.

It was estimated that a total of about 550 poles were felled. To hasten operation poles with trolley bracket arms attached were placed at intervals of approximately 200 ft. with the intention of later placing additional poles at intervals of 100 feet. The trolley wires followed the erection of the poles and only sufficient other wire was strung as would permit re-establishing light, power and telephone connection. A fair estimate of the cost of repairs was placed at \$150,000. Shortly after the interruption to service, three passenger trains, and a milk, way-freight and express service were being operated over the whole line. This service could not be augmented until trolley wire and roadbed were more substantially repaired.

The Public Service Commission for the First District of New York will soon fly a war service flag containing 257 stars. Two members of the commission, Col. William Hayward and Maj. Henry W. Hodge, and many members of its staff are in one branch or the other of the United States service, and some are already at the front in France.

Moving Cars Through Congested Intersections*

As a Solution of This Problem and a Step Toward Rapid Transit the Author Suggests an Appeal to the Public to "Step Lively"

BY A. GABOURY

Superintendent Montreal (Que.) Tramways

EVERY electric railway, and more especially one engaged in transporting the population of a big city, has its hours of trouble. Many of its problems have been solved as they presented themselves, but there are others that are not so easily handled. Among them, probably the latest, is this: "How are we going to move at intersections the ever-increasing number of cars?" Transportation men have spent many an hour thinking about how to do it. Has the problem ever been solved? I doubt it.

Why has this new problem not come to the top? Is it not because railways, in endeavoring to solve the other problems in connection with increasing traffic, have added car after car to their existing routes, in many cases on account of the refusal of city councils to foresee the needs of the future and provide for them by establishing new routes?

The public expects principally one thing—service. To it the matter is very plain. The more passengers there are, the more cars are needed. To a certain extent the demand can be met and congestion of passengers taken care of, but there is a limit beyond which lies trouble. The more cars put on a line, the slower each unit moves and the more congested that line becomes, until finally the question arises as to how to take care of the cars at intersections.

The first problem of congestion of passengers simply meant extra equipment, but the problem caused by extra equipment on already overloaded routes is not so easily solved. Cars can be rerouted to avoid curving at intersections and new lines can be built to parallel existing ones, but since the intersections definitely limit the number of cars that can go through, congestion results after this limit is reached. If every effort on the part of the railway does not bring the solution, let it then apply politely to the traveling public to share the responsibility and to help. But how? By stepping lively, by moving smartly.

It would certainly facilitate the movement of cars, especially at intersections:

If every passenger would remember that the rear of the car does not stop opposite the street corner, but about 50 ft. back, and would stand at this distance from the corner.

If every passenger would move smartly when getting on or off a car.

If every passenger would have his fare ready and would go inside the car without delay.

If every transfer passenger would present his transfer unfolded so the conductor could examine it quickly and give his attention to the next passenger.

If every passenger after paying his fare would walk to the front of the car, ready to alight by the front exit at his stopping point, and thus allow other passengers to board at the rear while he was alighting at the front.

If every passenger would prepare in advance to get

off at his corner by moving toward the exit in readiness to alight the moment the car stopped.

If every passenger would buy his tickets in advance and have exact fare ready at the intersections.

Yes, certainly all this would help, but how can we obtain this help? By no other means than by a serious and well-conducted publicity campaign along the above lines with the use of either the public press or the windows of every one of the cars. After the campaign has been thought out seriously and plans of action carefully laid down, go ahead frankly and sincerely. Be sure that the wording of your literature will inspire confidence and command respect and esteem, and that it will convince the public that the results obtained will be to its own best interests.

How One Company Cured "Jitneyitis"

Better Public Relations Work of the Atlantic City & Shore Railroad Won the Support of the Public Against Unfair Competition

BY JOHN M. CAMPBELL

Secretary and Auditor, Atlantic City & Shore Railroad, Atlantic City, N. J.

ACCORDING to official figures the first jitney appeared upon the public streets of Atlantic City, N. J., on March 13, 1915. This form of transportation immediately became popular, no doubt owing to its novelty, and the number of jitneys increased daily. Supply and auto dealers encouraged them, and by mid-summer 600 jitneys—nearly all Fords, and second-hand ones too—had taken complete possession of Atlantic Avenue, the principal thoroughfare of the resort and the right-of-way of the main stem of the Atlantic City & Shore Railroad system. This great number of unrestricted and unregulated vehicles not only developed most difficult traffic problems for the police, but practically prevented safe travel for private vehicles and pedestrians.

City rulers made several ineffectual attempts to straighten out the tangle. The passage of an ordinance imposing an annual tax of \$25 caused a few local jitney drivers to discontinue operation, only to turn their badly-worn cars over to floaters from other cities who continued to skim the cream of the short-haul traffic in the busy section. The inevitable soon happened. The electric railway, deprived of its principal revenue, made earnest but fruitless appeals to the city rulers for the enactment of more rigid regulation of this unfair competition. The earnings so decreased that the company was forced to default interest, and it was soon forced into receivership.

The railway, left to fight its own battle, then started a campaign of educating the public to an appreciation of facts. The first move was the publication of a little four-page weekly pamphlet, *Trolley Talks*, in which patrons of the line and others were shown the importance to them of the continuation of the electric railway system, its intimate relation to the progress of the city, and the utter dependence of the suburban communities upon a safe, high-grade system of electric transportation.

A department of public relations was established, and criticisms and suggestions from patrons were invited and received. Every complaint was carefully analyzed and a remedy applied. In case a patron had a grievance, the cause was ascertained and a courteous, uniformed

*Abstract of address read before recent meeting of Canadian Electric Railway Association.

Safety Campaign with New Note

Northern Ohio Traction Makes Point that Recklessness Is Unpatriotic Because It Causes Accidents

BY E. BURT FENTON

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

SELF-PROTECTION as a patriotic duty is the keynote of a publicity campaign in the interest of safety, completed at Canton, Ohio, on Nov. 10, 1917. The campaign was conducted by the Northern Ohio Traction & Light Company, which operates the street railway system of the city, as a part of a comprehensive movement within the company's organization for the elimination of accidents.

The purpose of the publicity campaign is described in one of the fourteen articles in these words:

This company can prescribe safety rules for its employees and enforce them. It can equip its cars and its lines with the best of safety devices—and is doing so as rapidly as possible. It can place danger signals and other protective devices where they ought to be. It can use every device and precaution known to the Science of Safety—and has done so or is in process of doing so.

But—

It cannot make you careful if you choose to be reckless.

That part is up to you.

Carrying out the idea, the non-employed individual was urged daily for two weeks to "Be careful. Be careful. *Be careful!*" The ordinary dangers of street travel, whether afoot or in a vehicle, were pointed out and each individual exhorted to keep his eyes open.

In all of the fourteen articles, which were run in

(Concluded from page 233)

employee was sent to make amends. The latter plainly tried to show the desire of the company to avoid a repetition of the objectionable occurrence.

The motormen were carefully studied, and the most efficient one—curiously enough, the most popular one with the riding public—was selected for special work. His sole duty was to see that every motorman operated his car just as nearly like the model as possible. Similarly, a conductor popular with the riding public was carefully observed, and his actions and methods were copied and applied by the other conductors with the most pleasing results.

After many months of such conditions the management was sure of having secured a very efficient means of getting right to the hearts of the patrons. They recognized what had been done for them and would be done in the future, and they showed their appreciation by a new attitude toward the system. Then a final appeal was made to the city rulers. They, at last feeling the trend of public sentiment and realizing the true situation, in May, 1917, passed an ordinance barring the jitneys from operation in competition with the railway.

The ordinance has been carried to the higher courts by the jitney interests, but to date the city has been sustained in its action. Meanwhile the private vehicles and pedestrians are once again able to travel safely on Atlantic Avenue, the electric railway system is looking forward to a prosperous season, and the general expressions of satisfaction on every hand at the elimination of the jitney from Atlantic Avenue show a realization that the jitneys in competition with an adequate electric railway system are an unmitigated nuisance.

liberal newspaper space over the signature of the company, it was put squarely up to the individual that he owes it to his country to keep himself in proper condition to do the work of the country, that the success of the army abroad depends upon the efficiency of each individual at home. One article, having for its text the fact that the people of Canton had subscribed double

Need of "Whole Men"

Shortly after the beginning of the European war in 1914, over a million workmen in the United States, subjects or citizens of the nations at war, were called to the colors of their respective countries. This left a wide gap in the ranks of American industry—a serious labor shortage.

Almost simultaneously, American industry began an unparalleled expansion, demanding more and more labor as factories doubled and tripled their capacities—creating a demand for labor unequalled in history.

Within the present year nearly a million men have been taken from the ranks of industry to serve their country under the Stars and Stripes, and the war plans of the government contemplate the enlistment of five or six times that number. This vast army must be equipped with the myriad of things—arms, food, clothing, shelter, munitions, airplanes, motor driven vehicles, etc., which an army requires. These needs call for a vastly increased production in every line of raw materials and manufacture.

All along the line, as the need of more and more labor arises, there are fewer and fewer men to perform it.

This means that industry—all industry—has greater need of WHOLE MEN than ever before, men in good health, with all their arms and legs and bodies in good working order all the time—"on edge" to give the best there is in them.

Under the circumstances, it is more than foolish—it is almost criminal—for any individual to needlessly risk life or limb.

IT IS A PATRIOTIC DUTY TO AVOID ACCIDENTS.

If you must occasionally "take a chance" in your haste or heedlessness, wait until the man-power of your country is less valuable than it is now.

Be careful. Be careful. BE CAREFUL.

THE NORTHERN OHIO TRACTION & LIGHT CO.

N. B.—Another talk on Safety tomorrow.

GET THE HABIT

It is just as easy to form a good habit as a bad one.

"Taking chances" is a habit.

Running vehicles recklessly—getting on or off moving cars—crossing streets between regular crossings—walking or driving in front of moving cars—failing to look both ways before crossing a street or a railway track—all these become habits with the people who do careless things. The fact that up to date your carelessness has not brought injury to yourself or someone else is no argument for continuing to be careless. There's a first time for everything.

Caution can be made habitual. A few days of watchfulness, a little exertion to remember that there is danger at every street crossing, a little care in running a motor vehicle, forced for a time, will soon become so much a habit that you will soon become unconsciously cautious. You will look out for your own safety and that of others without thinking about it.

There are hundreds of people right here in Canton who have acquired the habit of caution—who avoid danger by looking out for and avoiding it. It comes as natural to them to slow down their machines at corners and other danger points, to look both ways before crossing a street, to wait for the car to stop before getting on or off—just as natural as to get hungry at meal time. Doubtless these people at some time had to learn to be cautious, but they learned it so well that they have no occasion to think of it now.

You can cultivate this habit, if you will.

In the long run, you'll find your way through crowded streets just as quickly and get where you are going just as soon as those people who take foolish chances with their lives and limbs.

Whether you are afoot or in a vehicle it pays to—

Be careful. Be careful. BE CAREFUL!

THE NORTHERN OHIO TRACTION & LIGHT CO.

TYPICAL ADS IN SAFETY SERIES

the city's quota to the Second Liberty Loan, under the caption "A 200 Per Cent City," the patriotic idea was expressed thus:

It is just as much a patriotic duty to protect your body from injury as to loan your money to Uncle Sam. He needs your money—will need more of it. But he needs *you* even more—your brains, your muscles and your skill. Are you protecting these national assets? * * * Uncle Sam needs *you*—your mind, your body, your bodily members—and *he* needs *them* all together, not scattered around. Make Canton a 200 per cent city in *Safety* as well as *Money*.

No attempt was made to duplicate the many "don'ts" usually made part of similar campaigns, but the "be careful" slogan was used every day as something that could be easily remembered and always kept in mind. One advertisement was devoted to the elusiveness of the "Go" signal at street crossings, so far as pedestrians are concerned.

This publicity campaign was used simultaneously with a series of lectures to the school children of Canton by Mrs. Minnie Riddle of the Chicago Bureau of Safety, who was engaged by the company for that purpose. Mrs. Riddle's talks to the children related to safety precautions in the home, on the playground and on the streets, and were adapted to the understanding of the pupils of all grades. During her stay she addressed the pupils of every school room in the city, public and parochial, making about 125 addresses in all.

Mrs. Riddle will conduct similar speaking campaigns in the schools of all of the communities served by the Northern Ohio Traction & Light Company, beginning soon in Akron.

CONSTRUCTION, MAINTENANCE AND EQUIPMENT

ENGINEERS, MASTER MECHANICS AND OTHERS WHO HAVE DEVELOPED ECONOMICAL PRACTICES, OR WHO HAVE WORTH-WHILE IDEAS ARE INVITED TO TELL READERS OF THE JOURNAL ABOUT THEM IN THIS DEPARTMENT

Car Axles—Their Design, Manufacture and Service

PART I—ESTIMATING FIBER STRESS

BY NORMAN LITCHFIELD

ATTENTION was recently called through an editorial in this paper to the necessity for uniformity in the production of a high quality axle for passenger service under electric railway cars. There can be no question as to the importance of this feature, and furthermore, it presents one of the most difficult problems in the attainment of that desired ideal, the absolutely safe axle. It, however, forms but one of a group of problems entering into the matter, and it is the purpose of this article to review the history of the development of the modern axle, and to set forth in convenient form the various points of design, manufacture, tests and inspection, and operating methods which experience has proved desirable. No feature of car equipment has received more attention, and rightly so, for the axle represents the last link between the safety of passengers and serious accident—so much so that on properties handling large numbers of passengers, the operating officials no longer look upon an axle as a mechanical detail to be purchased as cheaply as the state of the market and the dexterity of the purchasing agent will permit, but rather as a piece of accident insurance the value of which depends upon the care with which it was prepared and the stability of the company issuing it. The axle, therefore, must meet the strictest requirements of correctness in mechanical design and high quality of material, it must be produced as uniformly as possible by competent and trustworthy parties under proper checks and inspection, and it must be used under careful methods of installation and inspection during operation.

An axle is primarily a beam, cylindrical in section, supported at two points—the wheel hubs. With the car stationary the loading consists of the car truck and passenger weight acting vertically on the journals, and a certain portion of the motor weight on the motor bearings. In service, however, the axle becomes subjected to a variety of forces, some of which are exceedingly difficult of determination. The swaying of the car, especially through curves and switches, produces a heavy side thrust of the wheel flange against the rail, thereby applying a powerful force couple to the axle at the wheel hub. To this are added the vertical oscillation of the car on its springs, the effect of im-

perfect at rail joints, the torsion of the motor, the braking action, the gear vibration, etc. Furthermore, it is well known that the strain on a member is much more severe when for any cause the forces acting thereon are reversed rapidly in their direction, the magnitude also depending on the rapidity of the reversals, the effect of which on an axle running with 36-in. wheels at say 45 m.p.h. is equivalent to 840 reversals per minute.

While it is not practicable to calculate all of the forces, it is feasible to determine some of them and to analyze their combined effect on the axle, with the resulting fiber stress. Then from experimental data and experience the factor of safety necessary or desirable to use in the design can be judged. The fundamental

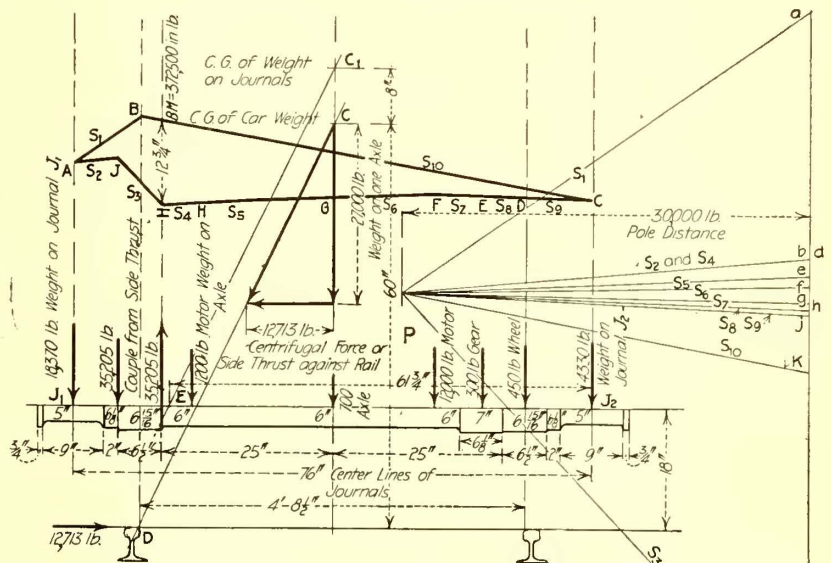


FIG. 1—DIAGRAM OF FORCES ACTING UPON AN ELECTRIC CAR WHEN ROUNDING A CURVE

facts are admirably covered in a report of a committee headed by E. D. Nelson and contained in the proceedings of the Master Car Builders' Association for 1896. Time has very largely borne out most of the deductions reached in that report and for the convenience of those to whom this report is not readily available such passages as are of immediate interest are quoted here.

The committee first turned its attention to the analysis of the forces acting on a car axle, these being worked out by the late Prof. A. J. DuBois of the Sheffield Scientific School of Yale University. A calculation was first made of the location of the center of gravity of the car under consideration, which was found to be approximately 6 ft. above the head of the rail. The committee then ascertained by a road test that the vertical oscillation of the car on its springs added about 26 per cent to the load on the journals

when stationary. This, it should be understood, is purely vertical oscillation and is not to be confounded with the shifting of the load from one journal to the other due to the swaying of the car. The maximum effect of the latter is assumed to be obtained by a horizontal force acting through the center of gravity of the car, and of intensity just sufficient to tip the car over. A simple calculation will show that at a distance of 6 ft. from the top of rails set at the standard gage of 4 ft. 8½ in. this force is equal to $0.4023W$, where W is the weight of the car. Hence the centrifugal force of the car rounding a curve is assumed as equal to 40 per cent of the weight. This, it may be said in passing, is equivalent to rounding a 600-ft. radius or 9-deg. curve at the rate of 60 m.p.h.

Two methods of calculating the bending moments are given—one analytical and the other graphic. The latter forms rather the more convenient method, it being the well-known graphic solution of forces and moments by use of the force and equilibrium of polygons, which needs no explanation here, as it is fully explained in all standard works on mechanics. For an

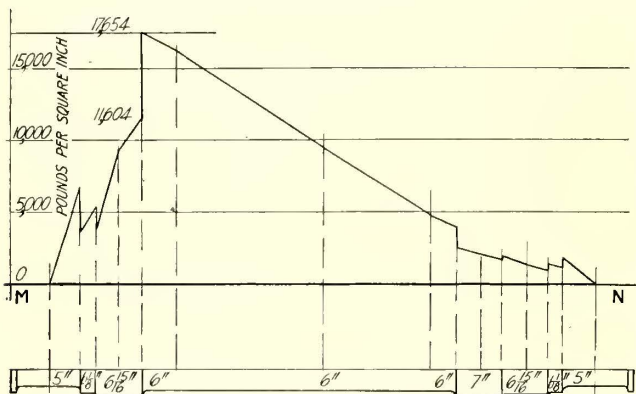


FIG. 2—STRESS DIAGRAM DRAWN FOR THE
A. E. R. E. A. AXLE

example we give in Figs. 1 and 2 a graphic analysis of the A. E. R. E. A. standard axle "E. C." having 5-in. x 9-in. journals with 6 in. diameter between wheel hubs. This is rated at a maximum loading of 27,000 lb., representing on two four-wheel trucks a car weighing with passenger load approximately 54 tons, equivalent to the average interurban car. While this car may not attain a maximum speed of 60 m.p.h., still the much smaller radius of curves in general use on electric lines as compared to steam practice makes the development of the full centrifugal force equally or even more likely.

An analysis of the weight in an average electric car shows that the great mass of the trucks, motors and equipment lowers the center of gravity of the whole car down to 5 ft. from the top of the rail, whereas the M.C.B. committee give 6 ft. for an ordinary steam coach. As the center of gravity of the electric car is lower than in the steam coach it follows that the side thrust from centrifugal action necessary just to overturn the car is greater than on the steam car, and a greater force can thus be exerted on the axle. The small radius curves and less favorable track conditions usually existing on interurban lines makes quite possible the exertion of this full force.

The stresses in the axle are most conveniently calcu-

lated by the graphic method, using the equilibrium polygon. For convenience of reference, the following explanation is given of its application to the axle in question.

As the basic assumption is that sufficient centrifugal force is exerted just to overturn the car, it follows that the resultant (through the center of gravity) of the car weight and the side thrust must pass through the head of the outer rail, thus relieving the inner rail of any pressure. As the weights of the wheels and gear and of the axle itself and a portion of the motor weight are not borne on the journal, these items are deducted from the total and the center of gravity of the masses whose weight is on the journal determined. This is found to be 68 in. above the rail. The resultant of the weight on the journal and the corresponding centrifugal force is parallel to CD or C_1E , Fig. 1.

The division of the weight between the two journals will then be in the proportion $\frac{EJ_2}{J_1J_2}$ so that the weight on the outer journal is 18,370 lb. and on the inner journal 4330 lb.

At each end of the outer wheel hub forces are exerted forming a couple caused by the side thrust, and equal to 35,205 lb. Lay off to any convenient scale the various forces, $ab = 18,370$ lb., $bc = 35,205$ lb., $cd = 35,205$ lb., $de = 1200$ lb. (motor), $ef = 700$ lb. (axle), $fg = 1200$ lb. (motor), $gh = 300$ lb. (gear), $hj = 450$ lb. (wheel), $jk = 4330$ lb.

Assume the pole P any convenient distance, taken in the figure as 30,000 lb., to the same scale as the forces ab , bc , etc., and draw the rays Pa , Pb , Pc , etc. Then through any point A on the line of direction of the force J_1 draw AB and AJ parallel respectively to Pa and Pb and JI , IH , HG , GF , FE , ED , DC and CB parallel to the other rays. If the work is done correctly the intersection of AB and CB will be on the line BD . The vertical intercept of the sides of the equilibrium polygon, measured in inches, to the same scale as the drawing of the axle, multiplied by the pole distance, 30,000 lb., gives the bending moment, in inch-pounds in the axle at that section. From these bending moments and the known section moduli at the various sections, equal to $0.098 d^3$, the stresses at the different points are calculated in pounds per square inch, laid off to any convenient scale vertically from the line MN , Fig. 2, and the stress diagram is drawn in.

It is at once seen that the point of maximum stress is at the inner end of the wheel hub on the commutator side, and that its value is 17,654 lb. per square inch. As before stated, the assumption of centrifugal force taken would require an excessive speed on a perfect curve to produce. But when it is remembered that this force is the product of the mass and the sidewise acceleration, and that switch points and curves are far from perfect and therefore induce exceedingly high rates of side acceleration, it will be seen that the conditions are not improbable.

In the next article of this series we shall discuss the merits of the axle analyzed herein to show how it might be improved by application of the theory outlined. A modified axle, with fiber stresses determined by the same method, will be described also. In the concluding article the materials available for use in axles and the care and treatment of axles, will be taken up.

New Passenger Locomotive for the St. Paul

Center of Gravity Is 63 In. Above Rail, One-Hour Rating 4000 Hp., and Starting Tractive Effort 112,000 Lb.

THE Westinghouse Electric & Manufacturing Company and the Baldwin Locomotive Works have under construction for passenger service on the Chicago, Milwaukee & St. Paul Railway ten direct-current, regenerating locomotives. These form part of the electrification extension described in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 3, 1917, page 819.

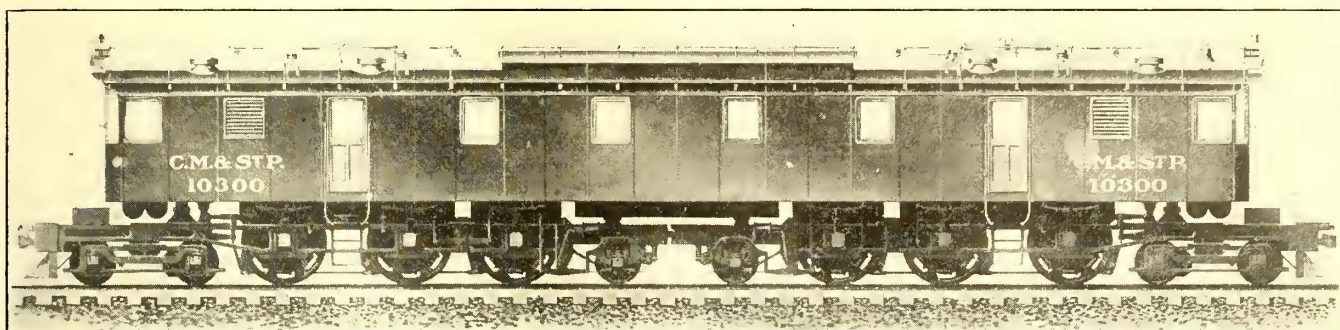
MECHANICAL FEATURES OF THE LOCOMOTIVE

The complete locomotive, with a total length over couplings of 90 ft., weighs ready for service 266 tons, and has an adhesive weight of 330,000 lb. The single cab is carried on the two main running gears, each having a four-wheel guiding truck, three driving axles in a 16-ft. 9-in. rigid wheelbase, and a two-wheel trailing truck. It thus corresponds to two Pacific-type running

The four-wheel guiding truck center pin and cross-equalized leading pair of driving wheels are equalized together on the longitudinal center line of the locomotive. This arrangement combines the advantages of the standard front and construction of the "American" and "Consolidation" types of steam locomotives. The remaining two pairs of driving wheels and the two trailing wheels of the main running gear are side-equalized together again, following accepted steam-locomotive practice. The method of equalization used here provides a weight variation on the driving wheels of only 6 per cent from normal when the locomotive is pulling at 30 per cent adhesion.

The center of gravity of the main running gear, including motors, is 41½ in. above the rail, and the height of the center of gravity of the complete locomotive is 63 in. above the rail.

The designers of this locomotive point out as salient features the following: Large capacity in single-cab unit; flexibility of running speeds with small rheostatic losses; twin-motor design with quill drive; low-voltage auxiliaries simplifying inspection, maintenance and



NEW LOCOMOTIVE FOR PASSENGER SERVICE ON CHICAGO, MILWAUKEE & ST. PAUL RAILWAY

gears coupled with a link and having the two-wheel trucks on the adjacent ends.

The main running gear center pins are located midway between the first and second driving axles of each running gear. On one running gear the center pin is designed to restrain the cab both longitudinally and laterally, while on the other the center pin restrains the cab only laterally, permitting free longitudinal movement. This arrangement of riding and floating pins relieves the cab of pulling and buffing strains due to train load, as these strains are taken directly through the running gear side frames and bumpers. The driving wheels are 68 in. in diameter, and carry 55,000 lb. per axle. The guiding trucks have 36-in. wheels, while each two-wheel truck has a load of 38,500 lb. at the rail, with approximately 62,000 lb. distributed on each of the four-wheel trucks.

On any single driving wheel, the non-spring supported weight is that of wheels, axles and driving boxes only.

The flexible type of quill drive is used to afford a means of permitting a motor located well above the roadbed to drive an axle which, with its wheels, is free to follow the rail independently. This drive secures all the advantages of a flexible gear in cushioning the transmittal of torque and minimizes the road shock.

Each main running gear has three-point equalization with a single point toward the end of the locomotive, in accordance with accepted steam-locomotive practice.

operation; simple and effective regeneration; improved equalization to minimize weight transfer in trucks; auxiliary train-heating plant.

One of these locomotive units is capable of hauling a 950-ton train (twelve coaches) over the entire mountain section at the same speeds as called for by the present schedules. The one-hour rating is 4000 hp. and the continuous rating is 3200 hp. with a starting tractive effort of 112,000 lb. The normal speed on level track is 60 m.p.h., and on a 2 per cent grade a speed of about 25 m.p.h. is maintained.

MOTORS, CONTROL AND AUXILIARIES

Flexibility of speed control is obtained by the use of nine running positions without rheostatic loss. The six 1500-volt twin motors on one unit are connected for three-speed combinations as follows: One set of six motors in series, two sets of three motors each in series, and three sets of two motors each in series.

Two additional running speeds are obtained on each speed combination by means of inductive shunts on the main motor fields, which assist in cutting down current peaks, as well as save rheostatic losses. The speed range is from 8 to 56 m.p.h., depending on the load.

The use of the twin-motor design with quill drive permits effective use of the space between the driving wheels, and the use of two armatures, each wound for 750 volts direct current, geared to the same quill. This voltage is preferred to 1500 on account of the better

Electrical Properties of Vulcanized Fiber

Effect of Temperature, Thickness and Color on Break-down Voltage—Physical and Chemical Properties—General Uses

By WILLIAM EVES, 3D

Engineering Department American Vulcanized Fiber Company

CONSIDERABLE work has been done in the measurement of the electrical properties of vulcanized fiber, but not very much of the information that has been obtained on the subject has been collected. Break-down voltage is by far the most important electrical property concerning which information is required by the user as it is considered in 98 per cent of the cases.

BREAKDOWN VOLTAGE

The breakdown voltage per unit of thickness of vulcanized fiber is a function of the thickness itself, the extent to which the gelatinization of the individual piles of paper has been carried, the temperature of the sample at the time of the test and to some degree the color.

Moisture to a certain degree is necessary for the life of vulcanized fiber and any zinc chloride used as the gelatinizing agent that remains after the washing processes will be in solution in the natural moisture. This may happen in spots at which points leakage would occur between the electrodes of the testing set. Local heating would result, reducing the resistance of the small amount of solution, and breakdown would

(Concluded from page 237)

commutating characteristics inherent in motors built for the lower voltage.

The only high voltage apparatus among the auxiliaries on the locomotive is the motor of the small motor-generator which is used for train lighting and charging the storage battery. Low-voltage auxiliaries were adopted to secure minimum complication of installation, maintenance and operation. Ordinary inspection can be carried on, including the functioning of switches and auxiliaries, with no 3000-volt power on the locomotive.

The regenerative control in these locomotives has been designed to secure positive operation of this feature over widely varying speeds. The same main motor combinations for "motoring" are used for "regenerating," except that the fields of the main motors are separately excited over a wide range by means of axle-driven generators. These are so connected with balancing resistance as to insure inherent stability in the motor characteristics during regeneration.

These machines are mounted on the pony trucks of the locomotive and, in addition to exciting the motors during regeneration, furnish power for operating the air compressors and blower motors when the locomotive is hauling. This arrangement insures a supply of current to the air compressor motors irrespective of the overhead trolley supply, and provides that compressed air will always be available for use of the air brakes.

Each locomotive is equipped with an oil-fired steam boiler, designed to burn the ordinary fuel oil used by the railway company. Provision is made for a storage of 7500 gal. of water and 750 gal. of oil in each engine.

occur before the breakdown voltage of perfect fiber was reached.

The method and conditions of the test will also affect the voltage at which the sample will break down. The shape of the electrodes will affect the distribution of the electrostatic flux throughout the material, and the medium in which the terminals are immersed, oil or air, and the rate of application and the method of application of the voltage will determine the amount of heating due to corona loss, causing consequent drying and carbonization and premature breakdown.

CURVES SHOWING EFFECT OF TEMPERATURE AND THICKNESS

The accompanying curves were plotted from test data obtained at the Massachusetts Institute of Technology by Katzenstein and Burt. In all, 4000 tests were made, including red, black and gray fiber, but it has been considered advisable to reproduce here only the temperature curves for gray fiber. The tests were

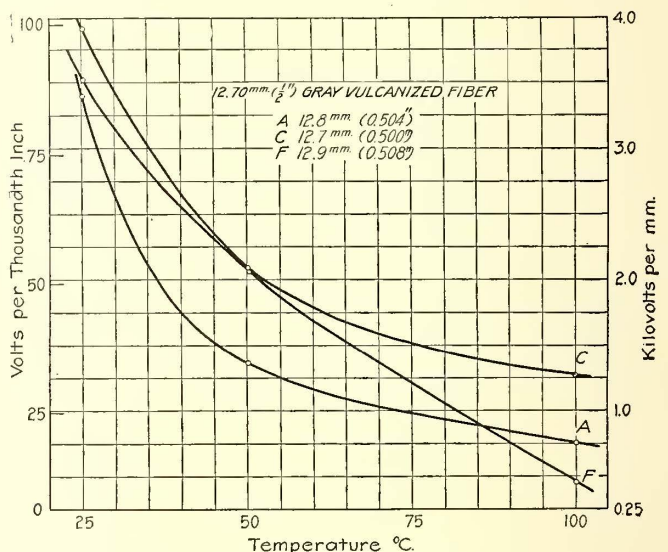


FIG. 1.—BREAKDOWN VOLTAGE OF ½-IN. GRAY VULCANIZED FIBER

all made with the same electrodes, and the voltage was increased at the constant rate of 1000 volts per second. At temperatures higher than room temperature the samples were prepared by heating in an oven for one hour for the thinner specimens and from four to five hours for the thicker.

SOME OBSERVATIONS MADE IN THE INVESTIGATION

Fig. 1, referring to gray fiber of ½ in. thickness shows an average decrease in breakdown voltage in the 25 deg. to 100 deg. temperature range, of 77 per cent. Tests on a thickness of 0.03 in. show an increase of 80 per cent in breakdown voltage for the same range of temperature. Tests on thickness greater than ½ in. are not very interesting, because the voltage required to break down a sample of such thickness is greater than most commercial voltages.

A comparison of results on black fiber of 0.067 in. thickness shows on average increase of 12 per cent in breakdown voltage. Greater thicknesses show a decrease with increase in temperature.

The results of tests with red fiber of ¼ in. thickness show the average decrease in breakdown voltage in the range from 25 deg. to 100 deg. to be approximately

60 per cent. Thin red fiber shows an average increase in breakdown voltage from 25 deg. to 100 deg. of approximately 20 per cent.

The most plausible theory for the change from an increasing variable with increasing temperature to a decreasing variable with increasing temperature but with an increase in thickness, is that the small amount of moisture and zinc chloride in solution cause the resistivity to decrease with increase in temperature, while the fiber loses a certain amount of its contained moisture when heated, greater thicknesses doing so much less rapidly than lesser thicknesses, but not at all in proportion to the thickness.

The results of many tests made with the fiber of five large manufacturers have been averaged, and the composite results are shown in Fig. 2. This curve gives values for room temperature only.

BREAKDOWN VOLTAGES* OF SEVERAL THICKNESSES OF VULCANIZED FIBER	
Thickness in Inches	Breakdown Value, Volts per 0.001 In.
1/32	225 to 425
1/16	150 to 300
1/8	125 to 275
1/4	100 to 225
1/2	75 to 150

*Results higher than these have frequently been observed, but these limits will include the majority of cases.

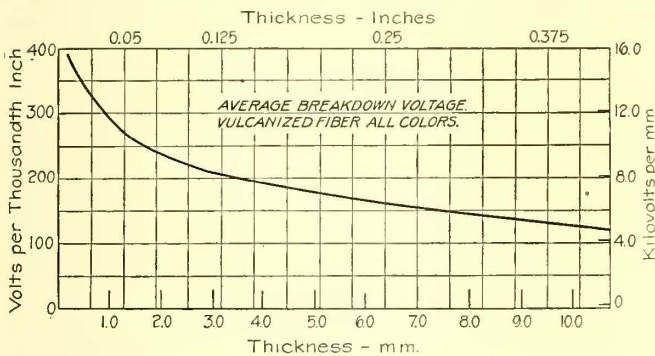


FIG. 2—AVERAGE BREAKDOWN VOLTAGE OF VULCANIZED FIBER OF ALL COLORS

Gray fiber is made from paper of the natural color, with no coloring matter of any kind. Black contains a small amount of lamp black or other coloring matter, and red is colored with a relatively large amount of various grades of oxide of iron. Any loading material placed in the paper from which vulcanized fiber is made tends to interfere to some extent with the chemical treatment, and the result is a less homogeneous material. Coloring matter acts as a loading material and produces a slightly more "papery" fiber, which usually has a higher breakdown value because of the greater degree of lamination. Moreover, fiber is made from three grades of paper, which vary in the degree to which they are gelatinized by the chemical action. The paper from which 1/8 in. to 3/4 in. fiber is made is treated to the greatest extent with the zinc chloride, and consequently a more homogeneous material with low breakdown voltage results. In a large number of cases the loading factor of red fiber is so much more pronounced than the tendency for the small amount of solution of oxide of iron to lower the breakdown voltage that the dielectric strength of red fiber will be higher than that of gray fiber. Black fiber is usually between the red and gray grades and nearer the gray in its breakdown voltage.

As vulcanized fiber loses its normal amount of contained moisture its pliability decreases and finally it becomes brittle. This is caused either by application of a sustained temperature of 80 deg. to 100 deg. cent. (176 deg. to 212 deg. fahr.) or to higher temperatures up to 200 deg. cent. (392 deg. fahr.) for shorter periods of time. At this latter temperature charring commences. It has the following strengths in pounds per square inch: Tensile, 9000-13,000; compressive, 33,000-43,000; shearing, 9000-13,000.

Vulcanized fiber is not waterproof. It absorbs water to a certain degree, but is not injured by either hot or cold water, for it returns to its original dimensions and properties when dried. Most dilute acids and alkalis cause no effect other than the effect of water, but concentrated acids cause disintegration. However, organic solvents and all oils have absolutely no effect and are not absorbed in the slightest degree.

GENERAL USES FOR ELECTRICAL INSULATION

Vulcanized fiber was first used in 1873 for axle washers and railway car-journal dust guards. One of the largest uses at the present time, either for electrical or mechanical purposes, is for railway signal insulation. The rail joints opposite every block signal must be insulated in order that the rails may be used as the signal circuit. The ends of the rails are insulated by means of fiber end posts and a fiber head plate and base plate with bushings around the bolts are used to insulate the fish plate from the rail. Every spur must have an insulated joint where it leaves the main track, and every switch rod and steel tie and all metal parts that connect the two rails electrically must be insulated. The specifications for this application are quite severe.* This is an instance where the material is subject to severe weather conditions and extreme mechanical strain, and yet the dielectric strength must be high even when it contains a fairly high percentage of moisture.

When the breakdown voltage per thousandth of an inch, the specific gravity and the cost per pound of vulcanized fiber are compared with the corresponding values for other insulating materials, it will be found that the commercial insulation value of vulcanized fiber is very high. Its ability to be machined with great accuracy and to be bent, punched and formed to shape should be taken into account. In fact, it can be used in many cases where no other material will answer.

Circulating Water in Car Heaters

It has been found at the carhouses of the Ohio Electric Railway, Columbus, Ohio, that the difficulty of starting the water to circulate in the pipes of hot-water car heaters can be overcome by putting the car in motion. To this end the car is sometimes run for short distances and stopped suddenly each time. A small motor-driven centrifugal pump has also been installed on some cars for the same purpose. The experience of this company in the use of car heaters of this type was related in some detail by F. J. Foote, master mechanic, in an article in the ELECTRIC RAILWAY JOURNAL for March 3, 1917, page 397.

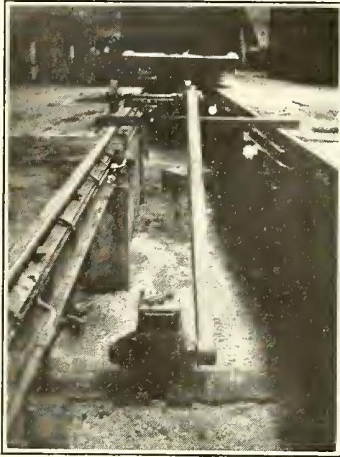
*See standard specifications of Railway Signal Association.

Quick Method of Grinding Wheels

By J. F. MERRICK

Master Mechanic Oakwood Street Railway, Dayton, Ohio

WE HAVE on our system approximately a mile of track with an average gradient of about 6 per cent, the maximum being 8.5 per cent, and the braking required on this section subjects the wheels to very severe tests, making flat spots not uncommon, especially on cast wheels. Turning the wheels true both reduces the wearing capacity and requires considerable time, and although emery shoes would remove the flat, it would take, in most cases, two or three days.



APPARATUS FOR GRINDING WHEELS AT THE PIT

To obviate these difficulties we designed an apparatus both for grinding the wheels and for truing up the flanges, as shown in the accompanying illustration. The grinder consists of an emery wheel

and a pulley on opposite ends of a shaft, mounted on a 6-in. x 8-in. timber. This is laid across the track under the car, and bolted down, and power is supplied by a track-grinder motor which is set in the pit. The car is jacked up, and the proper car motor is operated to turn the defective wheel, while the remaining motors are cut out. The emery wheel has a feeding mechanism operated by a ball handle similar to that of a lathe tool.

With this method it is possible to grind a wheel during the time it would take to prepare it for turning in a lathe. By providing two emery wheels, with the pulley in the middle, two wheels can be ground simultaneously, thus saving more time and making the work on both more nearly the same.

ft. square and upon both sides of which the sign is painted in different color combinations. Two hooks, screwed to the top of the board, provide places for hanging lanterns.

This sign is used almost exclusively throughout the city to protect track gangs and material and also in place of regular "Street Closed" horses. While it is impossible to give any data as to the effect its use has had on the prevention of accidents, it is considered well worth its cost, since the ease with which it is transported adapts it especially to repair and construction work on city streets. The cost of this sign in the early part of last year was \$6.

During construction work on its interurban lines the company uses the standard flagstaff shown in Fig. 2. This is used also with a yellow flag or a yellow light when work requiring low-speed operation is in progress. It is also easily shifted from place to place.

Effective Snowplow Equipment for Interurban Roads

THE Bamberger Electric Railroad, Salt Lake, Utah, has built in its shops some interesting snowplows to be used in keeping track open during drifting snow.

Fig. 1 shows the type of plow as applied to the standard motor car equipment of this company. Note that the wings of the plow are so curved as to give the snow

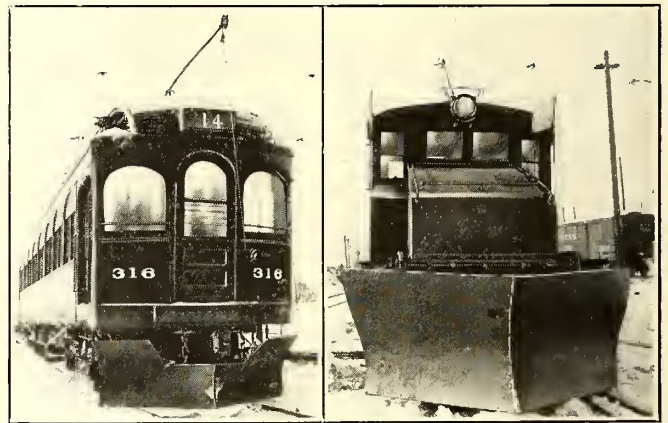


FIG. 1—TYPE OF SNOWPLOW USED ON MOTOR CARS. FIG. 2—SNOWPLOW EQUIPMENT FOR USE ON LOCOMOTIVES

Protecting Signs Used in Rochester

A CONVENIENT and substantial danger sign used by the New York State Railways, Rochester, N. Y., is shown in Fig. 1. It consists essentially of an iron framework supporting the signboard, which is about 2

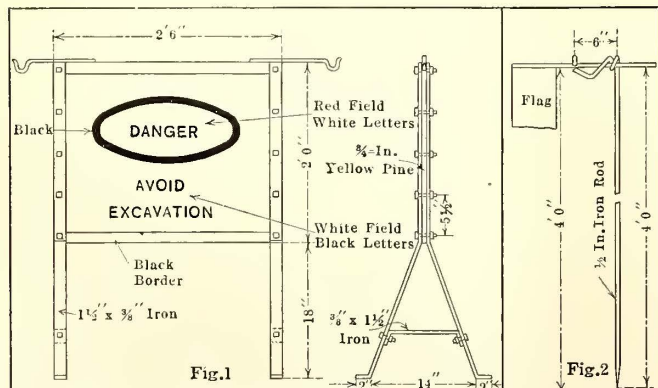


FIG. 1—DANGER SIGN USED IN ROCHESTER. FIG. 2—FLAGSTAFF USED ON INTERURBAN LINES

a rotary motion, throwing it entirely clear of the track. This makes a channel wide enough to clear the journal boxes, rear steps and other parts of the car. The plow is fastened to the wooden pilot which has been effectively braced to the main body frame of the car. As shown in the figure, the construction is such that the cars can be coupled in trains, space having been left to allow free action of radial drawbars.

It is stated that motor cars carrying this plow seem to make better speed and pull less heavily on the substations than cars not so equipped.

In Fig. 2 is seen a similar type of plow built for the locomotives. This plow has been made entirely of scrap 1/4-in. sheet steel heavily reinforced and mounted on a steel frame. Sixty-five pound steel rails, bent at right angles, are attached to the locomotive frame, and on these are mounted two air cylinders for raising the plow from an operating position of 1-in. clearance to a carrying position of 6-in. clearance above the top

Pay-as-You-Leave One-Man Car at Plymouth, Mass.

THE Brockton & Plymouth Street Railway is operating two pay-as-you-leave one-man cars upon that part of its line between the Hotel Pilgrim, in Plymouth, Mass., and the Kingston town line, a distance of about 10 miles. This mileage is divided into three overlapping zones as shown in Fig. 1. The fare unit for the whole or any part of a single zone is 6 cents,

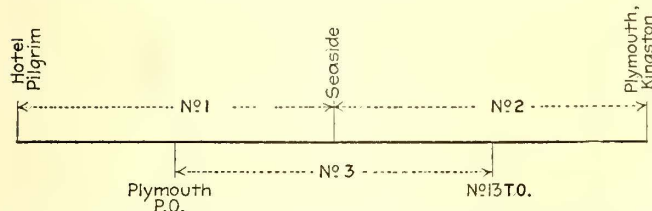


FIG. 1—OVERLAPPING FARE ZONES, BROCKTON & PLYMOUTH STREET RAILWAY

and for the entire line between the above-mentioned terminals, 12 cents. Fares are paid either in cash or with tickets which may be purchased in advance.

Upon entering the car, which is shown in Fig. 2, each passenger is given a metal identification check, Fig. 3. These checks are of three designs, square, octagonal and circular. Each represents one of the three fare zones and is stamped accordingly. Before leaving the car the passenger in each case returns his check to the operator and is told the amount of his

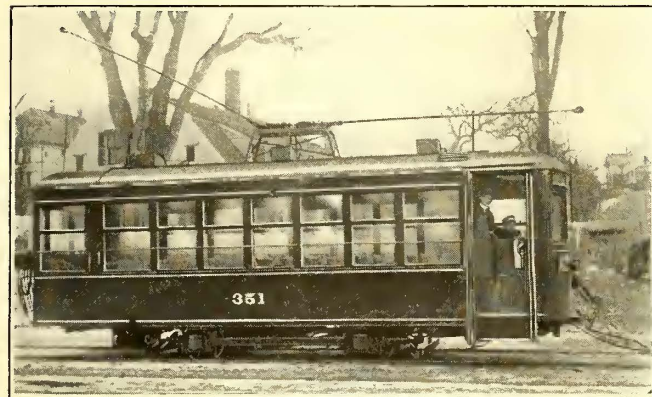


FIG. 2—SAFETY PAY-AS-YOU-LEAVE CAR, BROCKTON & PLYMOUTH STREET RAILWAY

(Concluded from page 240)

of the rail. This operation is controlled by a simple valve at the motorman's position.

As in Fig. 1, it will be noted that the plow has been so shaped as to give the snow a rotary motion that at a fair rate of speed deposits it clear of the second track. The plow is mounted in front of the pilot and is readily attached to the locomotive. This operation comprises the application of twelve bolts to connect the holder rails to the frame and eight bolts for the brace rod between the holder rails and the frame.

The two holes shown in the front of the plow were cut to permit the passage of a chain to the coupler in case it should be desirable to use the locomotive for wrecking purposes with the plow attached. The locomotive weighs approximately 40 tons and the plow an additional 1250 lb.

fare. This he deposits in one of two compartments of a C-16 International fare box, arranged for both ticket and coin service. The slot for tickets will not admit a coin or identification check, and the circular openings in the coin receiver are too small to admit a ticket or a check. The tickets are mutilated as they pass through the box. Coins (cents, nickels and dimes) are held visible to the operator in the coin receiver until released by him. They then pass automatically through an adding machine showing the total value of



FIG. 3—METAL IDENTIFICATION CHECKS, BROCKTON & PLYMOUTH STREET RAILWAY

fares collected at any time. The coins are then removed by the operator and used over and over in change-making.

No transfers are given in connection with the operation of these one-man, or safety cars, as the Stone & Webster organization, managing the road, designate them, but school

children are carried at half fare, in accordance with the Massachusetts law. The cars were built by the St. Louis Car Company. They are each equipped with two GE-258 motors, safety controller handle, automatic door, step, braking, sanding and unlocking door equipment along the usual lines of design applying to this type of rolling stock. Besides the controller contact which must be held in position in order

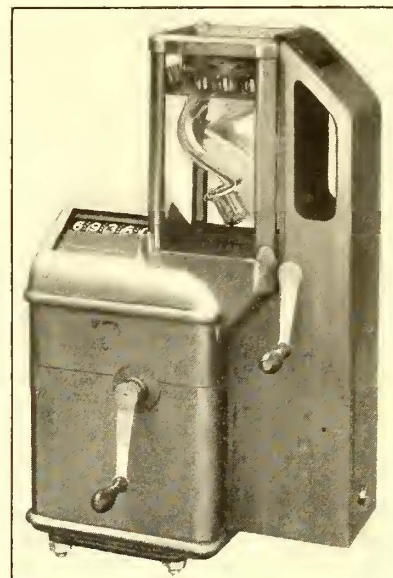


FIG. 4—FARE BOX USED ON ONE-MAN CARS

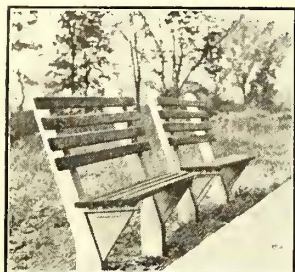
to operate the car, a pedal switch is provided in each car to relieve the operator of the inconvenience of constantly holding his hand upon the control. An average service of 180 car-miles per day is performed by each of these cars.

Rate of Bituminous Increased-Production Better This Year

The increase in bituminous coal production in 1917 over 1916 was 8.3 per cent in place of the expected 10 per cent. The increase was 23 per cent over 1915. The year 1918 has started off with an average per working day of 1,799,000 tons, an increase of 1¼ per cent over the average for 1917.

Concrete Makes Good Benches for Interurban Shelters and Parks

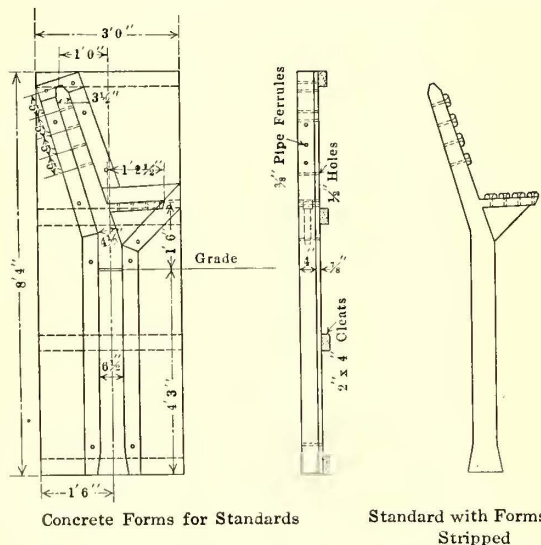
ELECTRIC railways are often called upon to provide outdoor benches at waiting shelters along interurban lines and in company-owned parks. As these benches get rough usage it is desirable to make them as rugged as possible and at the same time they should present an attractive appearance.



ATTRACTIVE BENCHES MADE OF CONCRETE

A concrete bench which meets these requirements and one which can be readily made by the railway's own men is shown in the illustrations. The forms for the concrete are made of 4-in. planks which are bolted to a baseboard from which they are removed as soon as possible

after the concrete has set. The concrete is a 1:1:2 mixture, the coarse aggregate consisting of 3/4-in. washed gravel. Four 1/4-in. square rods 8 ft. long and twisted are used in each of the standards, and two rods of the same cross-section but 1 ft. 4 in. long are placed in the brackets underneath the seat. The standards are



DETAILS OF FORMS FOR MAKING CONCRETE BENCH

set 4 ft. apart and 4 ft. 3 in. in the ground. It is reported that benches of this type which have been in service for more than a year have caused no trouble from breaking or from heaving.

The cost of making and installing the benches is about \$8.75 complete.

Coasting 1581 Miles More Per Day

In the latest issue of the *B. R. T. Monthly*, William Siebert, superintendent of surface transportation, points out that the schedules on the Brooklyn Rapid Transit system call for 33,400 trips per day. If each motorman on each trip would coast an additional 250 ft. it would mean a daily saving in power consumed equal to the amount of power it would take to operate a car 8,350,000 ft., or 1581 miles. From five to ten times this amount could easily be saved.

Precautions that Prevent Freezing in Air Piping

THE large number of air-operated mechanisms used on railway equipment make it necessary to take great precaution in the installation of the air-piping between the compressor and the main reservoirs to prevent freezing of the condensed moisture. This is especially true of pneumatically operated apparatus which employs valves with small openings. The January issue of the *Electric Journal* tells of some important parts that should receive careful attention.

Contrary to a general impression, freezing at very low temperature is not so troublesome as it is a little below 32 deg. Fahr. because at low temperature most of the moisture has been frozen out of the atmosphere. The installation of air piping should be such that the maximum amount of moisture is retained in the main reservoir and no pockets should exist where moisture is liable to collect. The pipe between the compressor and the main reservoir, as well as the pipe between the two main reservoirs, should be at least 25 ft. long, and when the length of car does not permit a straight run the pipe should be made in the form of horizontal coils.

A scheme which is similar to the pipe coil, but having the additional advantage of multiple paths, is the arrangement of a number of tubes fastened into two heads or drums. One of these drums can be used as a moisture trap, preventing the major portion of the moisture from getting into the main reservoir. For a given length of piping with the same diameter in the two systems one arranged in the single path and the other in multiple paths, the single path will require a greater velocity and hence a greater loss in pressure for the delivery of a given quantity of air.

In connecting the feed pipe to the reservoir particular attention should be given to make sure that the connections do not give a reduction of pipe area at any point, as the change in area increases the possibility of freezing. One of the most common breaches in the proper method of making an air installation is to use an "L" fitting at this joint, which not only gives a reduction of area but forms a trap for moisture to accumulate. A better and much more satisfactory scheme for this connection is to have a straight run or large radius bend to the main reservoir where possible and use a connector which does not give a reduction in area.

All piping from the reservoir to the various pieces of apparatus should be arranged to drain back into the reservoir as far as possible, and when this is impossible it should at least drain away from the apparatus.

There have been a number of installations where the compressor intake has been mounted inside and, in some cases underneath, the car. The best place to mount the intake is on the roof, as it is then possible to obtain cool, clean air. More moisture is obtained from the interior of a car than from the exterior, especially on a cold day, because the higher temperature of the air within the car permits the presence of more moisture per unit volume of air.

Even with the best installations it is impossible to prevent considerable moisture from getting into the system and to prevent trouble from this source a rigid inspection should be maintained during the winter. It is a good practice to drain the main reservoir at least once a day and oftener if possible.

Recent Happenings in Great Britain

Coal Saving, Labor Shortage, Package Delivery and Other Matters Growing Out of the War Are Main Topics to Receive Attention

(From Our Regular Correspondent.)

The coal conservation sub-committee has issued an interim report to the Ministry of Reconstruction regarding electrical power supply in Great Britain. The sub-committee proposes, briefly, to supply all industries with energy generated at big "super-power" stations, not more than sixteen in number for the whole country, and to eliminate or combine all smaller stations. The primary object of the scheme is to economize coal supplies. The amount of coal used in the United Kingdom for the production of power is 80,000,000 tons at a cost of about £40,000,000 at the pit head. By an up-to-date and national scheme of electrification 55,000,000 tons of this, valued at £27,000,000 a year, could be saved. This, with a saving of the by-products now wasted by the burning of coal in open grates and boiler furnaces, would effect a national economy of £100,000,000. The generating machines in the stations should be of large size, not less than 20,000 hp. each. In more important industrial districts machines of as much as 50,000 hp. might be used to even greater advantage. At the present time the supply of electricity in Great Britain was split up among about 600 companies and municipal undertakings. The average generating capacity of such of these undertakings as possessed power stations was only 5000 hp., or about one-fourth of the capacity of one single generating machine of economical size and about one-thirtieth of that of a power station of economical size. The committee favored private enterprise. The sixteen great power authorities, whether private companies or public bodies, would be controlled by a national board of electricity commissioners. Existing plants would be handed over on equitable terms to the new authority.

YOUTHS AS DRIVERS

The Board of Trade inquiry into the recent tramcar accident in Glasgow has elicited some interesting information as to the conduct of tramways in war time. The car in question was being driven by a lad about sixteen years of age. It took the corner at Queen's Park gate at very high speed and was overturned. As a result three persons were killed and about fifty others were injured. Colonel Pringle, who conducted the inquiry, elicited from the chief instructor in the tramways motor school the information that in tramway service youths stood the cold better than women, and were less emotional and excitable. It was contended that a boy of sixteen was as strong as a woman of twenty-five. The traffic manager stated that in ordinary times the department did not employ men under twenty-one years of age, but owing to the fact that about 3000 of the staff were absent in the army it had become

necessary to employ youths or women. The traffic manager stated that women were not efficient drivers as a rule. Of 800 women trained in Glasgow for such work, only 258 had been retained. Three months ago the department started the experiment of training lads of sixteen and upwards, and at present the corporation had 146 under age, of whom thirty-nine were qualified as motormen, fifty-one were training, and fifty-six were conducting. There were disadvantages in the employment of these youths, but if the corporation did not utilize them, cars would have to be taken off. This would be a serious matter in important munition centers.

INCREASE IN STAFF PROPOSED

At a recent meeting of the London County Council the highways committee submitted proposals for the appointment of an assistant electrical engineer and for the settlement of details of reorganization not covered by the main scheme approved in February. The proposals included increase of the fixed staff of the tramways department. Including the appointment of an assistant electrical engineer, indicated in the main report, the estimated additional expenditure involved by the proposals in the report is £1,655 and ultimately £2,905 a year. The committee is satisfied that economies in working costs will outweigh the additional expenditure which is proposed for the staff.

By a new defense of the realm regulation, the Board of Trade, for the purpose of making the most efficient use of the materials or plant belonging to a tramway or light railway undertaking with a view to the successful prosecution of the war, may by order require the whole or any part of the rolling stock, materials and plant, including permanent way, of any such undertaking to be placed at its disposal or at the disposal of any person or body of persons named by the board. Where any such order has been made, the board or any such person or body of persons may take possession of such portions of the rolling stock, materials or plant of such undertaking as may be required, and may remove them and make use of them for the purposes of any other tramway or light railway.

A large number of the Councils through whose districts the cars of the London United Tramways pass have decided to petition against the company's bill to increase fares, abandon parts of its lines, abolish wayleave payments and put off the time of purchase of the undertaking by local authorities.

It is of some interest to note the effect of the abolition of the halfpenny stages at Keighley. The tramways department had settled down to the halfpenny stage system for some time before the war. Keighley's short and compact tramway system lent itself

admirably to the halfpenny arrangement. The cases of crowding out longer distance passengers were comparatively few. With the increased running costs due to the war it was found impossible to make the halfpenny fares pay. Recourse was had first of all to a twenty-for-a-shilling prepaid ticket system. Later on the corporation adopted penny fares for all stages. For a time the number of passengers registered showed a marked drop from the halfpenny totals. Now the passenger records are mounting again. The totals for the last four weeks for which figures were available show an advance of £153 over those for the corresponding period of the previous year. The Town Council has sanctioned an advance in fares by the trackless trolleys to meet the increased running charges.

CO-ORDINATE ROAD TRAFFIC

The Leeds tramways committee has been asked by the government department responsible for the co-ordination of road transport if it cannot make more use of the cars for the conveyance of parcels. A similar communication has been sent to the tramway undertakings in many other cities. One of the exceptions is Bradford, which has taken the lead in the matter of package handling. Road transport offers a wide field for the exercise of various economies—economy in man-power, petrol, fodder, etc. Three or four tradesmen's vans delivering goods on the same day in the same locality represent a wastage which in these times it is most desirable to avoid, and this departmental activity is aimed at concentrating into one organization the entire parcel delivery system in any given district.

No cheaper method than the use of the trams could be devised for this purpose. It is interesting to know that the system is in operation in Bradford to such an extent that the parcels department is handling, apart from newspapers and milk from the municipal depot, between 9000 and 10,000 parcels a week.

The Halifax Tramways committee has decided to ask the Town Council to sanction an all-round increase of 50 per cent in tramway fares. The recommendation is made because of the growing difficulties of maintaining the present services in consequence of reduced staff and material and the increased cost of repairs, renewals and labor. It is also necessary to put a stop to overcrowding on the cars.

The question of municipal tramways was mentioned at a recent meeting of the Grimsby Corporation highways committee. It was reported that the lease of the tramway company would expire in 1921, and it was decided to appoint a special committee to consider the question of acquiring the undertaking. This committee will be authorized to make investigations, collate information, and to engage such advice as may be necessary to enable it to present a complete report to the Town Council.

A. C. S.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE · PERSONAL MENTION · CONSTRUCTION NEWS

Forty-eight Cars Burned

Damage at Buffalo Not as Great as at First Reported, But Will Total \$500,000

Fire which swept through the Forest Avenue station of the International Railway, Buffalo, N. Y., on the night of Jan. 23 destroyed forty-eight cars and four snowplows and track sweepers. Twelve other cars were slightly damaged. The loss is estimated at \$500,000. The burned cars will be replaced immediately, but the company will probably move the location of the carhouse. Investigations made by the railroad officials failed to determine the cause of the fire.

After conferences with the J. G. Brill Company, Philadelphia, that company promised to divert to Buffalo thirty cars now being built for other companies. These cars are of the double-end type similar to those destroyed in the fire. The company has received twelve cars from the G. C. Kuhlman Car Company, Cleveland, Ohio, on its second order for fifty cars and the other thirty-eight cars will be delivered within the next sixty days.

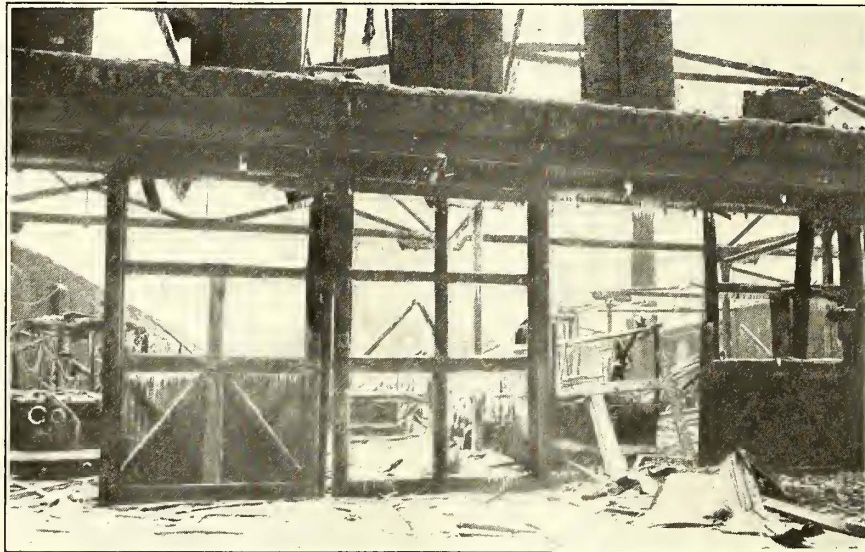
The Forest carhouse was one of the oldest owned by the company. It was a one-story brick structure 500 ft. x 150 ft. About eighty cars were operated out of it, but fifteen cars were lying on storage tracks on property adjoining the station on the night of the fire and the balance were being operated on the three lines which run out of the burned structure.

Within thirty minutes after the fire was discovered the entire building was in ruins. As soon as the power had been cut off at the power houses the firemen started to throw water onto the building, but it was fully fifteen minutes before this was done. The frame roof fell onto the cars and every car in the house was destroyed beyond repair.

About half of the burned cars were of the double-end type. The others were near-side pay-as-you-enter cars. None of the company's new equipment was operated out of this carhouse. The loss of this equipment will seriously

handicap the company until all the cars can be replaced. From the Forest carhouse are operated all the cars for the Elmwood Avenue line, which is the main traffic artery to the Pierce-Arrow Motor Car Company, the Curtiss Aeroplane Company, and other large war industries in the congested Elmwood-Hertel Avenue section. Cars have been diverted from several of the company's other carhouses to handle a large part of this traffic.

E. G. Connette, president of the International Railway, has not decided whether the Forest station will be rebuilt. The company owns the property, which is located in a valuable residential section with a long frontage on Richmond Avenue, a popular residential street. The company is considering the purchase of property in the Elmwood-Hertel section for a new carhouse. This



ALL THAT REMAINS OF THE FOREST AVENUE STATION

proposed site would be of great value to the company because it would be in the center of a rapidly growing industrial section.

The rolling stock equipment of the company as last reported consisted of 945 motor cars and ninety-three other cars. The company operates about 400 miles of electric railway.

Manila Officials Return

J. H. Pardee, president, and J. P. Ripley, railway engineer, the J. G. White Management Corporation, New York, N. Y., who have been making a general inspection of the Manila Electric Railroad & Light Corporation and other interests in the Islands operated by the Management Corporation, have returned to this country.

Franchise Approved

St. Louis Settlement Grant Goes to Public Service Board Before Final Action by City

The bill providing for the settlement of the differences between the United Railways, St. Louis, Mo., and the city was approved by the Board of Aldermen on Jan. 18 by a vote of twenty-four to five, and sent to the Public Service Board, which must submit a report on the franchise measure under a provision of the city charter before final action is taken by the Aldermen. Under the charter the Aldermen are not bound to accept any amendment suggested by the Service Board. They are merely required to receive a report from that body before acting finally, in order not to pass on franchise legislation without expert engineering advice.

The bill was approved with amendments agreed upon by the public utilities committee, on motion of Alderman Barney L. Schwartz, chairman of the committee. Alderman Hall objected to approving the amendments before the Service Board acted, but his motion to send the bill to the Service Board without amendments was lost.

The bill extends the franchise of the United Railways thirty years, and substitutes a special tax of 3

per cent on gross revenues for the mill tax and special franchise taxes. It creates a board of control with power to order extensions and betterments of service whenever the company can afford the investment. The city will recognize the company's right to earn 6 per cent on a valuation of \$60,000,000, and all earnings above 7 per cent will be turned into a fund which the board of control may use for building extensions or providing improvements in service, or for reducing the capital stock of \$60,000,000. Extensions or rolling stock purchased out of such surplus are to belong to the city, and the company is not to be permitted to earn profits on this investment. The accrued mill tax of \$2,300,000 is to be paid within five years and the company is to pay 6 per

cent interest on all of the deferred payments.

The Service Board took up the measure for the first time on Jan. 22 and decided to hold daily meetings until the measure has been fully considered. President Kinsey said the board would not be able to reach a report when the Aldermen hold their next meeting, but that it would probably be in a position to submit a report at the meeting on Feb. 1.

The board indicated on Jan. 22 that it may recommend an amendment to the settlement bill providing that whenever the earnings exceed 7 per cent on a valuation of \$60,000,000 the surplus may be used to reduce car fares. The present bill provides that surplus earnings may be used by the Board of Control in building extensions to the company's lines or in bettering the service.

Another amendment proposed on Jan. 22 was that the right of the city to condemn the property by a suit in the Circuit Court be stipulated in the settlement bill.

Strike on Municipal Railway City Council Refuses to Bow to Threat of Coercion by Other Municipal Employees

The men in the employ of the Monroe (La.) Municipal Street Railway, operating 10 miles of line, went on strike on Dec. 26. This is the second strike of the employees of the municipal railway system in four months. The men claimed a "lockout" on the part of the city and failure of the city to live up to the contract between them and the city as interpreted by the arbitrators who settled the previous strike. Mayor Apgar said the "walkout" was due to the fact that there was not a sufficient number of men available to continue operation of the cars with two operatives on each car, and because the city refused to pay double time to the operatives for one-man operation. To the operators of the one-man cars the city had paid time and a half.

The city at once set about the task of finding men to replace those who had gone out, and in a few days was able to restore service practically to normal. Subsequently the City Council rejected a proposal by the executive committee of the Monroe Labor Council whereby the men who struck and the city would renew their contract and the men would return to work operating cars on the one-man plan, the wage scale to be the subject of subsequent agreement. This action reaffirmed the city's determination not to enter into another contract with the men. At the same meeting the Council ratified Mayor Apgar's action in hiring imported operatives and authorized the Mayor to hire at home or elsewhere not only additional men to operate cars but any men needed to operate other public utilities owned by the city. This authority was given in view of threats of a sympathetic strike which might tie up such utilities as the electric light plant and water works.

Two Estimates of Minneapolis Railway Values

Majority and Minority Reports Made by the Central Franchise Committee to the City Council Differ by \$5,809,572

The central franchise committee on Jan. 23 presented to the City Council of Minneapolis, Minn., its report of the valuation of the property of the Minneapolis Street Railway, controlled by the Twin City Rapid Transit Company. Two sets of figures were presented. Twenty-nine members of the committee signed a majority report that places the total value at \$21,279,932. Eighteen members signed a minority report that places the total value at \$15,470,360. Many qualifying or modifying considerations attach to the reports.

The majority report presents the figures as representing fair value proper to be used as a basis for a valuation of a new franchise for the company. It puts the physical valuation on Jan. 1, 1916, at \$18,868,130, including overhead charges, and the going concern value on Jan. 1, 1918, at \$2,411,802. The majority report is issued, its context states, subject to express provisions, one of which is that the \$2,411,802 allowed for going concern value on Jan. 1, 1918, shall be eliminated from capitalization at the rate of 2-11 a year, after Jan. 1, 1918, until a new franchise goes into effect.

The minority report, based upon the Cappelen and Pillsbury reports long precedent, criticises these reports and presents the figure \$15,470,360 as arrived at by taking the Cappelen physical valuation of \$21,152,221 and subtracting \$5,681,861, made up of items that the report says should be deducted. The minority report disagrees with the majority report in a number of important respects.

Each report presents analyses in detail of the various important items involved.

The company's franchise expires in 1923. Since the matter of a renewal of the grant came actively before the City Council several years ago, the following valuation reports have been made:

Date—By Whom	Valuation
Sept. 29, 1916—City Engineer F. W. Cappelen—Existing physical value Jan. 1, 1916	\$21,152,221
Cost to reproduce new	22,432,072
Including capital expended in development and commercial value of water-power leases (figures commonly referred to as representing the Cappelen report)	25,914,308
Including value of water-power leases to July 1, 1923, value of steam-property leases and value of downtown terminal block	28,789,085
Nov. 28, 1916—Street Railway Company	35,323,376
Dec. 22, 1916—C. J. Rockwood, attorney	19,107,607
Aug. 21, 1917—C. L. Pillsbury, engineer	24,300,000
Nov. 15, 1917—J. D. Hogarth, Milwaukee	13,608,730
Jan. 23, 1918—Central franchise committee, majority report	21,279,932
Minority report	15,470,360

The minority report dissents from the majority report with reference to what it terms the "function of our committee to act as an arbiter," and says it has not conceived the committee to have such

function and that it does not desire to relieve the City Council of the duty imposed upon it of making an agreement with the railway.

DISAGREEMENT ON FUTURE PROCEDURE

The two reports differ widely in their suggestions as to what should be done next. The majority report says:

"In view of all considerations involved it will be to the best interest and welfare of the public of this city to secure a prompt settlement of the problem on the basis of valuation figures set forth."

The minority report disagrees with this and, after commenting on the statement that the stock of the company is widely distributed among men of influence in Minneapolis, says:

"The personnel of its officers is and has been in the past so closely related to those conducting large industrial and financial enterprises here, that sound business judgment dictates that a utility value from a board of national reputation and representing the people's point of view should advise the city as to what elements should be allowed in the final capitalization."

The reports have gone to the street railway committee, which will meet again at the call of the chairman to take up the matter.

Extension to Ballard Ready

Addition to Seattle Municipal Railway Will Be Placed in Operation This Month

Operation of the Seattle (Wash.) Municipal Railway, Division A into Ballard, over the Fifteenth Avenue N. W. bridge, is expected to begin during February. The opening of this extension will be the signal for the operation of municipal cars on Fourth Avenue as far as the County-City Building at Jefferson Street, by common-user agreement with the Seattle & Rainier Valley Railway. Because of the light construction of the Loyal Heights Railway, which has been taken over by the city, it will be impossible to operate the city's large cars over that line, so that between the County-City Building and the north terminus at Thirty-second Avenue N. W. and West Eighty-fifth Street there will be a transfer of passengers to and from large and small cars at West Sixty-seventh Street and Twenty-second Avenue N. W.

The City Council has concurred in the recommendation of the Public Utility Department that the agreement between the Loyal Railway and the Western Washington Power Company, which owns the Everett interurban, concerning the exchange of transfers, be continued in force. It has also been decided to permit the issuance of transfers between the city's Ballard line and the Loyal Heights unit, when it becomes city property, on 4-cent fares.

Temporary Agreement on Bay State Wages

Acute Situation Probably Relieved by Understanding Between Receiver and Representatives of the Men

The negotiations regarding wages that have been in progress between the officers of the Bay State Street Railway, Boston, Mass., and the representatives of the union of employees were terminated on Jan. 23. The men had requested an increase which would have cost the company about \$900,000 more a year than at present for wages. The company presented a co-operative plan for the consideration of the men. The contract under which the men are now working has until May, 1920, to run.

On Jan. 29 danger of a strike appeared averted by the reaching of an understanding between union representatives and the company relative to wage conditions during the present period of abnormal and reduced schedules resulting from the coal shortage. Conferences between Wallace B. Donham, receiver, and W. D. Mahon, of the Amalgamated Association, were concluded a few days ago, and it was expected on Jan. 29 that a formal agreement would shortly be signed which will remove all possibility of a strike. Up to the time of sending the *ELECTRIC RAILWAY JOURNAL* to press the details of the agreement had not been made public beyond the fact that it contained provision for wage increases dependent upon the co-operation of the men with the company's efforts to obtain increased efficiency of service. The temporary agreement will not invalidate the current agreement between the men and the company as to wages and working conditions in general.

A week after Mr. Donham became receiver, without any warning, the men took a strike vote, based on the necessity of the receiver shutting down part of the service on account of the coal shortage, notwithstanding the fact that the men were fully paid, under terms of the contract, whether they worked or not.

At the second conference arising out of this situation, Mr. Donham told the men that in his opinion this was not the real issue between the company and the men, but that they wanted increased wages. He told them further that he sympathized with their feeling, and they ought to have more wages, as prices had gone up since the war began. He told them, however, the Bay State Street Railway had no funds out of which it could pay any increased wages, but that the company was making an effort to work out plans under which it could get more money. It was explained in behalf of the company that it was impossible for it to meet the demands of the men.

Mr. Donham desired, however, to work out a method under which the men could get more money and he presented to them, over a series of conferences, a plan under which, with their co-operation in saving operating expenses the company could make sub-

stantial savings, most of which Mr. Donham was prepared to give to the men. As evidence of his good faith and belief that this savings plan would result in a real increase in the money received by them, Mr. Donham guaranteed, out of the share in the savings which would, under the plan, go to the company, to pay the men 1 cent an hour in addition to their contract wages. He further guaranteed that their share in the savings would equal at least 1 cent an hour additional, and stated to them that estimates made by the company showed that the savings would equal 2 cents an hour. In other words, he made a definite offer to guarantee 2 cents an hour during the period of the war and six months thereafter, and to give the men an additional 1 cent if they could save it. All of this was conditional only on the men co-operating with the company to bring about these savings.

RECEIVER MAKES STATEMENT

After the sub-committee of the general conference board, assisted by President Mahon and Executive Board Member John H. Reardon and Vice-President P. J. O'Brien informed Mr. Donham that they would have nothing whatever to do with the plan, Mr. Donham made a statement in which he said:

"I do not know what the intentions are of the representatives of the men, as they in no way expressed themselves in this regard, but it is a source of complete astonishment to me that the committee should take this position.

"The members of the committee stated they took the position because they thought I was trying to break up the union. This is not so. On the contrary, it has been my absolute intention to work with the union and I had so stated to them. Also that I was endeavoring to build up the spirit of co-operation between the company and the men, believing that the result of co-operation through them, working with their union, and me, as receiver, would be to the mutual advantage of both sides, and would be very greatly to the advantage of the public.

"For example, one of the principal features through which the men were to benefit in financial return was by their acting under our instructions to prevent accidents; another was saving power and thereby coal consumption, which is a matter of the very greatest importance to the public at the present time; third, by courteous and friendly treatment of passengers, thereby increasing riding, the results of which I was prepared to share with them.

"It will be noticed that the plan which I suggested to the men is not the ordinary profit-sharing plan, which is for the benefit of the individual workman, but that the plan which we worked out would have distributed the savings over men in large groups, a method

which, so far as I know, has never been in any way considered opposed to the principle of collective bargaining."

W. D. Mahon, the president of the Amalgamated Association, said that the union had a contract with the company that contained ample provisions for any co-operation necessary and that he would not recommend to his men something he did not understand himself.

Service-at-Cost Plan

Rumor Has It That the Massachusetts Legislative Investigating Committee Will Recommend This Plan

Holders of electric railway securities will be guaranteed a return of 6 per cent on their investment, jitney competition will be greatly reduced, excise and commutation taxes will be abolished and increased electric freight and express service will be authorized if the Massachusetts Legislature adopts the recommendations of the special commission on street railways as forecasted at Boston during the week ended Feb. 2 in anticipation of the filing of the formal report of that body.

Up to Jan. 30 the report had not been filed, but many of the anticipated recommendations were being freely discussed at the State House. Bills already filed contain provisions along the line of the legislative commission's recommendations. The legislative commission is expected to make it clear that it does not feel that State ownership and operation would solve the electric railway problem and that it does not approve of the State's acting as banker for companies in financial straits. It is understood that Governor McCall would not approve either of these plans.

According to reports the legislative commission indorses the service-at-cost plan first suggested by the Association of Owners of Massachusetts Street Railway Securities. A bill providing legislation putting this plan into operation has been prepared and will be offered to the Legislature. Under this plan the State would appoint a State director for each road and accountants to examine the books; the Public Service Commission would determine the amount of invested capital, and each company would be obliged to set aside from 4 per cent to 8 per cent of its capital stock as a reserve fund, the maximum fund being \$1,000,000. Rates would be fixed semi-annually, each company being obliged to file eight different schedules of fares, four above and four below its present schedule, and establishing variations of from 1 cent to 10 cents on lines now charging 5 cents. All profits would be turned into the reserve fund, and if the fund increased 30 per cent in six months, the fare would drop 1 cent during the next six months.

Authority to grant electric railway freight permits would be taken from local municipal governments and vested in the Public Service Commission, and the companies would be relieved of all street repair work except between the tracks in paved streets and a space 18 in. outside each rail on unpaved streets.

Car Hearing Goes On

B. R. T. Again Argues for Relief from Order Requiring Purchase of 250 Surface Cars

The Public Service Commission for the First District of New York on Jan. 23 reopened the hearings on the order to compel the Brooklyn Rapid Transit Company to buy and operate 250 new surface cars.

William Siebert, superintendent of surface lines of the company, testified that, owing to the opening of new transit lines, it was his opinion no new surface cars were needed.

John L. Wells, of counsel for the company, said that the situation had changed since the order was issued because the war had made it much more difficult to procure motormen and conductors, and that to buy the surface cars required by the order would necessitate the company borrowing \$3,000,000. Mr. Wells contended that on account of the opening of the new high-speed lines adequate service on the surface lines would be possible very soon by using fewer cars. Commissioners Whitney and Hervey demanded a tabulation from the company supporting this contention.

John J. Dempsey, vice-president of the company, estimated that the opening of the Brighton Beach-Flatbush Avenue-Eastern Parkway-Eastern District subway would be equivalent to an addition of 250 new surface cars, while W. S. Menden, chief engineer of the New York Municipal Railway Corporation, which operates the dual rapid transit lines allotted to the Brooklyn Rapid Transit Company, estimated that the operation of 400 surface cars would be saved by the new tubes.

Walter Barnaby, auditor of receipts of the Brooklyn Rapid Transit Company, testified that there had been an average decrease in receipts of \$50,000 a month for the last four months of 1917 over the similar period of 1916 on the surface lines. He mentioned the Fifth Avenue, Third Avenue, Flatbush-Seventh and Smith Street lines as those on which the falling off in traffic was most marked.

On Jan. 28 Charles H. Sabin, president of the Guaranty Trust Company, testified that he believed it would be unwise to compel any corporation at this time to spend money unnecessarily. He said that he was not competent to decide what was necessary in the matter of railroad facilities for the city.

John J. Dempsey, vice-president of the company, testified that if the third tracking of the Fulton Street elevated line in Brooklyn had been completed, and if other transit improvements, now under way, were ready for operation, the 250 cars would not be necessary. He added that when the pending improvements were finished it would be possible to take from the surface lines from 296 to 500 cars.

William H. Williams, of the Delaware & Hudson Railroad, introduced by the Brooklyn Rapid Transit Company as a witness, said that no railroad

should spend any money during the war on new equipment. He insisted that permission from the federal government should be obtained before the Public Service Commission required any of the companies under its jurisdiction to put any money into improvements during the war.

Engineers and Mechanics for Aviators

The Navy Department announces that men will soon be selected for aviation service. Men of suitable qualifications who report now to the Navy recruiting offices are eligible for examination for commissions and ratings. The rates of pay and duties assigned in this aviation work in the Navy will make this opportunity highly attractive to mechanical engineers and to draftsmen, mechanics and others who are experienced in gasoline engine design or operation. Among the men desired are the following:

Graduate mechanical engineers and men of experience along engineering lines for special duty in the bureau of steam engineering, and in connection with work of this bureau at various places.

Mechanical engineers for special work under the bureau of construction and repair. These men will be used in connection with the development of air craft.

Mechanical draftsmen for duty in bureau of construction and repair on aviation work. These men will receive special aeronautical training as needed.

Suitable men for training for quartermasters (aviation) and carpenters' mates. Men for training as quartermasters (aviation) should be experienced in fabric work, wire working or any form of light rigging. For carpenters' mates (aviation) boat builders are especially desired, but any men with woodworking experience will be considered.

Ordnance Department Needs Help of Various Kinds

Stenographers, typists, production clerks, statisticians, multigraph operators, engineers of tests of ordnance material, assistant engineers of tests of ordnance material, machinists, tool-makers, mechanical draftsmen, munition inspectors, etc., are wanted for the ordnance department of the army to serve in the United States. For further information apply to the representative of the United States Civil Service Commission at the post office or custom house in any city, or to the Civil Service Commission in Washington, D. C. Except for the positions of stenographer and typewriter, typewriter operator, multigraph operator, and general clerk, applicants are not assembled for a written examination, but are rated principally upon their education, training, and experience, as shown by their applications and corroborative evidence.

News Notes

Last Kansas Horse Car Line Replaced.—The Consolidated Street Railway, operating 2 miles of railway between Cottonwood Falls and Strong City, Kan., with horses, has substituted a self-propelled electric car for the horse cars.

Storm Does \$150,000 Damage.—W. G. Murrin, assistant general manager of the British Columbia Electric Railway, Vancouver, B. C., recently placed the estimate of damage to the company's Fraser Valley line during the recent storms and washouts at \$150,000.

Bus Hearing in New York on Feb. 8.—The hearing before the Board of Estimate & Apportionment of New York City on the application of the Fifth Avenue Coach Company for permission to operate in Manhattan and the Bronx has been adjourned until Feb. 8.

Municipal Ownership Plan Carried.—Municipal ownership of the electric railway facilities in Windsor, Ont., after the expiration of the franchise of the Sandwich, Windsor & Amherstburg Railway in 1932 is probable, following the recent election, when a vote of 1462 to 317 carried a proposition for such a change. An extension of the electric railway franchise was voted down 855 to 366, while the plan for the city to make needed improvements on the lines and to charge a rental therefor until 1932 carried by a vote of 958 to 380.

Suit to Test Cleveland Rapid Transit Act.—Prosecuting Attorney Samuel A. Doerfler of Cleveland, Ohio, on Jan. 24 filed in the Ohio Supreme Court a writ of ouster against the Cleveland Rapid Transit Commission on the ground that a city, which is operating under a home-rule charter, cannot avail itself of the provisions of the general law. It is claimed that the members of the commission are holding office without warrant of law. This suit was brought merely to test the legality of the commission before it proceeds with the work for which it was created.

Praise for Milwaukee Company.—The Milwaukee *Wisconsin* said of the Milwaukee Electric Railway & Light Company in its issue of Jan. 9: "The Milwaukee Electric Railway & Light Company, profiting by experience of former years, has attained a high degree of efficiency in combating the efforts of old King Winter to put it out of business. It deserves credit for the car service it gave the public in spite of the recent storm, and for the benefit to the community incidentally derived from the open space it maintained between the drifts on streets occupied by its tracks. This might have been an advantage of incalculable value in case of fire."

Financial and Corporate

Federal Financing Aid

Secretary McAdoo Urges Congress to Authorize \$500,000,000 Corporation to Handle Security Issues

The creation of a \$500,000,000 government corporation to make loans and advances to enterprises essential to the war and otherwise assist in private financing was recommended to Congress on Jan. 28 by Secretary McAdoo.

The Secretary also asked that all private issues of securities of more than \$100,000 be made subject to the approval of the government body, to be known as the "War Finance Corporation."

The proposed corporation would have power to make advances to banks which finance industries essential to the war or to buy direct the securities of such corporations, subject to certain restrictions concerning price and length of the loans. The corporation also would make short-time advances to savings banks.

Further powers of the corporation would be "to subscribe for, acquire and own, buy, sell and deal in bonds and obligations of the United States." It could issue notes or bonds of its own of an amount not more than eight times its capital, which would be supplied originally by the government.

The corporation would be managed by the Secretary of the Treasury and four directors to be appointed by the Secretary with the approval of the President. The draft of a bill embodying Secretary McAdoo's suggestion was prepared and will be introduced shortly in both houses of Congress.

ADVISORY BOARD

In accordance with a plan to have the Federal Reserve Board pass upon voluntary security applications, Allen B. Forbes of Harris, Forbes & Company, New York, has been appointed chairman of a board of three advisers to the federal body. The recommendation for a securities authorization board by a special committee of the Investment Bankers' Association of America, of which Mr. Forbes was chairman, was noted in this journal last week.

B. R. T. TO HAVE HELP

At the annual meeting of Brooklyn Rapid Transit Company on Jan. 25 T. S. Williams, president, in reply to the inquiry by stockholders regarding the \$57,000,000 of notes which mature next July, said that the company's officials had taken up the matter of this maturity with the Federal Reserve Board authorities in Washington and had been directed by them to take up the matter with the local authorities. This maturity is one of the largest occurring in 1918.

The local Reserve Bank authorities

have the matter under consideration. Mr. Williams said: "I want to express full confidence that whether such financing is undertaken by the government or privately in some way, the maturity of these notes will be taken care of without any question. The government authorities have asked the company's officials to take no definite step in regard to the note matter until they (the government authorities) arrive at a decision."

Interborough-Consolidated Report

Company Received 20 per Cent on Interborough Stock and Pays 6 per Cent on Own Preferred Issue

According to the report of the Interborough-Consolidated Corporation, New York, N. Y., for the calendar year 1917, the surplus balance on Dec. 31 totaled \$1,645,356, as compared to \$1,875,877 the year before. Indebtedness amounting to \$750,000, however, which was part of money advanced by the Bankers Trust Company in June, 1916, was paid off in 1917.

As shown in the accompanying income statement, the company received 20 per cent dividends on its holdings of Interborough Rapid Transit stock, and it paid 6 per cent on its own preferred issues. The company had in its sinking fund on Dec. 31, 1917, \$2,881,588 of Interborough-Metropolitan 4½ per cent collateral trust bonds.

Surplus balance Dec. 31, 1916...	\$1,875,877
Dividends on Interborough Rapid Transit Company stock.....	\$6,782,560
Interest and dividends on securities owned	138,403
Interest on loans, bank balances, etc.	34,902
Total income	\$6,955,865
Total	\$8,831,743
Interest on Interborough-Metropolitan 4½ per cent collateral trust bonds	\$3,052,125
Interest on advance from Bankers Trust Company.....	65,562
Interest on bills payable.....	2,964
Sinking fund on Interborough-Metropolitan 4½ per cent collateral trust bonds.....	300,000
Administration and general expenses	41,809
Taxes	229,494
Total deductions	\$271,304
Total	\$3,691,956
Surplus available for dividends..	\$5,139,786
Dividends on preferred stock..	2,744,430
Net surplus	\$2,395,356
Appropriation to Bankers Trust Company	750,000
Surplus Dec. 31, 1917.....	\$1,645,356

The company controls the Interborough Rapid Transit Company subway and elevated lines and the surface lines of the New York Railways through ownership of stock.

Abandonment Set for Feb. 1

Alton & Jacksonville Railroad to Discontinue Operation Under Authority from Illinois Commission

The Alton & Jacksonville Railroad, successor to the Alton, Jacksonville & Peoria Railway, which has been operating an interurban railroad between Alton and Jerseyville for several years, was to discontinue operation and dispose of its property after Feb. 1, by virtue of authority granted by the Illinois Public Utilities Commission in a recent case (7188), in which the company made application for such authority. The city of Alton, the city of Jerseyville and former bondholders of the company appeared in opposition to the application.

Testimony submitted at the hearing in this matter showed that the territory served by the Alton & Jacksonville Railroad was also served in a general way by the Chicago & Alton and the Chicago, Peoria & St. Louis steam railroads. During the period from Jan. 1, 1916, to June 30, 1917, the Alton & Jacksonville operated at a net loss of \$46,274, of which amount \$7,276 was an operating deficit. Taxes amounted to \$5,247 and interest on the \$450,000 of outstanding bonds was \$33,750. No interest was paid on these bonds during this period nor at any other time. The testimony further showed that from \$65,000 to \$90,000 would be needed for repairs, if operation of the road were to be continued.

The commission found that the territory through which the Alton & Jacksonville Railroad operates is not such as demands the operation of such a road, nor such as would, with reasonable certainty, make the operation of the road under the most efficient management a profitable undertaking. According to the commission order the railroad should probably never have been built.

HOW PROCEEDS OF SALE MUST BE USED

In authorizing the sale of the physical property of the railroad, the commission ordered that the proceeds of the sale must be applied and disposed of in the following manner:

1. To the payment of any State, county, municipal or government taxes or assessments, judgments and liens, except bonds, due and payable, if any;
2. To the payment of open accounts, if any exist, due and owing by said railroad company;
3. To the payment of accrued interest on the bonded indebtedness;
4. To the payment of principal of bonded indebtedness;
5. The balance, if any, to be distributed to the stockholders as their interests may appear.

The case of the Alton & Jacksonville Railroad was appealed to the Circuit Court of Sangamon County on Jan. 9. No motion was made for a rehearing and no stay order had been asked up to Jan. 29. At that time it was stated that the commission's order would become effective on Feb. 1 unless further action was taken prior to that date.

Electric Railway Statistics

Comparison of Returns for October, 1917, With Those for Same Period in 1916 Show Increasing Cost of Operation

A comparison of electric railway statistics for October, 1917, with figures for the corresponding month of 1916, made by the Information Bureau of the American Electric Railway Association, indicates a continued rise in operating expenses. This condition is noticeable throughout the country, although in the Southern District traffic in connection with the operation of military camps has apparently tended to accelerate somewhat the rate of increase of operating revenues.

Data for October, 1917, representing 7394 miles of line of electric railways scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 5.78 per cent and in operating expenses of 12.65 per cent, and a decrease in net earnings of 5.77 per cent. Data representing approximately 70 per cent of this mileage indicate an increase in the amount of taxes paid of 10.53 per cent and in operating income a decrease of 13.73 per cent.

The returns from the city and interurban electric railways, as shown in detail in the accompanying table, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River; Southern District—South of the Ohio River and east of the Mississippi River; Western District—West of the Mississippi River.

Of the three groups shown returns for the Southern apparently indicate a slight degree of improvement over the corresponding period of the previous year, while returns for the Eastern and Western are decidedly unsatisfactory. Data for the Eastern group, representing

4722 miles of line, show an increase in operating revenues of 4.41 per cent and in operating expenses of 10.55 per cent, and a decrease in net earnings of 6.92 per cent.

Returns for the Western group, representing 1668 miles of line, indicate an increase in operating revenues of 8.64 per cent and in operating expenses of 20.89 per cent, and a decrease in net earnings of 9.18 per cent. Returns representing approximately 85 per cent of this mileage indicate an increase in the amount of taxes paid of 19.58 per cent and a decrease in operating income of 18.63 per cent. The unfavorable returns for the Western district may largely be accounted for by labor difficulties as well as by a general rise in the wage scales of electric railway employees.

The operating ratio for the country as a whole has increased from 62.68 in 1916 to 66.76 in 1917. The operating ratio of the Eastern District has increased from 64.88 in 1916 to 68.89 in 1917, while that of the Western group has increased from 59.27 in 1916 to 65.95 in 1917.

Abandonment Confirmed

Ohio Court Upholds Commission in Its Decision Not to Require Continuation of Operation

The Supreme Court of Ohio has ruled that under the law the Ohio Public Utilities Commission has no authority to set a date for an interurban railway to go out of business after the company has failed. The question arose from an appeal by patrons of the Lake Erie,

Bowling Green & Napoleon Railway to the commission to prevent suspension of operation. The commission decided it did not have jurisdiction, and dismissed the case. The Supreme Court affirmed the decision.

At the same time the court decided that Theodore Luce, who purchased the railway, may proceed to junk it. Suit had been brought by the prosecuting attorney of Wood County to oust him as head of the bondholders' committee, which purchased the line and began to junk it, in the hope that some arrangement might be made to continue it in operation. It was contended that the road would pay if properly managed. Since that time another road has arranged to operate a portion of the line, but under the decision since rendered the owner may dismantle the line, should he so decide.

The light and power plant at Bowling Green, which was owned by the company, has been operated continuously.

Data for Stockholders' Tax Return

The section in the present income tax law which provides that profits or surplus paid to stockholders as dividends "shall be taxed to the distributee at the rates prescribed by law for the years in which such profits or surplus were accumulated by the corporation" is leading many companies to send notices to stockholders, giving the facts, so that the individual stockholder may properly make up his income tax statement. The detail with which some of these dividend statements to stockholders are prepared is shown by the following notice issued by Wells Fargo & Company on Jan. 19, 1918:

The attention of stockholders is called to the fact that the dividends paid in 1917 are, under the provisions of the income tax

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS, OCTOBER, 1917 AND 1916. COMPILED FROM MONTHLY RETURNS OF ELECTRIC RAILWAYS TO THE AMERICAN ELECTRIC RAILWAY ASSOCIATION

ACCOUNT	UNITED STATES				EASTERN DISTRICT				SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount, October, 1917	PER MILE OF LINE		Increase Over 1916, per Cent	Amount, October, 1917	PER MILE OF LINE		Increase Over 1916, per Cent	Amount, October, 1917	PER MILE OF LINE		Increase Over 1916, per Cent	Amount, October, 1917	PER MILE OF LINE		Increase Over 1916, per Cent
		1917	1916			1917	1916			1917	1916			1917	1916	
Operating revenues	\$13,809,872	\$1,868	\$1,766	5.78	\$8,716,797	\$1,846	\$1,768	4.41	\$1,506,117	\$1,500	\$1,393	7.68	\$3,586,958	\$2,150	\$1,979	8.64
Operating expenses	9,219,519	1,247	1,107	12.65	5,987,967	1,268	1,147	10.55	866,160	862	800	7.75	2,365,392	1,418	1,173	20.89
Net earnings	4,590,353	621	659	15.77	2,728,830	578	621	16.92	639,957	638	593	7.59	1,221,566	732	806	19.18
Operating ratio, per cent	1917, 66.76; 1916, 62.68				1917, 68.69; 1916, 64.88				1917, 57.47; 1916, 57.43				1917, 65.95; 1916, 59.27			
Av. No. of miles of line represented	1917, 7,394; 1916, 7,291				1917, 4,722; 1916, 4,694				1917, 1,004; 1916, 956				1917, 1,668; 1916, 1,640			

COMPANIES REPORTING TAXES

Operating revenues	\$9,679,043	\$1,751	\$1,664	5.23	\$5,650,323	\$1,594	\$1,542	3.37	\$815,785	\$1,610	\$1,476	9.08	\$3,212,935	\$2,177	\$2,024	7.56
Operating expenses	6,757,118	1,223	1,084	12.82	4,161,466	1,174	1,078	8.91	460,373	909	815	11.53	2,135,279	1,447	1,194	21.19
Net earnings	2,921,925	528	580	18.97	1,488,857	420	464	19.48	355,412	701	661	6.05	1,077,656	730	830	12.05
Taxes	697,620	126	114	10.53	374,550	106	101	4.95	71,371	141	116	21.55	251,699	171	143	19.58
Operating income	2,224,305	402	466	13.73	1,114,307	314	363	13.50	284,041	569	545	2.75	825,957	559	687	18.63
Operating ratio, per cent	1917, 69.85; 1916, 65.14				1917, 73.65; 1916, 69.91				1917, 56.46; 1916, 55.22				1917, 66.47; 1916, 58.99			
Av. No. of miles of line represented	1917, 5,527; 1916, 5,473				1917, 3,545; 1916, 3,517				1917, 507; 1916, 507				1917, 1,476; 1916, 1,449			

†Decrease.

law quoted below, "deemed to have been made from the most recently accumulated undivided profits or surplus," which were as follows:

Semi-annual dividend declared Dec. 28, 1916, and paid Jan. 20, 1917, from earnings of the calendar year of 1916.

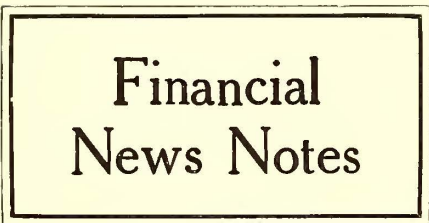
Quarterly dividend declared March 22, 1917 and paid April 20, 1917: \$1,421.7 from 1917 earnings, \$0.0783 from surplus earnings accrued prior to March 1, 1913.

Quarterly dividends declared June 28 and Sept. 27, 1917, and paid respectively July 20 and Oct. 20, 1917, from 1917 earnings.

Special dividend declared Dec. 28, 1916, and paid Jan. 20, 1917, from surplus earnings accrued during the following periods: Prior to March 1, 1913, \$9,361.1 per share; March 1 to Dec. 31, 1913, \$1.1999 per share; Jan. 1 to Dec. 31, 1914, \$1.44 per share; Jan. 1 to Dec. 31, 1915, \$8.7636 per share; Jan. 1 to Dec. 31, 1916, \$12.5686 per share.

One-Man Cars Save Road

At the annual meeting of stockholders of the Batavia (N. Y.) Traction Company, Stephen W. Brown, president of the company, announced that the company has been placed on a sound financial basis through the operation of one-man pay-as-you-enter cars. There was an increase of 28,000 fares in 1917 over the preceding year, the total for 1917 being 343,000 fares. The company operates single-truck, double-end one-man cars. The company is also planning the construction of new lines in rapidly growing sections of the city and a 5-mile, single-track line to Horseshoe Lake, a summer resort.



Sold Under Foreclosure.—The Orleans-Kenner Electric Railway, 16 miles long from New Orleans to Kenner, La., is reported sold under foreclosure to J. Blanc Monroe for \$225,000. It is understood that the purchase was made on behalf of the bondholders.

Preferred Dividend in Scrip—Common Passed.—The directors of the Com-

monwealth Power, Railway & Light Company, Grand Rapids, Mich., have decided to pay the preferred dividend in scrip and drop the common stock dividend. The company has obligations coming due in May and it was decided to conserve the cash, as government financing has made it difficult to finance the cost of improvements by the sale of securities.

Receiver for Illinois Road.—D. Harvey, master-in-chancery of Kane County, Ill., has been named receiver of the Chicago, Aurora & De Kalb Railroad, Aurora, Ill., upon a petition filed in the Kane County Circuit Court by the Continental & Commercial Trust & Savings Bank, Chicago, Ill., representing certain bondholders. These charge that while the interest is being paid on the bond obligations the company is not living up to the terms of the indenture securing the bonds which provides for a sinking fund for the redemption of these bonds.

New Republic Railway & Light Company Issue.—A syndicate headed by Reilly, Brock & Company and Harper & Turner, Philadelphia, Pa., are offering a portion of an issue of \$1,500,000 of Republic Railway & Light Company, Youngstown, Ohio, two-year 6 per cent convertible secured gold notes, due on Jan. 15, 1920. These notes are part of a total authorized issue of \$2,500,000. They are secured by deposit of an equal amount of Mahoning & Shenango Railway & Light Company 7 per cent preferred stock and all the common stock, and are further guaranteed as to principal and interest by indorsement by the Mahoning & Shenango Railway & Light Company.

Foreclosure Proceedings Likely Soon.—The reorganization committee of the Petaluma & Santa Rosa Railway, Petaluma, Cal., has extended the time for deposit of bonds under the plan until and including Feb. 1. In a circular letter the committee states that the response to the call for deposit of the first and second mortgage bonds has been a gratifying one. It is added that

the reorganization agreement will become operative upon the deposit of 90 per cent of the outstanding bonds. The committee feels that this amount is practically assured. Foreclosure proceedings on both mortgages, it is stated, will probably be instituted without delay. A review of the affairs of the company was published in the ELECTRIC RAILWAY JOURNAL for Jan. 12, page 104.

Georgia Earnings Gain.—A. B. Leach & Company, summarizing reports of earnings of the Georgia Light, Power & Railways Company for the last six years, point out that the business of this company is substantially larger than ever before in its history. The figures for the calendar year 1917, approximated on the basis of actual earnings for eleven months to Nov. 30 and December estimated, show that gross earnings increased 13.4 per cent over 1916 and net earnings 13.8 per cent; net income, 25.3 per cent; balance, 73.3 per cent. The total earnings for the twelve months ended Nov. 30, 1917, amounted to \$1,164,261, as compared to \$1,028,949 in 1916, and the railway earnings increased from \$322,711 in 1916 to \$355,267 in 1917. The company controls the Macon Railway & Light Company.

New Monongahela Valley Note Issue.—Hambleton & Company, Baltimore, Md., are offering at 99 and interest, to yield 7.05 per cent, \$3,000,000 of Monongahela Valley Traction Company one-year 6 per cent gold notes due on Feb. 1, 1919. The notes are in the denomination of \$1,000. The proceeds derived from the sale of the notes are being expended in the erection of a 20,000-kw. power plant and for other corporate purposes, such plant to be used in part for war needs, as demonstrated by the action of the United States government in giving priority orders for equipping the plant. The notes are followed by \$3,389,798 of preferred stock upon which dividends are paid at the rate of 6 per cent per annum, and \$8,278,086 of common stock upon which dividends are paid at the rate of 5 per cent per annum.

Electric Railway Monthly Earnings

CITIES SERVICE COMPANY, NEW YORK, N. Y.						JACKSONVILLE (FLA.) TRACTION COMPANY					
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Dec., '17	\$1,712,683	\$30,257	\$1,682,425	\$227	\$1,682,198	1m., Nov., '17	\$60,939	*\$42,368	\$18,571	\$15,848	\$2,723
1m., Dec., '16	1,570,819	20,310	1,550,509	314	1,550,195	1 " " '16	48,375	*35,394	12,981	15,508	†2,527
12m., Dec., '17	19,252,492	357,229	18,895,263	2,861	18,892,402	12 " " '17	690,833	*462,942	227,891	188,581	39,310
12m., Dec., '16	10,110,342	239,389	9,870,953	258,961	9,611,992	12 " " '16	618,511	*422,330	196,181	183,091	13,090
CLEVELAND, PAINESVILLE & EASTERN RAILROAD, CLEVELAND, OHIO						LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO					
1m., Nov., '17	\$41,783	*\$28,012	\$13,771	\$11,635	\$2,136	1m., Nov., '17	\$142,814	*\$103,922	\$38,892	\$35,149	\$3,743
1m., Nov., '16	35,940	*21,216	14,724	11,649	3,075	1m., Nov., '16	125,610	*86,790	38,820	36,263	2,557
11m., Nov., '17	496,163	*310,912	185,251	128,473	56,778	11m., Nov., '17	1,618,439	*1,103,340	515,100	381,998	133,102
11m., Nov., '16	426,104	*240,686	185,418	125,691	59,727	11m., Nov., '16	1,468,736	*924,797	543,940	400,089	143,850
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.					
1m., Nov., '17	\$268,643	*\$186,536	\$82,107	\$50,267	\$31,840	1m., Nov., '17	\$270,510	*\$144,286	\$126,224	\$28,259	†\$107,548
1 " " '16	209,936	*131,340	78,596	49,018	29,578	1 " " '16	163,929	*92,228	71,701	29,222	42,479
11 " " '17	2,559,445	*1,798,210	761,235	543,485	217,750	12 " " '17	2,470,263	*1,399,013	1,071,250	348,390	†742,025
11 " " '16	2,271,968	*1,504,507	767,461	536,251	231,210	12 " " '16	1,904,904	*1,149,770	755,134	347,583	407,551
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.						PHILADELPHIA (PA.) RAPID TRANSIT COMPANY					
1m., Nov., '17	\$25,987	*\$16,986	\$9,001	\$5,075	\$3,926	1m., Dec., '17	\$2,622,429	\$1,582,589	\$1,039,840	\$810,783	\$229,057
1 " " '16	26,089	*14,468	11,621	5,241	6,380	1m., Dec., '16	2,487,287	1,396,094	1,091,193	813,920	277,272
12 " " '17	341,718	*211,220	130,498	61,465	69,033	6m., Dec., '17	15,030,458	8,817,187	6,213,271	4,867,365	1,345,906
12 " " '16	323,507	*183,470	140,037	64,197	75,840	6m., Dec., '16	13,857,145	7,703,819	6,153,326	4,887,233	1,266,092
UNITED LIGHT & RAILWAYS COMPANY, GRAND RAPIDS, MICH.						UNITED LIGHT & RAILWAYS COMPANY, GRAND RAPIDS, MICH.					
12m., Nov., '17	\$2,046,898	*\$170,122	\$1,876,776	\$689,368	\$1,187,408	12m., Nov., '17	\$2,046,898	*\$170,122	\$1,876,776	\$689,368	\$1,187,408
12m., Nov., '16	1,849,084	*141,631	1,707,453	575,006	1,131,447	12m., Nov., '16	1,849,084	*141,631	1,707,453	575,006	1,131,447

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

Traffic and Transportation

Increase in Fare in Spokane

Companies There Will Raise Price of School Tickets to Four Cents and Charge Five Cents for Others

Officials of both the Spokane Traction Company and the Washington Water Power Company, operating electric railways in Spokane, Wash., express the hope that by increasing the rate on tickets to school children from 2½ cents each to 4 cents each, effective from Feb. 1, and by discontinuing the sale of twenty-two tickets to others at \$1 and obliging these patrons to pay a straight 5-cent fare they will be able to increase earnings.

Waldo G. Paine, vice-president and traffic manager of the Spokane Traction Company, and C. S. MacCalla, vice-president and general manager of the Washington Water Power Company, say that until this has been tried no move will be made to charge a 6-cent fare.

The recent intimation from these officials that later such a move may be made resulted in the Corporation Counsel being instructed to investigate the law. He reported that the present State law does not permit the companies to charge more than 5 cents for fare.

Traffic Rules Approved

Police Departments of New York State Cities Agree to Uniform Rules for Controlling Traffic

Uniform traffic regulations for New York State have been approved by the police departments of the cities of the State, according to a statement made public by the New York State Conference of Mayors and Other City Officials on traffic regulation and the causes of automobile accidents.

In a report to the conference the State Bureau of Municipal Information says:

"We are pleased to report that the police departments have universally approved the new law and that no changes of material importance have been suggested. The reports to us show that the law has worked out admirably in all the cities and that the uniform regulations have been generally observed with the result that the number of accidents, compared with the increase in automobile traffic in the cities, has been reduced. There is, however, need for greater effort to reduce accidents and make the highways safer."

RECOMMENDATIONS SUGGESTED

Basing its suggestions on the reports of the police departments the bureau has recommended to the conference the following:

1. A more rigid enforcement of both the State highway traffic act and the

speed provisions of the State automobile law.

2. A better knowledge of the traffic and speed laws and compliance with their provisions by the drivers of all kinds of vehicles.

3. The regulation of pedestrians crossing or in any way using the highways.

4. Changes in the automobile head-light law.

5. A law requiring the registration of drivers and an adequate examination and test of at least all new operators of automobiles and motorcycles.

6. Greater co-operation between police and parents in regulating the play of children in the streets, and increased recreation facilities in congested districts.

The Mayors' Conference has called a meeting for the purpose of discussing these suggestions and considering needed legislation.

Fare Advance for Seattle

Puget Sound Traction, Light & Power Company Preparing Petition for Six-Cent Fare

The Puget Sound Traction, Light & Power Company is preparing a petition to the State Public Service Commission for permission to advance railway fares in Seattle to 6 cents. According to information received from Olympia, action by the Public Service Commission on the company's petition likely will await an examination of the company's books to ascertain present receipts and disbursements. This examination was ordered by the commission recently on the company's statement that it intended to file a 6-cent schedule. As the investigation is being made in advance of the receipt of the petition from the company, it is expected that the case will be ready for immediate hearing when the filing of the petition for an increase in fare is made.

Walter F. Meier, acting corporation counsel of the city, has advised the City Council to prepare to oppose any attempt to increase fares in Seattle.

Emergency Committee for Pittsburgh

An emergency transportation committee has been appointed by Mayor E. V. Babcock of Pittsburgh, Pa., to assist in helping to improve service on the lines of the Pittsburgh Railways. Members of the committee are: John W. Weibley, president of the Pittsburgh Taxicab Company; Reid Kennedy, president of the Monongahela Trust Company; J. R. Rider, vice-president of the Pressed Steel Car Company; David J. Berry, editor of the *National Labor Journal*; A. W. Robertson, attorney of

the Pittsburgh Railways, and David C. Ainey, assistant engineer of the Public Service Commission. Among the points to be worked out by the committee are the following:

Adoption by the Pittsburgh Railways of such means as might be considered sufficient to induce patrons to use the cars in non-rush hours; co-operation of manufacturers in arranging work periods so as to utilize the best available facilities of the railway; efforts by merchants to induce customers to shop in the non-rush hours, and active support of commercial, industrial, civic and press bodies in promoting the public welfare.

The civic bodies which are leading the campaign for improved service have been notified that the State Public Service Commission will hold hearings in Pittsburgh within a few days to receive complaints.

Food at Cost in Baltimore

Company There, as War Emergency Move, Goes to the Aid of Its Employees

The United Railways & Electric Company, Baltimore, Md., has arranged to aid its employees to obtain foods at cost. This war emergency measure will be tried out at once.

A commodious and ample room with a large storage space adjoining is being erected in the carhouse at Charles Street, near Lafayette Avenue. This location is central and served by several lines, making it convenient of access from all parts of the city.

This war emergency measure is being undertaken voluntarily by the company to assist its employees during the period of high prices. Nothing in the way of profit will be added to the cost price of the foodstuffs. If the employees find the savings sufficiently attractive, the distribution will be maintained while prices continue high.

EMPLOYEES ON MANAGEMENT COMMITTEES

In order to make the plan fully effective, a number of the employees have been asked to serve as a committee to make suggestions and to supervise the purchases and operation of the scheme so that it may be made to meet the emergency most completely.

Employees and their wives will be provided with suitable means of identification to the end that this distributing agency will only be used by them for purchasing at cost food necessities bought by the United States in wholesale quantities.

Still further to insure the success of the undertaking free transportation will be given to the wife of each employee so that there will be no expense imposed in going to and from the Charles Street location.

Among the things that will be distributed to the employees are beef, pork, mutton, ham, butter, lard, canned goods, flour, corn meal, potatoes, turnips, apples, oranges, crackers, rice, sugar, coffee, tea, etc.

War Conditions Discussed at Boston Hearing

Chairman of Commission Says Boston Elevated Needs More Modern Cars—Traction Company Has Lost 900 Men Since War

The effect of the war upon electric railway service conditions was discussed before the Public Service Commission of Massachusetts recently at a hearing called upon a general complaint of the service of the Boston Elevated Railway in Dorchester following the opening of the South Station-Broadway section of the Dorchester tunnel. The bone of contention was the handling of traffic at the Broadway terminal of the tunnel, where transfer is made between through trains to and from Harvard Square, Cambridge and surface lines serving South Boston and Dorchester.

QUICK PASSENGER MOVEMENT NECESSARY

The point was made that the tunnel in its uncompleted state could not handle the traffic thrown upon it at Broadway station from both South Boston and Dorchester. It was also charged that the company had failed to secure an adequate number of conductors and motormen through its policy of discouraging the employment of men subject to the draft.

Chairman Macleod, of the commission, said that the electric railway service of the State had broken down in the sense that the steam railroad service had failed to meet the test of war conditions under private ownership and operation. He pointed out that the service could not be handled by the Boston Elevated Railway in this district until some way could be found to provide a large number of new cars of a modern type, susceptible to quick loading and unloading, in order to relieve the congestion to move the passengers quickly at terminal and concentration points.

NEITHER CASH NOR CREDIT AVAILABLE

The company claims that it had neither cash nor credit with which to purchase additional cars, and that if it had, it could not secure deliveries under a year or two. Mr. Macleod said that high prices ought not to deter the expansion of existing facilities under private ownership, if any way could be found to effect it; if not, the problem would then have to narrow itself down to the most efficient utilization of the equipment that the company had on hand, and that resolved itself into a proper balancing of service between different communities, districts and lines.

Edward Dana, manager of surface transportation of the Boston Elevated Railway, said that from July 1 to Dec. 31, 1917, the company had hired 887 men, 300 of whom were between the ages of twenty-one and thirty-one. Men ostensibly subject to the draft had not been employed. The company operated 16,000 trips a day and was losing between 200 and 300 trips in the rush hours. At present there were 114 cars per hour scheduled around the

loop at the Broadway station, and about 6500 persons passed through. The cars were less suited to the traffic than those that were operated through Harvard Square station, at the other end of the tunnel.

New center-entrance motor cars were being fitted out of service as fast as possible, fifty-seven having been received out of an order for 100. Forty-two of these cars were required in the East Boston Tunnel. It was suggested that present conditions be improved by operating a portion of the service to the upper level of the Broadway station and by restoring the service between Meeting House Hill and Dudley Street, to enable the Washington Street tunnel to be utilized by some of the patrons of the company now routed through the Dorchester tunnel. Forty-one of the 114 rush-hour cars at Broadway station were destined for South Boston. Since July 1, 354 men had left the company's service and about 900 had left since war was declared against Germany by the United States.

Ohio Fare Changes Likely

First the Interurbans, Now the City Companies, Find Their Burdens Too Great

Fare changes for roads in Ohio other than those referred to in the *ELECTRIC RAILWAY JOURNAL* from time to time recently would seem to be in prospect. The Cleveland Railway will probably be able to manage matters for a time, with its adjustable scale of fares, but officers have already pointed out the possibility of an even higher rate than is provided in its grant, should the heatless days prove as much of a loss as at first anticipated.

The Columbus Railway, Power & Light Company, it is currently reported, will shortly ask for an increase in fare commensurate with the rates that are paid in other cities of similar size. Officials state that the cost of fuel, materials and labor has increased out of all proportion to the growth of the business. The company is now selling tickets at the rate of eight tickets for a quarter. This is lower than the present rates at Cleveland, although Cleveland is the boasted 3-cent city of the country.

Intimations have been made to members of the Council at Youngstown that the Mahoning & Shenango Railway & Light Company will shortly ask for a flat 5-cent fare on the city lines. At the present time twenty-five tickets can be purchased for \$1.

The Interurban Railway & Terminal Company, Cincinnati, has taken an appeal to the Supreme Court from the holding of the Public Utilities Commission on an action in which it asked for an increase in the rate of fare to 2½ cents a mile. The city of Cincinnati

filed a demurrer to the company's petition and it was sustained by the commission.

The petition of the Ohio Electric Railway for an increase in its rate of fare was heard before the commission on Jan. 23. Only minor objections were made to the proposed increase, although the road has 700 miles of track. Statistics were presented to show that the road was being operated at a loss under the greatly increased cost of everything. Decision was reserved.

An examination of the books of the Toledo Railways & Light Company is now under way to determine whether increased wages can be paid to the motormen and conductors. Officers of the company contend that it will be impossible to increase wages without an increase in the rate of fare.

Fare Increase Denied

Ohio Commission Holds That Franchise Provisions Prevents It from Allowing Fare Advance

The application of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, for permission to file a new schedule of rates in excess of those provided for in its franchise has been refused by the Public Utilities Commission of Ohio. The commission held it has no jurisdiction to set aside rates prescribed in a franchise.

Application was filed by the company with the commission for the purpose of increasing rates on its interurban lines between Youngstown and Girard, Niles, Warren and Hubbard. It was proposed to raise the present rate from Youngstown to Girard from 5 to 10 cents, and from Youngstown to Warren from 15 to 25 cents. The other tentative advances were in proportion.

When the hearing on the case was held each of the communities was represented in opposition to the advance, while John T. Harrington appeared for the company. The latter contended that the advance was necessary for the company to maintain service. Representatives of the cities named alleged that the utilities commission was without jurisdiction in the matter, which was covered by local franchises.

The company has appealed to the State Supreme Court for the reversal of the decision of the commission. The question involved is the right of the commission to fix new rates regardless of rates prescribed in franchises, granted prior to the organization of the commission.

Praise for Evansville Railways

The Evansville (Ind.) *Courier* in a recent article paid a high tribute to the Evansville Railways, the Public Utilities Company, the Evansville, Suburban & Newburgh Railway and others. The paper said that it realized the difficulties which beset the interurban officials in the way of automobile competition and appreciated what increasing costs meant to the companies.

City May Buy and Loan Equipment to Railway

Mayor of Buffalo Sees in This Possible Solution of Problem to Which War Department Has Assigned Colonel Arnold

Unless orders are placed at once by the International Railway, Buffalo, N. Y., for 100 new cars in addition to the 100 side-exit Peter Witt cars now being received from the G. C. Kuhlman Car Company, the city will buy the equipment and lease it to the railway. Mayor George S. Buck made this statement to E. G. Connette, president of the International Railway, at a conference attended by members of the new municipal electric railway commission, Col. Bion J. Arnold, Chicago, of the War Department at Washington and John C. Brackenridge, who has been retained by the City Council to make a survey of traffic conditions on the city lines of the company.

COLONEL ARNOLD PROMISES AID

When President Connette said that several questions, including that of financing the purchase of the equipment, would have to be considered by directors of the company before such an order could be placed, the Mayor suggested that the notes of the International Railway covering the proposed equipment would be acceptable for banking houses, and Colonel Arnold of the War Department said that the government would aid in a situation involving transportation problems of workers in munitions plants and other war industries.

It has been agreed that the company shall have additional time in which to consider the placing of a new order for 100 cars. The company has been directed to place in operation in the meantime during the rush-hour periods all of its open cars as an emergency measure. Old cars not equipped with vestibules for the motormen may be rebuilt so as to afford the necessary protection and will probably be placed in operation until the new cars arrive.

HOW THE WAR BOARD IS INTERESTED

Federal officers in charge of production in munition and other war industries called the attention of the War Department at Washington to the railway situation in Buffalo, and it is because of this fact that Colonel Arnold was sent to investigate conditions. When President Connette explained to Colonel Arnold the many difficulties encountered by the company in getting its order of 100 cars from the car builders, the colonel promised the full cooperation of the government in getting the new equipment in the shortest possible time. A preliminary investigation disclosed that the car builders have been delayed through the loss of a shipment of electrical equipment from a Boston manufacturer. This shipment is now being traced by federal agents and every aid will be extended to the Kuhlman Company in an effort to rush the delivery of the Buffalo cars. The government has promised to provide flat cars to bring the new equip-

ment to Buffalo so as to avoid the delay caused by operating cars on their own power between Cleveland and Buffalo.

In a weekly report to the City Council on traffic conditions on the International lines in Buffalo, Mr. Brackenridge said that the company has based its car schedules upon too high a rate of speed. This caused frequent bunching of cars and delays. He said that the rate of 9 m.p.h. during the winter months was too high for Buffalo and that 7 m.p.h. should be the maximum during the winter. Mr. Brackenridge recommended that the company employ checkers to ride the cars and keep an accurate check on the length of time required for the car to reach certain specified points along the line. During a road inspection with members of the municipal electric railway commission Mr. Brackenridge reported he observed spaces between cars, considerably in excess of the 3600 ft. provided for under the schedule of this line. On the Elmwood Avenue line, which serves the Elmwood-Hertel industrial district and the large war plants, Mr. Brackenridge said that the schedule from terminal to terminal was thirty-eight minutes and the actual running time during rush-hour periods was fifty-eight minutes.

SCHEDULE SPEED TOO HIGH

In commenting on the schedule speed of this greatly congested line, Mr. Brackenridge said the rate of speed should be reduced from 9 m.p.h. to 6 m.p.h. and if this latter figure is found too low, it should be increased after careful checks are made by checkers who ride the cars. Mr. Brackenridge said that the low rate of speed would probably not work out well on paper, but that in actual operation it would prevent delays, bunching of cars and congestion. Statistics were filed with the municipal authorities by Mr. Brackenridge which had been taken from the "McGraw Electric Railway List" of August, 1917, showing the population per car and number of cars per mile of track operated in the large cities of the country.

POLICE AUTHORITY GIVEN TO SUPERVISORS

Upon the recommendation of Mr. Brackenridge, E. J. Dickson, vice-president of the International Railway, has agreed to place the company's thirty-two supervisors in uniform and each supervisor will be sworn in as a special officer and will display an officer's badge on the outside of his uniform so as to enable him to assert his authority in keeping track-hogs from delaying cars. Each supervisor will be placed in charge of 3 miles of double track. Mr. Brackenridge said that many of the irregularities he has observed in the operation of cars could be effectively corrected by uniformed supervisors.

Additional trains have been placed in operation on the belt line service around the city by the New York Central Railroad so as to relieve the traffic situation. Mr. Brackenridge said that with efficient operation and regular schedules, this loop service around the city could handle at least 42,000 passengers and thereby greatly relieve the street car situation.

Use of Women Protested

Brooklyn Labor Union Objects to Employment of Women by the B. R. T.

In response to a protest made by the Central Labor Union of Brooklyn and Queens against the employment of women on the electric railways in Greater New York, Chairman Straus of the Public Service Commission for the First District has replied that if the union thought it could produce facts showing that the employment of women menaced the adequacy, safety or continuity of the service, an effort would be made to arrange for public hearings at which testimony along these lines might be submitted. Mr. Straus' statement was in part as follows:

THE COMMISSION'S ATTITUDE

"The commission has not the power to say on physical or moral grounds, or for reasons of health, public policy, or the maintenance of proper wage standards, that women shall or shall not be employed, or that only men shall be employed. The law thus far leaves to the companies the selection of employees and leaves to the companies and their agreement with present or prospective employees the determination of the wage contracts. The commission has no power to exclude either men or women from any employment by reason of sex, or to say that men or women shall not continue in the employment of a railroad company."

Mr. Straus said that the question of competency, qualifications, or suitability of employees could be treated by the commission only if the public safety or convenience was threatened.

Who Am I?

I do much good.
I am an asset to you.
I have made friends and followers for the company.
I am a universal rule; in fact, I have become a habit.
I help you to hold your job.
I am everywhere.
Great men have written books about me.
I am contagious.
Without me no business can be truly successful.
I am one of your good friends.
I gain much and lose nothing.
I am a habit well worth acquiring.
I am on an equal footing with kindness.
I am COURTESY.
JOHN C. RIESENBERGER in *Here We Are*.

Heating Order for Brooklyn

After a consideration of the coal supply and other conditions word was sent by the Public Service Commission for the First District of New York to the Brooklyn Rapid Transit Company on Jan. 26, that there no longer existed any reason why heat should not be furnished in the cars and trains of that system in Brooklyn, and that the commission would expect that beginning not later than Jan. 29 heat would be so furnished.

The company on Nov. 14 asked the commission to suspend its heating order during the rush hours. It was explained that it was not proposed to stop heating the cars altogether, but to heat them probably an hour before they were placed in service for the rush hour so as to reduce the energy necessary to maintain a reasonable temperature. The commission then approved a plan for a test of the new arrangement. This plan was referred to in the *ELECTRIC RAILWAY JOURNAL* of Nov. 24, 1917, page 967.

Transportation News Notes

Ordinance for Increased Fare.—An ordinance has been introduced in the City Council at Frankfort, Ky., providing for 6-cent fares. The Kentucky Traction & Terminal Company, which operates the city lines, announced that unless the relief which it asked was granted, it would have to curtail service materially.

Three Killed in Accident.—A rear-end collision in which an interurban car of the Louisville & Southern Indiana Traction Company, on the approach to the bridge over the Ohio River at Louisville, was struck by a through car from Indianapolis to Louisville late on Monday afternoon, Jan. 14, resulted in three deaths and a score of passengers injured.

Trainmen Required to Help Enforce Law.—The city of Houston, Tex., has enacted an ordinance by which conductors of electric railway cars are required to report to the city secretary when any automobile passes a car which has stopped to take on or discharge passengers. The city ordinances prohibit this, and the trainmen are required to assist in enforcing the law.

Youngstown Company Threatened.—The city solicitor of Youngstown, Ohio, was authorized by the City Council on Jan. 21 to notify the officials of the Mahoning & Shenango Railway & Light Company that if railway service was not increased 50 per cent within the next thirty days proceedings would be started to revoke the franchise under which the company is operating.

California Jitneys Disappearing.—Although a few months ago 800 jitneys were operating in Los Angeles, Cal., less than fifty are now in service, according to the *Key System News*. There is none in San Diego, Alameda or Berkeley, only about a dozen in Oakland, and a few in Sacramento. San Francisco is practically the only California city which still has a considerable number of the "parasites."

Bay State Bulletin on Press Articles.—The Bay State Street Railway, Boston, Mass., has begun the plan of sending a weekly memorandum to all department heads calling attention to articles in the technical press in which it is thought the recipients will be interested. Occasionally an entire article will be so circulated, as was the case with the text of some remarks by W. H. Glenn, Atlanta, which appeared in the *ELECTRIC RAILWAY JOURNAL* for Jan. 19, page 149.

426 Collisions in a Month.—The New York (N. Y.) Railways Company has made an analysis to show the streets most prolific in accidents in December. There were 426 collisions between cars and vehicles of different kinds during the month. As a result, five employees, twenty-five passengers, and fifty-seven persons on vehicles were injured. One hundred and sixty-nine passengers were injured getting on and off cars in the month. More people were hurt getting on than off. The company's latest compilation shows a total of 1143 accidents of all kinds in December, 1917, as compared with 1855 in December, 1916.

Help the Motorman!—The Quincy (Ill.) Railway, included in the Illinois Traction System, has appealed to drivers of vehicles and to pedestrians to co-operate with the motormen of its cars in an effort to reduce the number of street accidents. The company says: "Safety first. Help the motorman. The motorman sees hundreds of wagons, automobiles, bicycles and baby carriages crossing his track every day. He sees and has to watch the movements of thousands of persons. He has to stop his car hundreds of times. He has grave responsibilities. He has to be careful. Why not help him by being careful yourself?"

Relief from Special Fare Contract.—Judge Cushing of the Hamilton County (Ohio) Common Pleas Court held on Jan. 17 that the contract for a special monthly ticket rate for its employees made by the King Powder Company with the old Rapid Railway cannot be enforced in equity against the Interurban Railway & Terminal Company or its receivers and that the only relief possible for the employees of the powder company must come from the Public Utilities Commission. The powder company had sought to enjoin Charles S. Thrasher and Charles M. Leslie, the receivers, from discontinuing the old monthly rate.

New York Fare Cases to Proceed.—The Public Service Commission for the First District of New York has been informed that the Third Avenue Rail-

way and other surface railroads will be ready to go ahead with their cases when the hearings on the companies' applications for permission to charge 2 cents for transfers are resumed on Feb. 6. These hearings have been adjourned from time to time at the request of the companies, but the most recent adjournment was made at the request of the city of New York through the corporation counsel, who stated that the city, a party to the cases, would not be ready to resume until the date mentioned.

Fare Increase Proposed for Galesburg.—The Galesburg Railway, Lighting & Power Company, Galesburg, Ill., controlled by the Illinois Traction System, has decided to ask the State Public Utilities Commission for a straight 5-cent fare. At the present time the company issues twenty-five tickets for \$1, the tickets being sold only at the office of the company. It was originally intended to ask the City Council for the increase, but later when that body assured the company that it would not object to a request for the elimination of the tickets being made of the State commission, and that it would abide by the decision of the commission, it was decided to make the request direct to the State regulatory body.

New Publications

Income Tax Procedure, 1918. By Robert H. Montgomery. The Ronald Press Company, 20 Vesey Street, New York, N. Y. 800 pages. Leather, \$4.

This succeeds Mr. Montgomery's 1917 interpretation of the income tax law. It includes the latest possible advice regarding the new laws, and provision is made for sending to buyers a supplement of important treasury rulings soon expected. The book is noteworthy for its careful exposition of the law and its frank criticism of provisions and treasury rulings which the writer thinks should be changed.

How to Study. By George F. Swain, LL.D., professor of civil engineering in Harvard University and Massachusetts Institute of Technology. McGraw-Hill Book Company, Inc., New York. Sixty-five pages. Paper, 25 cents.

Into the small compass of this book Professor Swain has condensed the principles of a neglected but essential art. While every thinking man will concede that his progress depends upon his methods of study, very few have given much thought to mental processes. There is no doubt that even a casual reading of "How to Study," which is written in popular style, will enable any man who uses his head at all to use it to better purpose.

Personal Mention

P. M. Hatch, who has been manager of the Ponce (P. R.) Electric Company, is now in the ordnance department at Washington.

Bert H. Wales, formerly chief inspector of the Denver (Col.) Tramway, has been promoted to the position of superintendent of the South Division of the company.

W. L. Weston, manager of the Houghton County Traction Company, Houghton, Mich., has been commissioned a first lieutenant in the United States Infantry.

E. L. Milliken, lighting superintendent of the El Paso (Tex.) Electric Company, has been appointed manager of the Houghton County Traction Company, Houghton, Mich.

C. J. Munton, president and general manager of the Fort Wayne & Northwestern Railway, Kendallville, Ind., has been re-elected president of the Noble Motor Truck Company.

James O. Heyworth, president of the International Transit Company, Sault Ste. Marie, Mich., has been appointed manager, Division Wood Ship Construction, Emergency Fleet Corporation, United States Shipping Board.

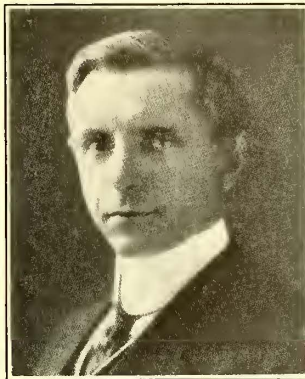
Edmond O'Callaghan, formerly superintendent of employment and inspection and recently appointed assistant to the claim agent with the Bay State Street Railway, Boston, Mass., has resigned to become connected with O'Neil & Parker, Boston representatives of the United States Fidelity & Guaranty Company, Baltimore.

G. A. DeHaseth, chief engineer of the Tacoma Railway & Power Company and chief engineer and roadmaster of the Puget Sound Electric Railway, Tacoma, Wash., has been appointed manager of the Ponce (P. R.) Electric Company, in place of P. M. Hatch, now in the Ordnance Department at Washington. Both properties are controlled by Stone & Webster.

Dana L. Spring, who for the last nine years has been a member of the law firm of Norton, Penney, Spring & Moore, of counsel for the International Railway, Buffalo, N. Y., has resigned from the firm to enter partnership with Hamilton Ward. Mr. Spring has specialized in trial work and has handled this branch of the International Railway's negligence actions for several years.

A. J. Bush, Jr., Dallas, Tex., has been appointed assistant to the general manager of the Texas Electric Railway, Dallas, the consolidated Strickland lines. Mr. Bush will maintain headquarters in Waco and will have charge of the Waco division of the Texas Electric Railway, and will also be manager of the Waco city system, which is owned and operated by the Texas Electric Railway.

W. J. Flickinger, chairman of the efficiency committee of the Connecticut Company, New Haven, Conn., since Nov. 1, 1914, has been appointed to the position of assistant to the president. The title of chairman of the efficiency committee has been abolished. Mr. Flickinger entered railway work with the Lehigh Valley Railroad in June, 1899, and continued with that company until March, 1907. He was employed in the car shops and at the office of the master car builder of that company at Packerton, Pa., from June, 1899, to July, 1900. He was connected with the office of the superintendent of motive power of the company at South Bethlehem, Pa., from July, 1900, to September, 1905. He was employed in the office of the purchasing agent of the company in New York City from September, 1905, to March, 1907. On April 1, 1907, Mr. Flickinger entered the employ of the



W. J. FLICKINGER

New England Investment & Security Company, Boston, controlling the New Haven Railroad's electric railways in Massachusetts, as a clerk in the office of President L. S. Storrs, of that company, now president of the Connecticut Company. In September, 1908, at the time the offices of that company were moved to Springfield, Mass., Mr. Flickinger became chief clerk to Mr. Storrs. He continued in that capacity until July 1, 1911, at which time he went with Mr. Storrs in the same capacity with the Connecticut Company, New Haven, Mr. Storrs having been elected president of that company. On Nov. 1, 1914, he was appointed chairman of the efficiency committee of the Connecticut Company. In 1917 Mr. Flickinger was awarded the bronze replica of the Brady gold medal for 1916 awarded to his company for the best record by an electric railway for the year along safety lines. In addition to the other duties that will devolve upon him in the position of assistant to the president Mr. Flickin-

ger will continue the work heretofore carried on under the title of chairman of the efficiency committee. Mr. Flickinger was the first president of the Connecticut Company section of the American Electric Railway Association, having retired from the position only a few weeks ago.

C. C. Curtis, lighting superintendent of the El Paso (Tex.) Electric Company, will assume the duties of manager of the Cape Breton Electric Company, Ltd., operating the electric railway and lighting properties at Sydney, N. S., replacing E. L. Milliken, who goes to Houghton, Mich., as manager of the Houghton County Traction Company, in place of W. L. Weston, now first lieutenant in the United States Infantry. The El Paso, Cape Breton and Houghton properties are all controlled by Stone & Webster.

Roy Ballou has been appointed chief inspector of the Denver (Col.) Tramway. Mr. Ballou has traveled far and wide. He was formerly a petty officer in the United States Navy. As such he took up as a member of the American forces in their participation in putting down the Boxer rebellion in China. He is also said to have upheld the reputation of the navy as its representative in a limited round engagement with Terrible Terry McGovern when the terrible one was in his prime.

James O. Carr, Schenectady, a republican member of the Public Service Commission for the Second District of New York, has placed his resignation in the hands of Governor Whitman. Mr. Carr's term does not expire until 1920. He desires to resume the practice of law. Before his appointment to the commission Mr. Carr was one of the attorneys for the General Electric Company. In 1916 he went abroad to study the transportation systems of France, England and Italy under war conditions.

G. A. Richardson, general superintendent of the railway department of the Puget Sound Traction, Light & Power Company, has returned to Seattle from the East. Several weeks ago Mr. Richardson was called into conference with officials of the American International Shipbuilding Company, and of the Philadelphia (Pa.) Rapid Transit Company, regarding transportation to and from the city and the Hog Island industrial development. During his absence from Seattle Mr. Richardson visited Boston, New York, Chicago and other cities.

Luzerne S. Cowles has resigned from the Boston (Mass.) Elevated Railway to accept the position of engineer in the structural division of the Stone & Webster Engineering Corporation. Mr. Cowles was born in Hartford, Conn., in 1876, and was graduated from the Massachusetts Institute of Technology in 1897 in the department of civil engineering. His practical engineering experience began in the estimating department of the Boston Bridge Works, and, after a year's travel and study in Europe, in 1899 he became associated with the bureau of elevated and sub-

way construction of the Boston Elevated Railway. He had been with this company for the last eighteen years.

Harry L. Brown, western editorial representative of the *ELECTRIC RAILWAY JOURNAL*, with headquarters in Chicago, has accepted a temporary appointment as radio engineer in the office of the Chief Signal Officer, United States Army, Radio Division, Washington, D. C. It is understood that he will have direct charge of the work of preparing literature for use as instructional material in the special radio courses which are being established at many of the engineering colleges throughout the country in co-operation with the Signal Corps. L. E. Stibbe of the New York editorial staff of the *ELECTRIC RAILWAY JOURNAL* will take up the editorial work in the Chicago office temporarily.

C. H. Hubbell, formerly auditor of receipts of the Illinois Traction Company, Peoria, Ill., is now connected with the First National Bank, Cleveland, Ohio, in the capacity of tax consultant. Mr. Hubbell is a certified public accountant. He was previously income tax inspector of the United States Treasury Department. As part of his work for the bank Mr. Hubbell has recently compiled a table showing concisely the application of the federal income and profits tax laws to Liberty Bonds. He had from one to ten inquiries daily in regard to these matters, and the statement which he has compiled is particularly helpful because it is compact, and reference may be made to it much more easily than to the tax laws and to the laws under which the bonds have been issued.

Richard D. Simms, treasurer of the Capital Traction Company, Washington, D. C., has been advanced from colonel to brigadier-general, in command of the District of Columbia National Guard. The new post does not interfere with the duties of General Simms as treasurer of the company. He succeeds Brigadier-General Harvey, now at Camp Shelby. Brigadier-General Simms was born in the District of Columbia forty-nine years ago and was educated in the public schools there. For twenty years he was employed in the District of Columbia government. In 1905 he resigned his position as purchasing agent of the District to become treasurer of the Capital Traction Company. Brigadier-General Simms has already served twenty-two years in the National Guard of the District, enlisting as a private in the field artillery. He was next made a first sergeant of cavalry, and later was in the infantry. He served a total of seven years as an enlisted man and fifteen years as a commissioned officer. In 1898 he was a captain in the First District of Columbia Volunteer Infantry. He served at Camp Alger, Va.; Camp Chickamauga, Ga., and at Tampa, Fla., and Huntsville, Ala. At the conclusion of the war with Spain General Simms returned to the local National Guard as a first lieutenant. He was promoted to major in 1899, and in 1909 was made a colonel. He was retired voluntarily in 1911.

E. C. Faber, Head of War Board Traffic Bureau

Man from Illinois Has Big Task of Arranging to Place Facilities of Electric Lines at Disposal of Government for Relief of War-Time Traffic Situation

To Edwin C. Faber, as traffic manager of the Traffic Bureau of the Electric Railway War Board, with headquarters in the Munsey Building, Washington, has been entrusted the big task of bringing the facilities of the electric railways of the country to the aid of the nation during the present crisis.

STARTING THE WHEELS

One of Mr. Faber's first acts as traffic manager of the Electric Railway War Board was to send to electric railways a list of questions for the purpose of assembling traffic data for the benefit of the Director General of Railroads. Mr. Faber states that under present circumstances it is the



E. C. FABER

patriotic duty of each American citizen to bend every effort toward relieving the present traffic congestion and toward placing on the highest plane of efficiency every existing transportation facility. This will entail co-operation on the part of everyone concerned, including the public, and this must be constantly borne in mind in any consideration of the subject. It is evident that the electric railways can be used to supplement steam railroad service, thus relieving the steam roads of a considerable amount of short-haul traffic, so as to render steam road cars and facilities available for long-haul business—business which the electric railways are not in a position to handle.

WHAT MR. FABER HAS DONE

Mr. Faber is vice-president of the Aurora, Elgin & Chicago Railroad, operating more than 170 miles of third-rail and overhead electric railway out of Chicago, from which property he

has secured leave of absence. He has had a remarkably successful career from the time when, as a young man, he secured a clerkship in one of the offices of the Cleveland Electric Railway.

Born in 1875, twenty-six years later Mr. Faber became general superintendent of the Cleveland system, and for many years bore the distinction of being the youngest general superintendent of an important city electric railway of the United States. His success has been very largely due to his faculty of "doing things" and the persistence with which he has familiarized himself not only with the details of the particular job in which he was engaged at the time, but those of every other position within his ken. From clerk he became a timekeeper, then connected with the accounting department, of which he later assumed charge, then general passenger agent; assistant to the general manager and finally general superintendent.

After the Cleveland city property changed hands in 1902 and its former general manager, Ira A. McCormack, became general manager of the Grand Central Terminal in New York, he commandeered the services of Mr. Faber, who had an important part in connection with the electrification of the New York Central lines entering New York. This work was done by the General Electric Company and when completed, Hinsdale Parsons, vice-president of the General Electric Company, made Mr. Faber his assistant and put him at work making investigations and reports on the various electric railway, light and power properties in which the company was interested.

In 1904 Mr. Faber became general manager of the Aurora, Elgin & Chicago Railroad and vice-president of the Elgin, Aurora & Southern Traction Company. A year later these two properties were consolidated with the Cook County & Southern Traction Company and Mr. Faber became general manager of the combined properties. In 1913 he was in addition made vice-president of the company.

HELP HIM! IT'S YOUR DUTY!

Mr. Faber's very wide knowledge of the electric railway business and his connection with interurban railways admirably fit him for the new position to which he has been appointed. But Mr. Faber's task—that of taking over by the electric railways such business of the steam roads as the electric lines can handle—is one that he, unaided and alone, cannot carry out to a full measure of success. He realizes this and has said so frankly. The electric railway industry stands to gain or to lose by just the extent that it does or does not co-operate with Mr. Faber along the lines laid down by him in his original traffic questionnaire.

Construction News

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

Recent Incorporation

***Davis Creek & Spring Hill Railway, Spring Hill, W. Va.**—Incorporated to construct a line from near Spring Hill to a point near the middle fork of Davis Creek. Capital Stock, \$50,000. Incorporators: R. N. Snyder, Samuel Edwards, L. P. Snyder, H. T. Smith and E. M. Surber, all of Charleston, W. Va.

Franchises

Los Angeles, Cal.—The Los Angeles Railway has received permission from the City Council to abandon its East Fourteenth and Tennessee Streets line on condition that the company will extend its West Jefferson Street line from Third to Ninth Avenue.

Elmira, N. Y.—The Elmira Water, Light & Railroad Company has asked the City Council of Elmira for a franchise to construct a line on East and West Chemung Place from Main Street to Maple Avenue, in order that a portion of the heavy traffic may be taken off the Main Street bridge.

Richmond, Va.—The street committee of the City Council of Richmond adopted a resolution recommending that the petition of the Richmond & Seven Pines Railroad to use the streets of the city under the new ownership in the same manner which they are now being used be granted.

Track and Roadway

Birmingham Railway, Light & Power Company, Birmingham, Ala.—Electric railway service has been discontinued by the Birmingham Railway, Light & Power Company on its Rugby Highlands car line, East Lake, southside, under orders from the State Fuel Administration as a war measure to save fuel.

Los Angeles (Cal.) Railway.—This company will extend its lines over Tenth Street to the private right-of-way to the new Los Angeles high school.

Pacific Electric Railway, Los Angeles, Cal.—Work is progressing rapidly on the double-tracking of the Pacific Electric Railway line between Los Angeles and Pomona.

Chicago (Ill.) Surface Lines.—The first lap of the Hegewisch extension from 108th Street and Ewing Avenue has been placed in operation as far as 118th Street and Burley Avenue. The

cars will reach the plant of the Interstate Iron & Steel Works.

Consolidated Street Railway, Strong City, Kan.—This company which operates a 2-mile horse car line between Cottonwood Falls and Strong City, will put on a self-propelled car. The track is being relaid to accommodate the heavier equipment.

Southwest Missouri Railroad, Webb City, Mo.—The contract for the construction of culverts and bridges for this company's proposed line between Baxter Springs and Picher, via Hockerville and St. Louis, has been awarded to the Topeka Bridge Company.

International Railway, Buffalo, N. Y.—The Public Service Commission for the Second District of New York, has announced a hearing to be held at its office in Buffalo on Feb. 6 in the proceeding which it has instituted to alter grade crossings by the International Railway of certain streets in North Tonawanda. The railway company, the city of North Tonawanda and other persons interested have been ordered to show cause, the commission holding that public safety requires an alteration of certain existing crossings. It is proposed that instead of crossing at grade the railway shall cross by overhead bridges, Payne Avenue, Linwood Avenue, Fredericka Street, East Fulton Street, Jackson Avenue, Stenzel Street, Ward Road and other streets in the city south of Witmer Road, which are crossed at grade including Sixteenth Street, Seventeenth Street, Eighteenth Street and Nineteenth Street.

Elmira Water, Light & Railroad Company, Elmira, N. Y.—The Public Service Commission for the Second District of New York issued an order directing the Elmira Water, Light & Railroad Company to discontinue operation of cars of certain weight over the Main Street bridge in Elmira. Steps will be taken by the company to build about 1800 ft. of new track and divert traffic to the Lake Street bridge.

Ottawa (Ont.) Electric Railway.—A report from this company states that it will reconstruct 2 miles of track.

Virginia Railway & Power Company, Richmond, Va.—In order to better the electric railway service in Norfolk, the Virginia Railway & Power Company made a proposition to the traffic committee, composed of delegates from the Norfolk business organizations, to make Monticello Avenue and Granby Street one-way traffic streets. The proposition made by the company included a better electric railway system for the Ghent section of Norfolk and a ten-minute schedule for Berkley. In order to put the proposition through without delay the company would use the Bay Shore tracks to make a standard gage system all over the city.

Monongahela Valley Traction Company, Fairmont, W. Va.—Surveys are being made by the Monongahela Valley Traction Company in the Marietta District for the extension of the company's lines into certain suburban districts. Lines will be extended to West View and Norwood, necessitating additions of about 2½ miles of track.

Shops and Buildings

Northern Electric Railway, Chico, Cal.—A new station will be built by the Northern Electric Railway near Globe.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.—Announcement has been made by the Terre Haute, Indianapolis & Eastern Traction Company that hereafter all freight shipments will be handled at the new freight house and terminal, Kentucky and Oliver Avenues, Indianapolis.

Concord, Maynard & Hudson Street Railway, Maynard, Mass.—Fire completely destroyed the carhouse of the Concord, Maynard & Hudson Street Railway at Main Street and Great Road, and all the rolling stock owned by the company with the exception of two cars. Twelve trolley cars, a snowplow and a construction car were burned together with a large amount of wire and other construction material.

International Railway, Buffalo, N. Y.—Fire completely destroyed the Forest Avenue carhouse of the International Railway on Jan. 23, together with forty-eight cars, four snowplows and sweepers and one work car. The loss is estimated at about \$500,000. For further details see page 244.

Power Houses and Substations

Northern Electric Railway, Chico, Cal.—John P. Coghlan, receiver of the Northern Electric Railway has sought an order from United States District Judge Dooling, authorizing the purchase of an additional generating unit at a price of \$37,500. In his petition Mr. Coghlan asserts that the freight traffic on the Northern Electric Railway is steadily increasing.

Pensacola (Fla.) Electric Company.—This company contemplates the erection of a 13,200-volt transmission line to the Pensacola naval station.

Interborough Rapid Transit Company, New York, N. Y.—Plans are being prepared by the Interborough Rapid Transit Company for the erection of a one-story transformer station, 50 ft. x 100 ft. on Livonia Avenue, near Rockaway Avenue, Brooklyn, to cost about \$40,000.

Virginia Railway & Power Company, Richmond, Va.—Plans have been made and application filed by the Virginia Railway & Power Company for an addition to its power plant at the foot of Twelfth Street, Richmond, to cost \$6,000.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES · MARKET QUOTATIONS · BUSINESS ANNOUNCEMENTS

Prevailing Conditions in Wire Market

Western Stocks in Very Bad Shape—Supplies in the New England Market Are Increasing

To some observers the future price of copper wire to the trade is a puzzle. The government has, of course, fixed the price of ingots at 23½ cents. Ordinarily the mills formerly got about 1 cent a pound for working it up. Now they get, on account of labor conditions, from 3 cents to 4 cents, bringing factory prices on wire up to 26½ cents to 27½ cents. Chicago jobbers are at present continuing on a 30-cent base for rubber-covered and a 28-cent base on weatherproof.

On the Pacific Coast rubber-covered wire stocks have been seriously depleted of late by the slowing down of deliveries without corresponding decrease in demand. Despite this condition a tendency to a lower price is reported. Weatherproof wire stocks are also in worse shape than before, but are not so bad as rubber-covered.

In New England, however, wire and cable stocks are increasing, at least temporarily. One large manufacturer reports putting the first stock order through the works for many months, covering varied sizes. Weatherproof wire is quoted at 27 cents and rubber-covered at 30 cents.

Weatherproof wire was quoted in New York as the week opened at 28¼ to 34¼ cents per pound in 100-lb. lots.

Transportation Delays Deliveries

Local Stocks of Supplies Are Feeling the Strain of Lessened Incoming Material

Storms of the past two or three weeks in the East and Middle West have crippled transportation badly. Similar congested conditions prevail on the Pacific Coast. Each week the receipts of supplies have been smaller.

As a result local stocks of many staples are diminishing and in not a few instances a very serious situation is being faced. Embargoes to the Eastern seaboard have diminished stocks of iron and steel goods. In this list are a great many products used by railways in maintenance work.

Various things are being done in different parts of the country to relieve the congested condition of the roads, but even with the saving effected it will be many weeks before any material reduction can be made in delivery time.

Besides having the immediate effect

of putting a strain on local stocks of finished products the railroad breakdown has another more lasting result.

Factories have not been able to procure sufficient supplies of raw materials in many instances and the later output of the finished product will naturally be affected.

Cedar Pole Market Exceeds Expectations

Lack of Transportation Facilities and Utility Financing Conditions—Accumulation of Large Stocks

The twenty-second annual meeting of the Northern White Cedar Association was held at the Radisson Hotel, Minneapolis, Minn., on Jan. 22 and 23. Vice-President J. E. Gerich presided in the absence of the president, J. T. Kirkpatrick, who was unable to attend owing to work in connection with the exemption appeal board at Houghton, Mich. The meeting was attended by representatives of twenty-two of the leading cedar producers. The secretary in his report, reviewing the principal activities during the year, stated that the year 1917 was marked by an extraordinary traffic in cedar products, which was much greater than was anticipated. No papers were read, the entire time being devoted to presentation of committee reports and discussions of pertinent subjects.

The pole committee reported a good supply of poles on hand, which is ascribed to a lack of transportation facilities and the inability of many operating companies to procure funds for improvements. The post committee predicted a satisfactory business for post shippers. An exceptional market for posts had not been looked for in 1917 owing to the need of increased crop production and the high costs of fencing and farm labor. From the discussion of car supply it is thought that the situation is better this year than it was last. The priority which is expected for shipments of poles to public utilities it is thought will contribute to a favorable traffic in this product during 1918. It was recommended that the work of the pole advertising committee be continued, and appropriations were made for this and post advertising.

The election of officers for the ensuing year resulted as follows: President, J. E. Gerich, MacGills & Gibbs Company, Milwaukee; vice-president, L. L. Hill, Page & Hill Company, Minneapolis; W. L. Lafean, Chicago, and J. C. Kirkpatrick, the retiring president, were elected directors. W. D. Thomas and N. E. Boucher were continued in office as treasurer and secretary respectively.

Lightning Arrester Sales Active

Reports from the South State That Deliveries Are Slowing Up—Two to Five Months Specified

Heretofore the demand in the South for lightning arresters was more or less sporadic, but expansion of transmission systems in the Southeast has tended to flatten out the demand. Manufacturers report that last week's thunderstorms stimulated sales and brought to the attention of operating engineers the necessity of anticipating summer requirements. The aluminum-cell type has been quite active, but deliveries are slowing up. Manufacturers report great difficulty in securing steel containers and aluminum. Arresters for 6600 volts and below are promised for two months. Higher potentials cannot be had in less than five months, with the possibility of even longer shipments. There has been no decided change in prices recently.

Electric Railway Credits in the Southeast

Material Manufacturers and Jobbers Aver Collections Good—Peculiar Position of Traction Properties

Manufacturers and large jobbers handling electric railway material report that collections in general show an improvement over December, with the exception of a small number of isolated cases. A few of the larger accounts with manufacturers covering heavy equipment were slow coming in during the latter part of December, but these were taken care of in the early part of January and a fairly clean slate is presented at this time.

Electric railways in the Southeast hold a peculiar position, in that the majority are consolidated and operated in conjunction with lighting and power systems or controlled by holding companies. This feature influences the perspective of the credit man. The isolated systems that are not securing any direct benefit from military transportation are traveling a hard road in the face of increasing labor and maintenance costs. On the other hand, those systems securing military patronage are holding operating ratios down and doing as well as can be expected.

There is no doubt, however, that the equipment manufacturers are following up accounts more closely, and although this may not be construed as restricting or tightening up of credit facilities, nevertheless buyers are impressed with the fact that their accounts must be

Track Material Steady but Slow

Equipment for Maintenance and Replacements Receiving the Call—
Prices High—Certain Lines Scarce

With manufacturers and supply dealers, covering particularly track materials, the market is not altogether stagnant. In fact, considerable activity is noted with houses operating in this field, when conditions are taken into account. An authority on rails, plates, bolts, spikes and general track material states prices are keeping in line with the government selling figure on pig iron. This is also true of refined iron, bar steel and angle bars. Inquiries will not come along for immediate delivery. There is a mild inquiry for such specialties, mainly for track maintenance and replacement, on the part of electric roads, but it is nevertheless steady. Track cannot last forever, according to the same speaker, and even if the electric railways are in no financial position to buy as they should there is evidence that something is moving in the supply field, and it represents a regular trade if not remarkable in volume.

The straits that some electric roads are in for track maintenance and replacement is illustrated by a company in New York State that ordered a couple of cars of rails. When en route and before arriving at their destination the rolling mill, the statement says, ascertained its customer was by no means able to pay for the goods according to the contract. Without even notifying the buyer, the rails were rerouted and forwarded to another road, which happened to be in sufficient funds to pay the bill. It is said this is not an isolated instance, although no complaint is heard, because the electric properties are believed to be doing the best they can under the circumstances. Rail bonds including special heavy bonds are deliverable inside of a month. Third-rail anchors in carloads are going forward within the same time.

Another manufacturer stated the price of copper was checking the sale

of copper bonds to a considerable extent. In the spring, however, he looked for an improvement.

The recent storms were not only crippling transportation, rendering it more uncertain than ever, but the embargoes from Pittsburgh East, though expected to be raised, will probably be renewed. Steam railroad officials declare that the weather conditions are the worst they had experienced in thirty years. There were added difficulties because of the magnitude of current traffic. The actual freight situation is not a great deal improved over what it was on Jan. 1.

PROSPECTS IN PIG IRON MARKET

The last week has witnessed an opening of the pig iron market for the second half of the year and, while the volume of business is not large, the prospects are good for some heavy buying in the near future. After the wind-up of work on last year's adjustments and accounts a general desire to buy raw material is held to have taken possession of the trade. Sales for the second half are not very specific, in cases leaving out time of delivery and price, but being specific in description of material. The price is left open, as contracts must be written with a clause adjusting the price to any that may be made later by a government agency. A bolt and spike manufacturer stated he knew of many orders for pig iron which remained unfilled on account of the embargoes. That is to say, the material was finished at the foundry, but no cars could be had for shipping. Spikes, bolts, screw spikes can be delivered in a couple or three weeks, as can also some angle bars and tie-plates. Producers are ready to ship if they had facilities.

A manufacturer of track specialties, such as clamps, guard rail braces, derailleurs, tie plates, tie rods, rail joints, etc., states he was offering 60-lb. rails, for as good a delivery as the situation would permit, although the shipment would be prompt at \$70 a ton. A lot of 1000 rails was available, however, at \$60. Also a quantity of rails made for the Russian government, but undeliverable, was on the market at a still lower price. These rails differed from the kind used on American roads slightly, but they could be adapted with little trouble. They would probably find a market, he added, with a Cuban electric road. A large order of turnbuckles for the Interborough Rapid Transit Company, New York, ordered on Oct. 24 last, has not been received yet. Everyone concerned admits it is a seller's market.

Culverts are in weak demand just now, according to sales agents handling these goods, on account of the season. Old car wheels and relaying rails are scarce and backward on delivery. High prices prevail for both. Concrete showed a shade advance with the re-

cent change in the price of cement due to the increase of ligherage charges. It is further reported that Portland cement is likely to move up at any time with a most decisive jump. There are some in that trade who think a \$2.50 price per barrel, wholesale, will be reached before the end of the year.

War Board Rulings on Scrap Metals and Licenses

Exportation of Materials Under False Declaration—Photostatic Copies of Licenses Accepted

Desiring to stop the exportation of iron and steel products which are intended at destination to be scrapped and used as scrap metals, the War Trade Board has issued a prohibitory order to that effect. Under date of Jan. 13 a formal announcement of the board states that any firm exporting articles manufactured of iron and steel, such as second-hand rails, car wheels, and other material, for the purpose of being scrapped at destination, is guilty of false declaration and subject to penalties.

Another order of the War Board, under date of Jan. 10, is a ruling that photostatic copies of the originals of licenses granted by the Bureau of Enemy Trade may be used in lieu of and will be given the same force and effect as the original licenses.

Rolling Stock

Petersburg & Appomattox Railway, Petersburg, Va., expects to buy ten new standard double-truck interurban cars in the near future.

Macon Railway & Light Company, Macon, Ga., in a rear-end collision with a freight train on Jan. 19, had a motor car destroyed by fire.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., has six convertible cars now on order with the J. G. Brill Company, Philadelphia, Pa. The company contemplates building another electric locomotive early in the year.

Concord, Maynard & Hudson Street Railway, Maynard, Mass., on Jan. 25 had its carhouse destroyed by fire, of unknown origin, and all the rolling stock owned by the company, with the exception of two cars. Twelve passenger cars, a snowplow and a construction car were burned, together with a large amount of wire and other construction essentials.

Hudson River & Eastern Traction Company, Ossining, N. Y., on Jan. 28 had a passenger car smashed to pieces by running against a station abutment. The car slipped on ice-coated rails, ran down a steep hill and jumped off the end of the track, after a run of 1000 ft. against the station of the New York Central Railroad.

Dallas (Tex.) Street Railway Company, being in the market for a new

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kept up in good shape in order that the manufacturers may, in turn, take care of heavy current obligations covering raw materials, and eliminate, as far as possible, the necessity for further borrowing on short time paper. The serious problem of steam railroad financing has been removed by government operation, but the situation regarding the financing of other public utilities remains as a potential item.

Current opinion in the Southeast is that Congress will take up the subject of corporate financing in the belief that no satisfactory solution will be found that does not involve some degree of governmental intervention of control, in this way distinguishing between essential and non-essential industries during the period of the war, and diverting much-needed capital to the electric railways and other public utilities.

motor car and trailer, it was found that the car builders, according to a local report, refused to accept an order for the equipment with delivery stipulated earlier than two years. However, the needed cars—second-hand—were purchased from the Shreveport (La.) Traction Company.

Philadelphia, (Pa.) Rapid Transit Company is considering the purchase of a lot of 200 cars from The J. G. Brill Company. The additional rolling stock is needed to facilitate and enlarge transportation for the shipyard workers at Hog Island, Cramp & Sons Company and similar establishments in the vicinity of the city. The company has been negotiating with the United States government to assume the financial responsibility for the equipment, which probably will be of General Electric Company type. If these negotiations with the government to provide the funds for the purchase of these cars prove successful, they will be built and delivered on a priority basis.

Trade Notes

R. J. Morgan, formerly supervisor of sales for the American Steel Export Company, New York, N. Y., has been made assistant general sales manager.

Western Service Company, Spencer, Iowa, has been organized for the purpose of engaging in civil and electrical engineering and power-plant efficiency practice.

Crescent Electric & Manufacturing Company, Pittsburgh, Pa., recently bought the entire stock of the Pittsburgh Armature Works, thereby greatly increasing its capacity for work in that line.

Goulds Manufacturing Company, Seneca Falls, N. Y., has put into effect, beginning Jan. 1, 1918, a bonus system whereby all hourly piece work and salaried employees rated at \$40 a week or under will receive quarterly a bonus of 10 per cent on their total salary for the previous three months. This bonus is contingent upon a stipulated amount of time being put in at actual work during the year and is aimed to encourage full-time work.

C. C. Nuckols, president of the Consolidated Car-Heating Company, who at the outbreak of the war was commissioned major in the Ordnance Department, has been ordered by the War Department to report to Washington for active duty under the direction of Col. Samuel McRoberts, recently appointed head of the procurement division of the Ordnance Department. The directors of the company have relieved Major Nuckols of active duty in connection with the Consolidated Car-Heating Company. During his absence Cornell S. Hawley will have active charge of the management of the company, as mentioned last week.

Holden & White, Inc., Chicago, Ill., distributor of the air rectifier for the prevention of frozen air brakes, has installed it on the following railway systems: Omaha & Council Bluffs Street Railway Company, Gary & Interurban Railroad Company, Charles City Western Railway Company, Springfield (Mass.) Street Railway Company, Terre Haute, Indianapolis & Eastern Traction Company, East St. Louis & Suburban Railway Company, New York State Railways, Lincoln Traction Company, Mahoning & Shenango Railway & Light Company, Lackawanna & Wyoming Valley Railroad Company.

New Advertising Literature

American Spray Company, New York, N. Y.: Cooling water with sprays is the subject of bulletin No. 71.

John F. Godfrey, Elkhart, Ind.: The Godfrey coal conveyor is illustrated and described in a circular prepared by John F. Godfrey.

Westinghouse Lamp Company, New York, N. Y.: A folder showing the growth of its plants caused by the increase in the demand for its lamps.

Rubber Insulated Metals Corporation, Plainfield, N. J.: "Rimco" rubber-insulated pliers are illustrated and described in a leaflet prepared by this concern.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin 233, just ready for mailing, goes into the merits and

descriptions of air compressors and other machines.

Chicago Fuse Manufacturing Company, Chicago, Ill., and New York, N. Y.: "Union" renewable inclosed fuses for 250 volts and 600 volts are described in a leaflet prepared by this company.

National Tube Company, Pittsburgh, Pa.: "Rubber? No!" is the title of a four-page, illustrated circular, printed in colors, describing the "remarkable ductility of 'National' pipe," with specific examples.

Stow Manufacturing Company, Binghamton, N. Y.: Bulletins Nos. 101 and 102, entitled "Portable Tools of Proven Value," which will be sent upon request, contains and describes tools produced by a builder of forty-two years' experience.

Trico Fuse & Manufacturing Company, Milwaukee, Wis.: A leaflet descriptive of its renewable cartridge fuses. Seventeen features of these fuses are pointed out in this leaflet. This company has also printed a leaflet giving list prices of the fuses.

Wilson Welder & Metals Company, Inc., New York, N. Y.: Catalog No. 2, on electric welding. This book includes information on the development of the Wilson system, specifications of equipment, portable equipment, size, weight and use of electrodes and schedule of equipment, table of economies, physical tests of welded joints, economy and operation, etc.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.: Catalog A-2132 contains technical information regarding Bakelite Micarta-D gears. The distinctive features of this material for noiseless gears and pinions are listed, together with its physical properties. Methods of turning and drilling and gear cutting are described and illustrated with many halftones and drawings. Methods of attaching to the driving shaft which have proved suitable for gears of all sizes are shown and tables of pitch, teeth and other gear data are also given. There are formulas for the horsepower rating, the amount of power which can be transmitted through press fit and for calculating other variables in gear practice. It will be sent on request to the company's nearest office.

RAILWAY MATERIALS

	Jan. 23	Jan. 30
Rubber-covered wire base, New York, cents per lb.	30-33	30
Wire, weatherproof (100 lb. lots), cents per lb., New York	34 1/4-38 1/4	29.25-34.25
Wire, weatherproof (100 lb. lots), cents per lb., Chicago	38-38.35	33.50-38.35
Rails, heavy, Bessemer, Pittsburgh	\$55.00	\$55.00
Rails, heavy O. H. Pittsburgh, per gross ton	\$57.00	\$57.00
Wire nails, Pittsburgh, per 100 lb.	\$3.50	\$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	\$3.90	\$3.90
Steel bars, Pittsburgh, per 100 lb.	\$5.00	\$5.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$5.80	\$5.80
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$4.85	\$4.85
Galvanized barbed wire, Pittsburgh, cents per lb.	\$4.35	\$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	\$3.95	\$3.95
Cement (carload lots), New York, per bbl.	\$2.25	\$2.25
Cement (carload lots), Chicago, per bbl.	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.	\$2.63	\$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.31	\$1.31
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.32	\$1.32
White lead (100 lb. keg), New York, cents per lb.	10	10
Turpentine (bbl. lots), New York, cents per gal.	51	50

*Nominal.

NEW YORK METAL MARKET PRICES

	Jan. 23	Jan. 30
Copper, ingots, cents per lb.	23 1/2	23 1/2
Copper wire base, cents per lb.	27	27
Lead, cents per lb.	7 7/8	7-7 1/2
Nickel, cents per lb.	50	50
Spelter, cents per lb.	7.87 1/2	6.85
Tin, Straits, cents per lb.	\$86.00	\$85.00
Aluminum, 98 to 99 per cent, cents per lb.	34-36	34-36

OLD METAL PRICES—NEW YORK

	Jan. 23	Jan. 30
Heavy copper, cents per lb.	22	22
Light copper, cents per lb.	19 1/2	19 1/2
Red brass, cents per lb.	17 1/2	17 1/2
Yellow brass, cents per lb.	13 1/2	13 1/2
Lead, heavy, cents per lb.	5 1/2	6
Zinc, cents per lb.	5 1/2	5 1/2
Steel car axles, Chicago, per net ton	\$42.42	\$42.42
Old carwheels, Chicago, per gross ton	\$35.00	\$35.00
Steel rails (scrap), Chicago, per gross ton	\$35.00	\$35.00
Steel rails (relaying), Chicago, per gross ton	\$60.00	\$60.00
Machine shop turnings, Chicago, per net ton	\$17.50	\$17.00