

Electric Railway Journal

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Perhaps the Electric Railways Have a Secret Gold Mine

MAYOR GEORGE R. LUNN of Schenectady has been a listener at the hearings before the up-State New York Public Service Commission on applications to increase electric railway fares to 6 cents. He has heard or read the testimony. In spite of the Public Service Commission records which show that not one-half of the up-State companies are earning even their fixed charges (many of them not even their operating expenses), that not one of them has for years paid as much dividend (and most of them none at all) as in the eye of the law is "a fair average return on the capital used in the public service," the Mayor evidently thinks the railways have a secret gold mine. For he blithely says in a recent article in *Service*:

"There can be no natural right for private capital to monopolize public utilities. The important question of how to finance our municipalities will bring us face to face with municipal ownership. The cost of city government will inevitably increase. This is due to the fact that our cities are engaging in much work that was formerly done by the individual.

"No one in his senses would advocate the discontinuance of this important work by the city. The city must, therefore, look for new sources of revenue. Municipal ownership of public utilities offers the legitimate means whereby the city may gain either new revenue by conducting these utilities at the present prices or save money for the taxpayer by reducing the price charged for the various public necessities."

It must certainly be great to be a public ownership optimist.

New York Railways Wants City as Partner

THE statement that the New York Railways Company "is in an extremely receptive mood toward any proposition contemplating a partnership between the company and the city," made by President Shonts last May, is repeated in the company's annual report issued this week. Mr. Shonts was prompted to make this statement last spring in reply to a remark by Mayor Mitchel that the company ought not to ask for higher fares because in the past it had not shared its profits with the city. Nevertheless, we believe there are very few electric railway companies which would not be glad to substitute a partnership with the city for their taxes, or in default of that to sell their property to the city for the amount which it had cost to build and develop. This would mean municipal ownership, but the stockholders could well afford to let the taxpayers worry for a while about increasing costs for labor and materials. As a matter of fact, the city partnership plan is one which could well be used more

extensively than it is. It recognizes the vital concern of the city in good service, a liberal policy as regards extensions and low fares. When all of these three cannot be had under efficient management, the city might prefer to forego part of its return from the enterprise to secure such of these desiderata as the company otherwise would not be able to supply. At present, a city often considers it necessary to oppose an increase in railway fares when actually its real interest lies in such an increase so that the railway company may provide the other two desiderata. In reality, where a commission has power to reduce a rate which is excessive there is no real difference in aims between a city and a railway company, because both are interested in having a transportation system which pays a reasonable profit from operation. But a partnership plan would remove to a large extent the semblance of the difference in aims which exists at the present time.

The Safety Movement Needs Stronger Executive Backing

IN another column in this issue is a brief abstract of the proceedings of the electric railway section sessions of the Sixth Annual Safety Congress, including the substance of the papers of the two principal speakers, H. A. Nicholl, general manager Union Traction Company of Indiana, and H. V. Drown, general claim agent Public Service Railway. Without any desire to be critical, excepting in a constructive way, we are forced to admit that these speakers did not have as large and representative a hearing as the importance of their topics justified. It is true, of course, that the problems pressing upon the busy executive for solution at this moment are so numerous and so distracting that he has no time for anything but the essentials. Another fact is that considering the inherent risks of the business the electric railways are making an excellent record for keeping down accidents. Nevertheless, accidents of some classes are increasing very rapidly and something vigorous has got to be done, even where the fault does not lie with the electric railways. It will not do to leave this work entirely to subordinates especially charged with the duty of keeping up the interest in the safety work. These men alone have not the authority and influence necessary to get big results. They need the support of the executives in having their ideas carried out. The public also needs to be impressed in a large way with the fact that collisions with vehicles are not all or always the fault of the railways. There is then a duty as well as an opportunity for the executive—to stiffen the whole-



some discipline within his organization and to lead a campaign of education outside. Of course much of this must be done by proxy, but the man at the head must believe in his own safety propaganda so that it may have real vigor. Appointing safety committees, joining the National Safety Council, even designating a competent man as director of safety, are good in their way—but they are not enough. We were rather disappointed, therefore, in seeing so few executives at the Safety Congress. The presence of a fair number would have indicated at least that they believe in the merits of the safety movement. The advice which they could have given at the Congress would certainly have been greatly appreciated.

Government Bulletin on Electric Railway Labor

THE appearance of Bulletin No. 204 of the United States Bureau of Labor, entitled "Street Railway Employment in the United States," is a noteworthy event in the current history of electric railways. It is the first exhaustive official study of labor conditions in the industry and as such furnishes a fund of authoritative information which will be of direct assistance to operating officials, financiers, economists and students of labor conditions.

As a first attempt to investigate conditions of employment in the electric railway industry, this volume might have been made more complete. At the present time, when the questions of wages and hours of labor are so insistently before the public, it would have been helpful to have some comparative data given, indicating the recent trend of these matters, so vital both to the electric railway companies and their employees. In view of the fact that no arbitrary selection of cities can adequately indicate the solution of the labor problem in another city of approximately the same population or containing an electric railway company of similar capitalization, it is not feasible to draw general conclusions from the tables given in the book. Many of the statistics are indefinite in that they do not clearly state whether the figures are for the selected group of cities which were carefully investigated or for the group of cities from which data were obtained through correspondence. It must be remembered that the data were collected as of May, 1914. This, of course, was prior to the outbreak of the European war, and the statistics do not include the large increases in the cost of labor which beyond all doubt have resulted therefrom.

A review of the Bulletin leaves one with the distinct impression that conditions of employment are startlingly dissimilar throughout the country. Examples may be found of almost every type of employment agreement. Apparently the industry is trying a large number of experiments, out of which will come eventually some degree of uniformity of method. Perhaps this situation is fortunate. The industry is so young and the conditions surrounding it are so unlike anything which had gone before that recourse must be

had to the slow process of experimentation and evolution in order to work out the most satisfactory plan governing the relations between the companies and their employees.

Savings Incidental to the Light-Weight Safety Car

WHEN considering the advantages to be realized from the use of the light-weight, single-operator car, it is not sufficient to include only the savings embodied within the car itself. In fact, the ultimate savings are so far-reaching that it is almost impossible to estimate what the operating costs will be finally when an opportunity has been had to see the full results of complete installations in various cities. The most evident possibility for saving beyond the cars themselves is, perhaps, in track maintenance. The moving load which the track must support is from 12,000 lb. to 16,000 lb. instead of the 30,000 lb. or more imposed by large cars. This maintenance saving has been variously estimated to be from 20 per cent to 60 per cent of present maintenance costs. Beyond maintenance, there is the prospect of large saving in fixed charges through the construction, where extension or rebuilding work is necessary, of a very much lighter and cheaper type of track. Certainly it will not be necessary to use 129-lb. rail with heavy welded joint construction and 6 in. to 12 in. of concrete underneath the ties where the rolling stock weighs no more than 16,000 lb. There would also be a marked saving in the cost of maintenance of special work, and in the investment required for new work.

In connection with the overhead trolley and the feeder system, the light-weight car makes possible a very important saving. It reduces the energy consumption and therefore the line losses, or investment necessary in copper, or both. A good energy consumption record for a double-truck car is one which shows 2.6 kw.-hr. per car-mile for a car weighing 35,000 lb., operating under congested traffic conditions where the number of stops per mile is fourteen and the schedule speed is 5.5 m.p.h. In non-congested districts where the stops average 7.7 per mile and the schedule speed is 11 m.p.h., the energy consumption for this same car is 2.43 kw.-hr., hence, the average consumption would be approximately 2.5 kw.-hr. per car-mile. Contrast this with the average actual energy consumption in Wichita, as noted in the issue of this paper for Sept. 22, for the earliest type safety car, of 1.27 kw.-hr. per car-mile, and with the records of the later type safety cars of 1 kw.-hr. per car-mile and less. This means, then, a saving in energy for the new type car of at least 50 per cent of the present consumption, and allowing for a 25 per cent increase in the number of cars. If the line losses amount to 25 per cent of the power generated, and the consumption is reduced 50 per cent, this means that 75 per cent of the line losses, or more than 18 per cent of the total power bill, will be saved in line losses alone.

Carrying this matter of incidental savings to the

power house, another far-reaching effect of the light-weight car is seen. In the first place the saving of 50 per cent of the energy consumption will lighten the load on the plant 50 per cent, assuming a complete installation, and will therefore extend the adequacy of the present capacity for several years, or until a time, perhaps, when the prices and deliveries on electrical machinery will be more reasonable. In addition to this kilowatt-hour load reduction, there will also be a reduction in the maximum kilowatt demand, and hence a better load factor. This follows because the starting current of each car will be smaller and the peaks of starting current will be more uniformly distributed. Better load factor, of course, means cheaper power generation, and the reduction in load means longer life for the present power house and substations, and hence a less amortization charge. If power is purchased, it means a lower primary demand charge, and a lower kilowatt-hour bill.

Taking all items into consideration, then, would seem to offer an ultimate incidental saving possibly as important as the direct saving effected at the cars. Hence, if an installation of the safety cars can be justified on the saving represented by the cars alone, then the railway manager need have no fear but that he can show much greater reduction in annual operating costs than he promised would result. These incidental savings might be held in reserve as a sort of surprise bonus to be included in the operating report at the end of the year.

Labor and Capital Must Both Help in This War Period

AMERICAN business is patriotic—there can be little doubt of that. American labor is patriotic—that likewise is little subject to challenge. Yet these two forces in industrial life are not working entirely in conjunction at the present time. Faced with unprecedented demands for war production, the nation is nevertheless being confronted with serious interruptions and delays on account of strikes and threats of strikes in every part of the country. Lest these should grow to constitute a national interruption in essential services, it behooves both capital and labor to reach a better and more detailed understanding of their mutual responsibilities.

It is true that representatives of the largest national labor unions, through the committee on labor of the Council of National Defense, some time ago declared for an industrial armistice during which neither employers nor employees should endeavor to take advantage of the country's necessities to change existing standards. In spite of this and later supporting declarations, however, strikes have continued and even increased, and it has become apparent that the understanding previously reached with labor leaders needs to be further detailed.

We are glad to say that the National Industrial Conference Board of representative manufacturers and the Chamber of Commerce of the United States have re-

cently been trying to effect this very end. The first-named body, in a report this month to the Council of National Defense, endeavored to work out an unambiguous interpretation of the herein-stated general principle so as to insure its practical application. Its plan embodies points which may be summarized as follows:

- (1) Safety and health rules not to be modified or suspended except upon recommendation by the council;
- (2) wage demands to be tested by the standard in effect at the beginning of the war, with modification to meet any demonstrated advance in the cost of living;
- (3) hour standards to be changed only when deemed necessary for government needs by the council;
- (4) no effort to be made by either employer or employees to change open or closed shop conditions, and
- (5) a federal board to be created to adjust labor disputes involving war production.

Similar points were made at the Chamber of Commerce meetings last week, and one was added to the effect that there should be no profiteering in business to give rise to labor unrest.

This last point is worthy of separate treatment, for it is by no means inconceivable that a considerable part of the strike difficulty is caused by the stories that certain corporations have been making vast war profits. This does not explain all the strikes, however, for the desire of labor to get part of the "swag," as Secretary Wilson expresses it, would hardly account for the plague of strikes in the electric railway field, or in other industries where the need of price-fixing has not even been imagined. Hence, in the last few months, there has been a certain element of the censurable in the activities of labor, and this condition should be changed without delay.

A survey of the points made by the business men will show that they have taken a very broad-minded attitude toward the needs of labor. This is particularly evident in the matter of wages. There is no assertion that wages must remain unchanged until the war ends, for the justice of an advance to meet a proved rise in the cost of living is realized. Some industries, like the electric railway, would need financial relief before they could counteract much of an increase in the cost of living for employees, but that hardly detracts from the economic justice of the employees' side of the question. But, to resume, if the business men are broad-minded, why should not labor be so also? Why should not such an attempt as was recently made on the Kansas City Railways to force a closed shop be universally condemned as an infraction of the pledge made last spring?

The point of the whole matter is that capital and labor must both help the nation in its present struggle, and they should work together as efficiently and as harmoniously as possible. There should be no selfishness, no taking advantage of the other side. To avoid these things the business men of the nation have substituted particularities for generality, and labor has no excuse for withholding its full concurrence in this reasonable procedure.

Putting the Human Touch in Public Relations Work

How a Man Who Understands the Joy of Living Has Brought Inspiration, Breadth of Vision and Humanness to the Publicity and Allied Work of the Bay State Street Railway—How a Fourfold Plan Is Being Worked Out

OUR PURPOSE:

To create, assemble, and distribute ideas that will help the Bay State Street Railway Company give more satisfactory service to the public.

How Ideas Are Distributed

Publications

Correspondence

Lectures

Personal Talks

A PRACTICAL idealist—young in years but rich in experience—that is the type of man who heads the public relations department of the Bay State Street Railway, Boston, Mass. When this company late last year began to seek such an official, there came literally hundreds of applicants. But they were all passed over, for in the end the work sought the man, Thomas Dreier.

And a wise choice it was, for to the stern realities of the electric railway situation "Tom" Dreier has brought a quick understanding, a sympathetic heart and a virile code of business ethics. In his publicity work he has shown the same keenness of eye, the same brilliance of style and the same optimism of spirit that have featured and are still featuring his mass of other work along advertising and house-organ lines.

Mr. Dreier is profoundly interested in the great work of putting more neighborliness and good will into business, it being thoroughly understood that no work of this sort can be successful unless the management has as its ideal satisfactory service to its patrons. Upon this basis he has started out upon his work of inspiring Bay State Street Railway employees to better efforts, of helping the company and the public to see each other's good points, and of fostering a more neighborly feeling and kindlier co-operation between them.

The public-relations work of the company is rather unusual on account of the well-rounded conception of the channels one should use. As shown by the accompanying plan, it does not look alone to newspaper publicity to secure results but utilizes four basic means, as follows: Publications and allied publicity devices; personal talks with individuals; correspondence, and speeches before assemblages. Through such means the company endeavors to tell the exact truth about itself and its problems, to the end that it will be enabled to render service satisfactory to the public and at a fair return to its stockholders.

USING THE PRINTED WORD

There is no secrecy at all about the management or the operation of the Bay State Street Railway. P. F. Sullivan, president of the company, believes that the electric railway business is the public's business, and any citizen who desires to understand the business

better and wants any information in the power of the company to give can have that information. But the company does more than thus hold itself in readiness to furnish facts. It carries its work to the public, for it clearly realizes that men need information rather than reformation and that the responsibility lies with it of seeing that the information is furnished.

In bringing out facts about itself the company uses the printed word in the form of a weekly bulletin to employees, service to the newspapers, advertising and other publicity devices. These will be taken up in turn.

1. *Employees' Bulletin*

The company began its publicity work with its own employees in *Triangle Talks*. Some pages of this bulletin, which is an 8-in. x 11-in. four-page publication, are reproduced opposite. It was stated at the beginning that there are three partners in the electric railway business—the public, employees and investors—and that all the partners must know the facts to have efficient co-operation. Hence the company purposed to give the employees some facts, and it counted on them to pass these on to the public.

In form, however, *Triangle Talks* is a "we" publication, in which the employees can read of their own affairs as well as of the share they have in the operation of the property. The bulletin is not a didactic treatise—it is a humanized discussion of various points that touch the material welfare and personal interests of the men. Inspirational notes, written in Mr. Dreier's inimitable style, are liberally used, for he is greatly interested in the self-improvement of the employees. He is willing to put in all the time that is necessary to convince the men of the company's sincerity and eagerness to help them grow.

Along the line of electric railway problems, the various issues of *Triangle Talks* have discussed with the men the question of how, on the one hand, to decrease expenses through economies and, on the other, to increase income through courteous and efficient transportation salesmanship. Every issue of the bulletin aims to impress some particular point upon each group of employees—as, for example, what the motormen can do to save money, what the conductors can do to in-

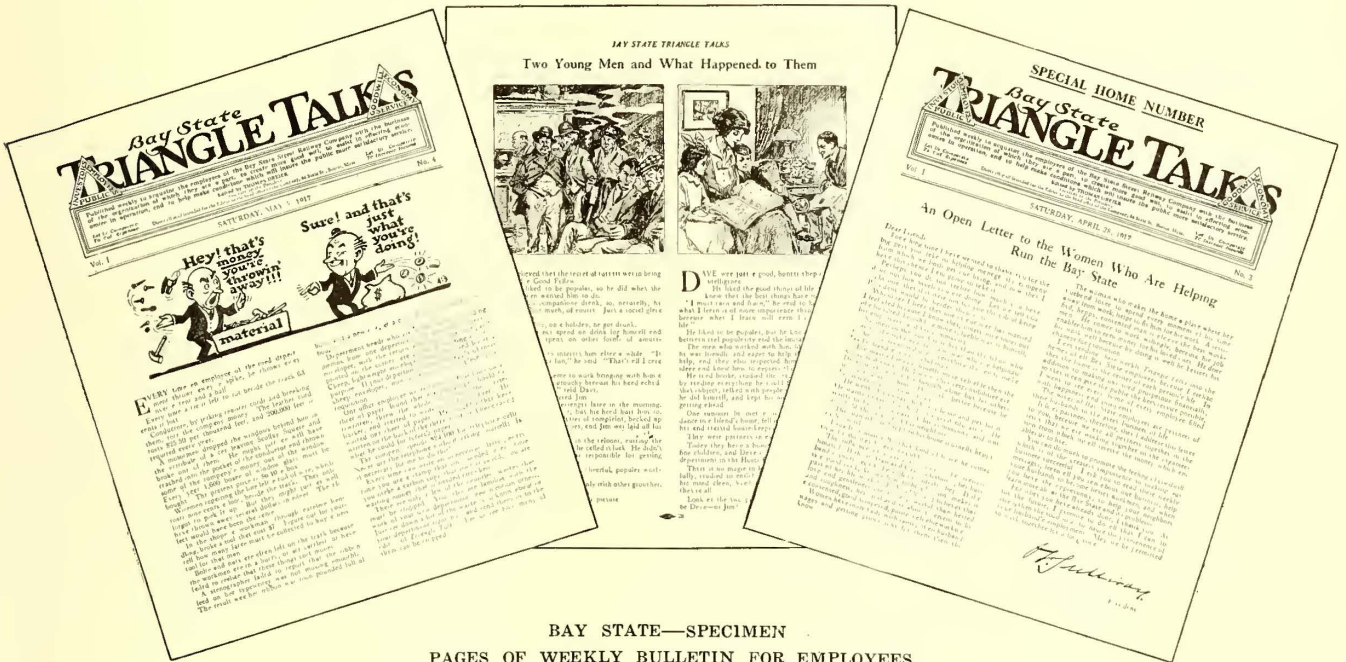
crease receipts or what the road department can do to avoid maintenance waste. In talking with employees on such matters, it is remembered that the frequent casual reminder rather than the once-for-all preachment brings results.

The bulletin also contains pictures and biographies of employees and departmental news. Cartoons are freely used, for it is believed that they count for more than type to the class of readers reached, and that the money spent for an artist is well invested. Sometimes the cartoons are added to emphasize the point in some article, but often they tell the whole story themselves. Several sketches selected at random from various issues are shown throughout this article.

Triangle Talks is expected to be eventually a monthly publication, with intermediate bulletins to employees as needed. Up to the present, however, it has been issued weekly. Each week 6000 copies are mailed to the homes of the employees. At first the company considered dis-

Mr. Dreier secures it. If the reporter, however, wishes to see any official, the interview is gladly arranged. The public-relations office does not believe at all in standing in front of the officials. When special statements are desired for the newspapers, they are usually given out in the name of President Sullivan or the local superintendent in the one of the ninety communities concerned. For example, a statement on the general question of higher electric railway fares would bear President Sullivan's name, while an explanation regarding service interruption because of a torn-up street would be on the authority of the local superintendent. This is done in order to play up the names of the operating officials with whom the public should be acquainted.

There are 129 newspapers in the company's territory, about thirty of them being dailies. All of these each week receive *The Bay State Neighbor*. The opening page of this, reproduced on page 567, contains at the top the following statement of policy:



BAY STATE—SPECIMEN PAGES OF WEEKLY BULLETIN FOR EMPLOYEES

tributing them at the carhouses, but it almost immediately decided in favor of mailing them. It was felt that this plan would give the women of the employees' families a better chance to wield their big influence along the lines desired, and also that any man who might be hostile to the publication would be less able to lead others not to read it.

2. Service to the Newspapers

Frankness, accuracy, dispatch and friendship—these are the aims of Mr. Dreier in dealing with the newspapers in the Bay State territory. He is trying to get reporters and editors so that he can say "Hello, Bill," to them; so that they will consider themselves free to come to him for any information they desire and feel certain that what they obtain is every bit available, and so that they will welcome without distrust his cooperation in the matter of furnishing "leads" and even stories to them.

The public-relations office receives operating and general information from company officials, but if the desired information is not in hand when a reporter calls,

"This letter is being sent to you from the office of the president of the Bay State Street Railway for the purpose of telling you more about the road, the ideals of its managers, their plans providing for the giving of better service, and many other things which you would learn if you were to talk to the officials personally. The more light thrown on the Bay State and its problems the better it will be for both the company and its patrons."

This first sheet is used in whole or in part for a summary letter to the editors from President Sullivan, and then follow as many sheets as are necessary to convey the news. Sometimes the appended articles are news items, sometimes speeches by company officials, sometimes editorials from the technical press and the like. The aim is to send the editors facts which will interest them and, when told to the public, will interest it too.

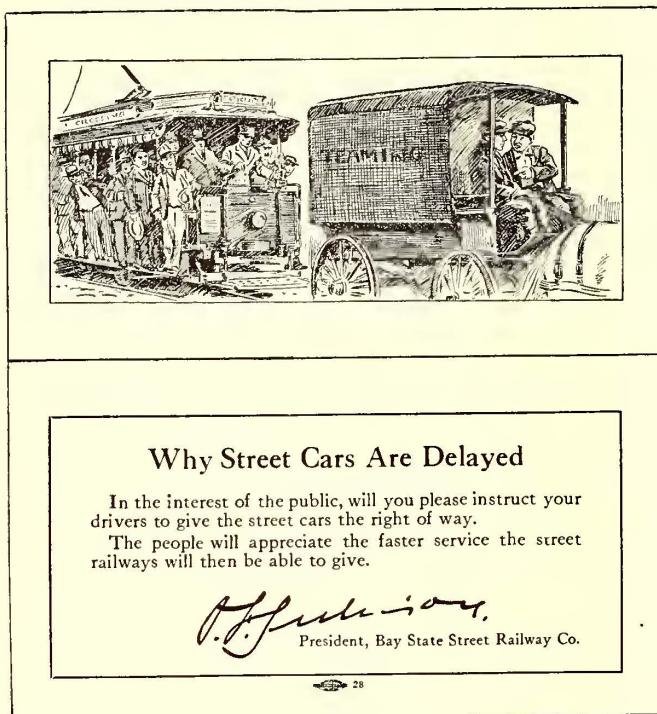
Besides this weekly news bulletin there are sent out each day or so stories on live news matters from the various departments of the company. It is understood that the public-relations office must be notified of all intended changes long enough in advance to secure full publicity. In the case of an important news story from the Boston office that will be of interest to some town

out on the company's lines, Mr. Dreier takes the initiative and telephones to the local superintendent, in order that the latter may establish a personal connection with the local newspapers in giving out the news. In a rush case, however, the message is telephoned directly to the editorial offices. If a news story of general interest is to be released, mimeographed sheets are sent out.

3. Advertising, Posters and Folders

Except for printing time-tables, newspaper advertisements have not been much used. The company is handicapped by the fact that it operates in so many communities having such a large number of newspapers. Furthermore, car cards have not been used, because the advertising spaces are all let out. Car posters have generally been utilized only for the announcement of operating changes, the posters being placed in the bulkheads.

A notable exception to the foregoing, in the case of newspaper advertisements and posters, was the prac-

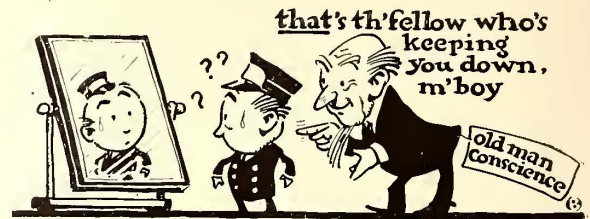


BAY STATE—SAMPLE OF FOLDER PLACED IN COMPANY'S CORRESPONDENCE.

tice in connection with the recent granting of a 6-cent fare on city lines. The company then ran a large advertisement in each daily and weekly newspaper, no matter in what language printed. This advertisement told why the additional revenue was needed, promised that the best service possible would be given and asked public co-operation. Posters were also placed on the ends of the cars, to direct patrons' attention to a booklet of information regarding the fare change. A total of 150,000 of these was printed for free distribution. A good-will message from President Sullivan was also placed on the back of tickets. The result was that the new rates went into effect with the minimum of trouble.

The company has made very efficient use of folders in its correspondence. It sends about 5000 2-cent letters a week to outside people in the normal course of its business. No more postage is required for the insertion of a small folder, and an excellent mailing list is

thus obtained. Illustrated folders on jitneys* and blocking the car tracks, like that shown in the accompanying illustration, have thus been used. In response to the latter, the president of a coal company wrote that he would dismiss any of his drivers that clogged the tracks, and the head of another company asked for fifty



additional copies to be distributed to employees. It was inexpensive publicity, but it hit the spot.

TALKING WITH INDIVIDUALS

This division of the work has to do with more than the simple talking with individual complainants, reporters and others that may often form a part of the daily round. It refers rather to heart-to-heart conversations with newspaper editors and other representative citizens in order to get at the public's point of view in regard to the company.

Mr. Dreier believes that it is highly important for a publicity man to get away from his desk. Hence he goes on frequent trips through the company's territory. When in any of the towns served, he drops in to see the local editors. He does so not with the purpose of getting anything into the newspapers, but of making friends with the editors and leading them to tell what they think of the company. The newspapermen are the ones best acquainted in general with local service, and Mr. Dreier tries to see the company through their eyes. He does not argue with them; he does not damn them for their sometimes mistaken and wrong criticisms; he simply listens. It is the voice of the public speaking, and his first task is to understand the ideas presented. Any necessary correction can later be sought in a gradual and tactful manner.

Sometimes, of course, the first approach meets with coldness, even with suspicion. Then Mr. Dreier simply increases his efforts to promote friendliness with the editor. The opening wedge is generally not difficult to find. Perhaps a recent book on the editor's desk gives the cue to a swapping of literary predilections; perhaps they both own the same make of automobile; perhaps the editor has some office "kink," the notice of which would bring joy to his heart. A subject of mutual in-

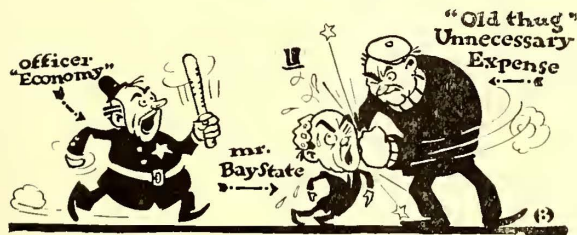


terest is usually quickly found, or a way in which the editor can be served.

The almost certain friendliness, once established, is not allowed to lapse. When Mr. Dreier returns to his office he writes a sincere letter thanking the editor for the courtesy and the co-operation shown. The letter is

*See ELECTRIC RAILWAY JOURNAL of July 21, 1917, page 103.

something tangible and its impression will be much greater than that of the memory of the interview. Moreover, the local editor is borne in mind; clippings in which he will probably be personally interested are sent to him, and the calls are repeated occasionally in a casual manner. And with it all the friendliness is



never presumed upon even for a hint as to how the editor's work should be done. Any act that would cause distrust to enter the mind of the newspaper man is astiduously avoided.

The local editors have been found to be a great source of constructive ideas. In one case, the editor said that he would not ask for more cars, for the company had no money to buy them; or for better service, for this could not be given with the equipment possessed. He did feel, however, that there might well be more signs on the part of local officials of a *desire to please* the public. For instance, in having seven or eight cars to handle an after-theater crowd, why could there not be some pleasant-mannered employee, separate from the carmen, to direct the loading and make the people feel that the company was much interested in getting them home as quickly and as pleasantly as possible? That was a constructive suggestion, and it was received with quick appreciation. In cases like this, when the company takes action, a letter of credit is sent out again thanking the man for the suggestion.

CHANGING COMPLAINTS FROM LIABILITIES INTO ASSETS

The correspondence of the public-relations office is closely related in many respects to the other portions of the work. The relationship can readily be seen, for example, in the usefulness of letters to follow up talks with editors and other persons of influence. The major class of correspondence, however, deals with "kicks." The general policy of the company in welcoming complaints and its work in changing complainants into friends are described below.


The company no longer wears a frowning face when complaints come into the office. As a matter of fact,



it welcomes them eagerly. The officials are just about as happy when the morning mail contains a number of letters telling of things that are wrong as an advertiser is when he receives coupons clipped from his advertisements. They feel that they have won a victory when a person who is not satisfied with the service comes straight to them with his story.

It is believed that the electric railway which never receives complaints from patrons is in a bad way. Or it is so good that it really belongs in some heavenly realm, far away from this earth with its opportunities to do things just a little bit better. Patrons who make complaints are the unofficial inspection staff of the Bay State company. They do for nothing what it pays inspectors to do—and sometimes do the work better. Of course, the company aims at the impossible and tries to give perfectly satisfactory service. But it knows that perfect service is only a goal toward which it is working. Until it reaches this goal, it will have many shortcomings. Complainants point these out and thus give the company an opportunity to overcome them. To widen this opportunity the company has even gone so far as to send to the newspapers special articles asking for constructive criticisms.

The routine of answering complaints on the Bay State Street Railway may be briefly described thus: All complaint letters reach the public-relations office, where they are acknowledged and sent to the assistant



The Bay State NEIGHBOR

This letter is being sent to you from the office of the President of the Bay State Railway Company, Boston, for the purpose of telling you more about the road, the ideals of its managers, their plans providing for the giving of better service, and many other things which you would learn if you were to talk to the officials personally. The more light thrown on the Bay State and its problems the better it will be for both the Company and its patrons.

Dear Mr Editor:-

Inasmuch as the financial problems of the Bay State Street Railway Company are of vital interest to the people of the communities served by our company, I want to supply you with all statements made by me in public talks.

As representatives of the reading public it is your right to have placed in your possession these facts so that you, if you will, may pass them on to your readers.

Let me call your attention especially to the editorial from The Boston News Bureau of Wednesday, May 9.

I also enclose a stenographic report of a talk delivered before the Lynn City Club on May 4

Yours sincerely,
P. F. Sullivan,
President.

BAY STATE—EXAMPLE OF FIRST SHEET OF WEEKLY NEWS LETTER TO LOCAL EDITORS

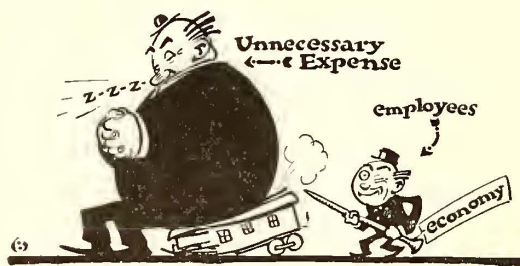
general manager's office. This official takes the matters up with the local superintendents, who prepare full reports. These come to the public-relations office for use in making the detailed answers to the complaints. But this by no means tells the story, for it does not show the thoughtfulness, courtesy and friendliness which, according to President Sullivan, characterize the whole process.

The company's attitude toward the person who makes a complaint is very important. It looks upon him as a friend—no matter what the spirit of his letter may be. Of course, there are many persons who feel that it is necessary for them to "wax indignant" and indulge in language that comes close to being profanity. Yet even they have not the power to ruffle the company's serenity. They receive the same friendly, courteous attention that is given to the people who write in a friendly spirit. The company just says to itself: "This

man may be a bit angry now, or he may have been angry when he wrote his letter, but by the time he receives our reply the chances are he will be in a receptive mood. His anger will have disappeared, and he will be a decent sort of fellow. Therefore, we'll just disregard these angry sentences."

If an unfriendly letter does stir the company up a bit, it simply delays answering until the next day, when its philosophic spirit has had a chance to regain control. Ordinarily, however, all complaint letters are answered the same day they are received. For many reasons the company may not be able to give faster car service, but it knows that there is no excuse for not replying to a letter without delay.

Even in making the mere acknowledgments to complaints, the company never writes perfunctory replies like this famous classic: "Yours of the 14 inst. received and contents noted. Same shall have our attention." It would cost as much to mail that as it does a real letter. The company looks at a complaint in this light: "Here is a patron who has asked us to talk to him about



our business. He expects to hear from us. He wants to know that we have his complaint and that it has received or is going to receive attention, and he also wants to know what our attitude toward him really is."

Hence the acknowledgment is a letter of prompt and courteous welcome to the complainant. It does not attempt to answer finally the specific assertions made in the complaint, for the reply to these must await the report of the operating department. The letter does, however, show the friendly spirit of the company and often affords an opportunity for an introductory selling talk about some of the conditions of the company's business.

The Bay State Street Railway always assumes that the patron is right—until he is proved wrong. Of course, the customer is not always right. But, it asks, what is the use of arguing? It is more profitable to find something upon which to agree than to point out where the patron is wrong. If the complainant says that Conductor 546797 was discourteous and therefore should be cast into the fiery pit, the company assumes that this conductor was guilty of something or other, or at least contributed his mite to the general fund of the passenger's dissatisfaction.

In such a case, therefore, the company writes something like this:

"If anyone treated us the way you say our conductor treated you at Nantasket Beach last Sunday, we would be stirred up too. We are sorry that the end of your pleasant day on the beach should have been marred by one of our men. Our desire is to give every rider satisfactory service, and as part of that service you should have received courteous treatment.

"Of course, Sunday is a hard day on electric railway conductors. Instead of being able to enjoy life with their families, they have to work harder than on any other day in the week. More cars are run and more people crowd into

the cars. Hence, as you can see yourself, the conductor's life on Sunday is not an enviable one. A few of the men, after a hard day, may not always speak to passengers as we would have them.

"But that does not excuse Conductor 546797 for speaking to you as he did. You can be sure that an investigation will be made. Enclosed are a couple of copies of our weekly publication in which you will find many facts about the electric railway business that may interest you, including some talks on the value of courtesy. We are thankful to you for writing so frankly."

Thus the patron was assumed to be right. But notice how the company managed to say a few words about the hard time a conductor has on Sundays. It did not offer this as an excuse, but simply as an interesting collateral statement of fact—just a little sales talk about the troubles of the other man in the case. There is nothing wonderful about the company's letters. It does not try to be clever. All it tries to be is human. It uses no form letters and no stereotyped paragraphs. These things might save time and a few cents, but they would be less effective. They would be less likely to sell to the complainant the idea that the company, no matter what its shortcomings may be, is a decent sort of corporation after all and really wants to do the right thing.

And it is by no means impossible to sell such an idea to a complainant. The following reply from a patron is sufficient to prove the point, and it incidentally shows the situation that confronted the public-relations department when it began work last February:

"While your reply of —, receipt of which I gratefully acknowledge, calls for no answer, I cannot refrain from expressing my appreciation of the courteous tone in which it was written. I must extend my assurance that this, in itself, has been sufficient to convert me from a kicker to an assistant, and that from now on I will boost instead of knock, whenever and wherever the opportunity presents itself, for the company you so conscientiously represent.

"In this connection allow me to say that, upon coming to your city early in January, I heard nothing but expressions of disgust at certain conditions and noticed the apparently widespread belief that the company was making no effort whatever to correct existing evils. But I now know that such is not true, and a careful perusal of your 'Triangle Talks' (copy of which has been duly received and carefully read) indicates, to my mind, that you are at least making a desperate effort to bring your road up to a high standard of efficiency. I sincerely hope your efforts may meet with success."

After the letters are sent to complainants, their names are carded. Each of these is valuable. It represents a prospect who has invited the company to send him sales literature from time to time. Because he drew attention to the fact that he lives in a certain community, he is from time to time called upon to pay the penalty of receiving from the company any news about its business that it cares to send him. This is nothing but ordinary business practice. The man who buys a razor from Jones the Druggist and has it delivered must expect to receive circulars from time to time advertising shaving soap and other articles carried in stock.

In short, Mr. and Mrs. Complaint Maker are prospective centers of good-will. If they can be changed, through correspondence, from people who never gave electric railway problems a thought into people who think a great deal about the company and its affairs, much has been accomplished. Even if the company's letters do no more than silence them as kickers, the money invested has not been lost. Electric railway men have learned not to be disappointed if all their investments fail to return 100 per cent profit. The Bay State

Street Railway believes, however, that in time—in the course of a few years—in response to its urging the people served will take a personal interest in helping to manage the property and will co-operate to the extent of offering their criticisms, whether they are constructive or merely ordinary criticisms, in a helpful spirit. There is something thrilling in the idea of selling the idea of mutual helpfulness, neighborliness and co-operation to the people served, but the company knows that it can be done provided it creates and keeps alive that same spirit inside its own organization.

SPEAKING BEFORE ASSEMBLAGES

At the present time President Sullivan is the man who does the speech-making for the company. Eventually this portion of the public-relations work will be handled by an organized staff of speakers. These men will be sent to public meetings of various kinds for the purpose of contributing ideas that will help the public better to understand the problems and the needs of the electric railway industry.

The best example of past work along this line was in connection with the recent movement for a 6-cent fare on the city lines of the Bay State system. At a luncheon in Boston President Sullivan called together about eighty representatives of the cities and towns having a 5-cent fare. Mayors, city solicitors, delegates from chambers of commerce and newspaper editors—all were there. Before these men President Sullivan, with manifest frankness and utter simplicity, described the situation confronting the company. He neither harangued nor complained; he just gave facts and then stated the alternative—either the company would go to the Legislature and ask the State to take over the system or the cities would go with the company to the Public Service Commission and secure a 6-cent fare.

Was there an outburst of criticism against the company? No! The facts were evident, and the city representatives understood them. The general gathering recommended that the Mayors and the official bodies in the various communities hold meetings and that President Sullivan go out and present the same story to each locality. Why? Simply that the responsible citizens in each city and town might have at first hand the facts of the case and see the need of the company and the justice of its economic plea.

The recommendation was carried out. Through many a long hour in the evenings of the next few weeks President Sullivan told his tale. Advance copies of his speeches were sent to the newspapers in each city. The industry knows the result. That the various communities co-operated with the company and presented to the commission a compromise plan for the trial operation of a 6-cent fare is adequate indication of the efficacy of such public-relations work.

THE PUBLIC IS FAIR, IF IT HAS THE FACTS

Such is the story of the four-fold public-relations plan now being followed by the Bay State Street Railway. The company believes in the work and expects a fair reception by the public. It states its creed thus: "The public is fair when it knows the facts—the trouble has been that corporations have not seen the necessity for presenting facts. The public is eager for the truth. Such being the case, corporations must tell its story. Moreover, a utility should be to the public what

a good neighbor is to a community. No other platform than the Sermon on the Mount can last in business, or in any true human relationship."

In Mr. Dreier's opinion the future happiness of the nation hinges on the proper interpretation of Big Business to the Public and the Public to Big Business. For years it has been his ideal to share in such work. The Bay State company has given him the opportunity, and from all appearances he is successfully making use of it.

Resolutions Passed by Business Men

Business Ready to Co-operate with Government in All Ways—Maintenance of Labor Standards Recommended

THE great war convention of the Chamber of Commerce of the United States, held in Atlantic City on Sept. 18-21, came to an end with some of the most remarkable resolutions ever passed by business men.

One resolution in most comprehensive and sweeping terms pledged the support of business to the war. It declared that business is ready for heavy taxes, the dissipation of its savings, the turning over of its plants and any other thing necessary to prove that it is behind the war until the last gun is fired. Another resolution declared that at the earliest moment all government purchasing for the war should be concentrated in one body. It stated in an unequivocal manner for the first time that it is proper and necessary that the government should have the power to fix prices on all materials needed by it for the conduct of the war as well as all materials affecting the interest of the public at large. The Chamber of Commerce went on record for a revision of prices based on production-cost.

On the subject of labor it was resolved that employers and employees should not attempt to change existing standards of work during the period of the war. The convention indorsed another labor resolution of great importance, urging the appointment of a federal board to adjust disputes. During the process of adjustment, American business declared, there should be no lockouts, strikes or other cessation of industry. Business pledged itself to accept decisions made by such a board and invited the co-operation of labor, instead of suggesting compulsory arbitration.

Other resolutions that were passed referred to the usefulness of a federal employment bureau, the desirability of a commission to study foreign business problems now and after the war, the payment of taxes in four quarterly installments and the support of Liberty Loans. The daylight-saving plan, it was declared, would conserve the nation's supply of coal, and action by Congress and the President to make the plan effective as a war measure was urged.

The committee on resolutions suggested that a number of recommendations be referred by the chamber to the board of directors with power to act. Among these was a recommendation that the national chamber make a prompt and careful study of labor conditions after the war. The committee on resolutions also requested that a number of recommendations be referred to the board of directors without advice. Among these was a recommendation that Congress should without delay enact legislation for the development of water power at sites now under federal control.

Street Railway Employment in the United States

A Review Is Given of the More Important Sections of Bulletin 204, Just Published by the United States Bureau of Labor Statistics

By THOMAS CONWAY, Jr., Ph.D.

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THIS report represents the initial attempt of the United States Bureau of Labor to collect and classify statistics concerning the wages, hours of labor and working conditions of the street railway employees in the United States. Unlike many of the other studies made by the Bureau of Labor, this work does not deal with conditions in the street railway industry over an extended period of time, and consequently it offers no basis for comparison with conditions existing prior to the date of its publication. The statistics presented were gathered in the latter half of the year 1914 and the early part of 1915. The greater part of the information collected was as of the month of May, 1914.

Special agents of the Bureau of Labor made a rather comprehensive study in eighty-three selected cities in the United States, while information from 321 companies operating in cities of reasonable size was obtained by means of correspondence. The cities chosen for investigation by the special agents of the Bureau of Labor do not include necessarily all of the larger cities in the United States, for the list was made primarily to show representative conditions in cities of varying size throughout the country. Elevated and subway lines as well as surface lines were covered in the cities selected, but interurban lines were not included.

The major portion of the bulletin, comprising 1131 pages, consists of elaborate tables setting forth the wages of car crews and their hours of labor. For each city covered in the investigation there are tables in which practically complete information is given concerning these two factors. The statistics also cover the rates of pay for specified classes in the personnel of the companies during a year, accidents, sick and death benefits and miscellaneous data relative to car employees.

A discussion of the contents of the bulletin will be made clearer by analyzing the chapters in consecutive order, as they are listed in the bulletin. Wherever possible, important information has been summarized. Although this summary is based upon the figures set forth, it is to be remembered that the figures in themselves, because of the method by which they were collected, are typical only of the conditions as they existed at the time the investigation was made. No definite conclusions can be drawn with reference to the statistics.

WAGES OF CAR CREWS

Practically all the companies pay a wage scale which increases automatically from time to time according to the length of service. Only a few companies pay a

flat rate. In some cities, instead of an increased scale depending upon the length of service, there is a merit and demerit system of wage payments, as in Brooklyn. In Washington, D. C., the flat rate is supplemented by a bonus of different amounts based on satisfactory service. The varying wage scale applies to extra men as well as to regular men. Although motormen and conductors ordinarily receive the same wages for the same length of service, the figures show that the average wage of motormen generally is greater than that of conductors, due to a greater length of service.

The wage statistics are divided into two groups. Group 1 relates to eighty-three cities in which the special agents worked, and Group 2 includes those cities from which information was obtained through correspondence. The median or middle rate of wages for motormen and conductors of Groups 1 and 2 follow—the median rate being the rate of the man having as many men of lower rates below him as of higher rates above him. It is the rate at which 50 per cent of the men are shown in the cumulative percentages.

Group I

Motormen, regular, surface, 28 and under 29 cents per hour.

Motormen, extra, surface, 25 and under 26 cents per hour.

Motormen, regular, elevated and subway, 35 and under 36 cents per hour.

Motormen, extra, elevated and subway, 30 and under 31 cents per hour.

Conductors, regular, surface, 27 and under 28 cents per hour.

Conductors, extra, surface, 24 and under 25 cents per hour.

Conductors, regular, elevated and subway, 26 and under 27 cents per hour.

Conductors, extra, elevated and subway, 25 and under 26 cents per hour.

Gripmen, regular, surface, 31 and under 32 cents per hour.

Gripmen, extra, surface, 25 and under 26 cents per hour.

Guards, regular, elevated and subway, 23 and under 24 cents per hour.

Guards, extra, elevated and subway, 21 and under 22 cents per hour.

Group II

Motormen, regular and extra, surface, 25 and under 26 cents per hour.

Conductors, regular and extra, surface, 25 and under 26 cents per hour.

When the figures compiled for the eighty-three selected cities—Group 1—are analyzed, some interesting data appear concerning the percentage of the total number of men employed earning a specified wage. For instance, out of the total number of regular motormen employed on the surface lines, in cities of Group 1, 61 per cent were earning less than 30 cents per hour, while the remaining 39 per cent were earning between 30 cents and 46 cents per hour. Out of the total number

of regular motormen employed on the elevated and subway lines 54 per cent were earning less than 36 cents per hour, and the remaining 46 per cent received between 36 cents and 38 cents per hour.

Sixty-seven per cent of the regular conductors on surface lines earn less than 30 cents per hour, with the highest wage of the remainder reaching 41 cents per hour, while 70 per cent of those who serve on the elevated and subway lines were paid less than 27 cents per hour, with the highest wage of the remainder reaching 34 cents per hour.

The variations in wage rates as disclosed by the mass of statistical data contained in the report has been summarized for the purposes of this review in Table I:

TABLE I—SUMMARY OF VARIATIONS IN WAGES SHOWN BY REPORT

| Rate of Wages (Cents) per Hour | MOTORMEN (Regular) | | | | CONDUCTORS (Regular) | | | | MOTORMEN (Regular) | | CONDUCTORS (Regular) | | Rate of Wages (Cents) per Hour |
|--------------------------------|---------------------|---------------------|---------------------------------|---------------------|----------------------|---------------------|---------------------------------|---------------------|---------------------|---------------------|----------------------|---------------------|--------------------------------|
| | Total Surface Lines | | Total Elevated and Subway Lines | | Total Surface Lines | | Total Elevated and Subway Lines | | Total | Total | Total | Total | |
| | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | Per Cent Cumulative | |
| 15 and under 16 | 4 | | 4 | | | | | | 2 | | 9 | | 10 and under 11 |
| 16 and under 17 | 2 | | 6 | | | | | | 8 | | 8 | | 13 and under 14 |
| 17 and under 18 | 53 | | 80 | | | | | | 28 | | 28 | | 14 and under 15 |
| 18 and under 19 | 120 | 1 | 168 | 1 | | | | | 141 | 1 | 114 | 1 | 15 and under 16 |
| 19 and under 20 | 193 | 1 | 295 | 2 | | | | | 136 | 2 | 102 | 2 | 16 and under 17 |
| 20 and under 21 | 374 | 2 | 455 | 3 | | | | | 253 | 4 | 179 | 3 | 17 and under 18 |
| 21 and under 22 | 471 | 4 | 583 | 5 | | | | | 511 | 8 | 387 | 6 | 18 and under 19 |
| 22 and under 23 | 779 | 7 | 1092 | 9 | | | | | 424 | 11 | 474 | 10 | 19 and under 20 |
| 23 and under 24 | 1047 | 10 | 1350 | 13 | 95 | 8 | | | 732 | 16 | 661 | 15 | 20 and under 21 |
| 24 and under 25 | 2214 | 17 | 3521 | 25 | 57 | 13 | | | 662 | 21 | 669 | 20 | 21 and under 22 |
| 25 and under 26 | 2012 | 24 | 2287 | 33 | 271 | 36 | | | 899 | 25 | 923 | 27 | 22 and under 23 |
| 26 and under 27 | 1752 | 30 | 2074 | 40 | 386 | 70 | | | 1038 | 35 | 1168 | 36 | 23 and under 24 |
| 27 and under 28 | 3905 | 43 | 3392 | 51 | 286 | 94 | | | 1065 | 43 | 1162 | 45 | 24 and under 25 |
| 28 and under 29 | 3944 | 56 | 3102 | 61 | 31 | 97 | | | 1358 | 53 | 1335 | 56 | 25 and under 26 |
| 29 and under 30 | 1546 | 61 | 1871 | 67 | | | | | 1427 | 63 | 1516 | 67 | 26 and under 27 |
| 30 and under 31 | 5520 | 79 | 4720 | 83 | | | | | 1163 | 72 | 1010 | 75 | 27 and under 28 |
| 31 and under 32 | 1875 | 85 | 1373 | 88 | | | | | 2531 | 90 | 2189 | 92 | 28 and under 29 |
| 32 and under 33 | 3715 | 97 | 3103 | 98 | 6 | 97 | | | 293 | 92 | 218 | 94 | 29 and under 30 |
| 33 and under 34 | 374 | 98 | 327 | 99 | 31 | 100 | | | 664 | 97 | 498 | 97 | 30 and under 31 |
| 34 and under 35 | 40 | 99 | 346 | 37 | 34 | 99 | | | 243 | 99 | 249 | 99 | 31 and under 32 |
| 35 and under 36 | 57 | 99 | 204 | 54 | 47 | 99 | | | 54 | 99 | 42 | 100 | 32 and under 33 |
| 36 and under 37 | 26 | 99 | 27 | 99 | | | | | 33 | 99 | 37 | 100 | 33 and under 34 |
| 37 and under 38 | 149 | 99 | 568 | 100 | 133 | 100 | | | 1 | 99 | | | 34 and under 35 |
| 38 and under 39 | 17 | 99 | 13 | 100 | | | | | 8 | 99 | | | 35 and under 36 |
| 39 and under 40 | 9 | 99 | 7 | 100 | | | | | 3 | 100 | | | 36 and under 37 |
| 40 and under 41 | 65 | 100 | 41 | 100 | | | | | 3 | 100 | | | 37 and under 38 |
| 42 and under 43 | 36 | 100 | | | | | | | 24 | 100 | | | 38 and under 39 |
| 45 and under 46 | 64 | 100 | | | | | | | 23 | 100 | | | 40 and under 41 |
| | | | | | | | | | 12 | 100 | | | 43 and under 44 |
| | G | rou | One | | | | | | G | rou | P | T | wo |

The basis for payment of the car crews in about 50 per cent of the eighty-three cities was the actual time worked each day calculated to the minute. Where this system was not in vogue, various aliquot parts of an hour were used to determine the wage, and under the latter system two methods were employed; first, payment to the nearest aliquot part; second, payment to the next aliquot part. Approximately forty-two companies used the first aliquot part method, which, as can be readily seen, is practically equalizing in its effects as between the company and the men. On the other hand, five companies, among which were those operating in Cleveland and Boston, made payment on the next aliquot part basis. This system of payment always inures to the benefit of the employee.

The liberality of some companies is illustrated by the fact that in many instances time not on duty was allowed and paid for in addition to the time actually worked. Such an arrangement, of course, applied especially to the triple runs and split or swing runs, in order to provide a reasonable compensation therefor. Twenty-four cities, or 29 per cent of the total of eighty-three,

had some definite scale fixed according to which the men were paid under certain circumstances when they were not on duty. Among the more important cities in which this arrangement is in effect are Boston, Buffalo, Chicago, Cleveland, Milwaukee, New York, New Orleans, Philadelphia, Pittsburgh, Rochester, San Francisco, Seattle and Washington, D. C.

A number of street railway companies (in nine cities out of the total of eighty-three) pay the car crews for reporting time. In twenty-one cities allowance is made for time consumed in filling out daily work and accident reports. In twenty-two cities, meals or cash allowances are given to the men when they are held for orders after finishing their regular day's work.

In order to assure the "extra" motorman or conductor that he will earn a certain minimum wage, the practice in sixteen cities is to guarantee to these extra men a certain minimum wage. The guarantee assumes either one of two forms—guarantee in time, or guarantee in amount of earnings. Table II gives a list showing the different guarantees and the companies paying them:

TABLE II—CITIES IN WHICH A GUARANTEED WAGE IS GIVEN TO "EXTRAS"

| Cities | Guaranteed Hours or Rate |
|---|---|
| San Antonio | 5 hours per day |
| Boston | 6.3 hours per day |
| Superior | 7 hours, first 3 months; 8 hours, second 3 months; 9 hours after 6 months |
| Birmingham | 9 hours per day |
| Portland, Me. | 10 hours per day |
| Pittsburgh | \$1.40 per day for any time on duty less than 5 hours |
| New York (Brooklyn, surface lines), Charleston, S. C. | |
| Grand Rapids | \$1.50 per day |
| Minneapolis and St. Paul | \$2 per day |
| Philadelphia ("last-run" men) | \$2.25 per day |
| Springfield, Mass. | Full day's pay |
| Milwaukee, Newark and Philadelphia | \$12 per week |
| Detroit | \$19 semi-monthly |
| Seattle (S. R. & S. Ry. Co.) | \$20 per half month |
| Cincinnati, Indianapolis, Kansas City | \$45 per month |
| Des Moines | \$50 per month |
| Seattle (P. S. T. L. & P. Co.) | \$55 per month |

Thirty-four other companies paid the extra men for reporting, even though they did not receive the runs that had been originally assigned to them. Time allowances for which payment is made varied according to the following data:

- Seven companies paid for one hour.
- One company paid for one to two hours.
- Two companies paid for two hours.
- One company paid for two hours to half day.
- One company paid for five hours.
- Thirteen companies paid for time held.
- One company paid for one-half time held.
- One company paid for five minutes only as reporting time.
- Three companies paid for time of run or trip assigned.
- One company paid \$1, or for actual time held if it would amount to over \$1.
- One company paid \$1.25.
- One company paid 15 cents per hour for time held.
- One company paid for one hour for second report and two hours for the third.

The customary practice for remunerating the men for overtime work is to pay them only at the regular rate. However, the companies in eleven cities paid extra for overtime. There were only eighteen cities out of the eighty-three, or 22 per cent, in which the excess of time on duty caused by obstructions to traffic or breakdowns on the line were not paid for at the regular rate, and even where these exceptions were in force, the allowances were extremely reasonable as far as the employees were concerned.

A very commendable practice on the part of twelve street railway companies has been to give premiums to car crews for the prevention of accidents. This premium takes the form either of additional pay or a bonus, or

the granting of an extra day off in a certain period of time.

Table III shows the rewards granted the car men for care in the operation of cars and the prevention of accidents.

TABLE III—CITIES IN WHICH PREMIUMS ARE GIVEN TO CAREFUL EMPLOYEES

| Name of City | Premiums Given to Careful Employees |
|----------------------|---|
| Jacksonville | One day off with pay each month after the third month in which no accident occurred. |
| Louisville | Balance in the accident fund not expended for damages was distributed among employees as a bonus. |
| Memphis | Bonus of 1 cent per hour for each hour on duty in which employees had no accident, 100 hours being deducted for each accident that occurred and payments being made every six months. |
| Nashville | Bonus based on hours as in Memphis, with a deduction of 200 hours for each accident. |
| Norfolk and Richmond | Each carman given uniform for each six months of service in which he had no accident costing the company more than \$10. |
| San Francisco | The decrease in damage claims paid in one year over the preceding year was distributed among employees. |
| Washington, D. C. | Schedule of bonuses under the merit and profit sharing plans. |
| Witchita | A month without accidents entitled men to their wages for two days off that month. |
| Wilmington, Del. | Bonus of 1 cent an hour for each month in which employee had no accident. |

Wherever companies have an increasing wage rate for the year or a part thereof, the advance for each year of service averages ordinarily about 1 cent per hour. The custom has been to make the initial advances at more frequent intervals of time than the latter ones. After the first or second year the rate advances year by year up to a maximum flat rate. The length of time in which the annual advance in rate continues, depends largely upon the individual company. In some cases it continues up to the fifth year of service, while other companies provide for an annual advance over a period of ten years or longer. Out of the eighty-three cities in Group 1, the companies in twenty-eight cities or 34 per cent provide for an increase in wages in the first or second six months of employment. For the cities from which data were obtained by correspondence—Group 2—110 companies or 34 per cent provided for an increase of wages in the first year. The number of companies in Group 1 whose annual rate of advance continued longer than the fifth year was fifty-eight, while in Group 2 the number reached 114.

In Table IV are listed the figures showing the average rate of wages per hour for the regular and extra motormen and conductors in the cities investigated by the special agents of the bureau.

The cities in Group 1 have had a range from a minimum average for regular motormen from 18.7 cents per hour to 44.1 cents per hour, while conductors in the same eighty-three cities had an average wage per hour ranging from 17.6 cents to 44.1 cents. An analysis of the same figures for the cities of Group 2 for the regular motormen, shows a minimum rate per hour of 14.8 cents and a maximum of 38.3 cents, while conductors had a minimum of 14.0 cents and 38.3 cents respectively.

HOURS OF LABOR AND DAY WORK BY CAR CREWS

The statistics concerning the hours of labor served by the car crews on their daily runs are divided into three groups: (1) the number of regular runs, with each specified number of hours on duty from Monday to Friday; (2) the same for Saturday; (3) the same for Sunday. In the first group, with the total number of motormen, conductors and guards on the elevated and subway lines included, there were:

| | |
|-------------------------|--------------------------------------|
| 442 runs from 7½ to 8 | hours, or 7.8 per cent of the total |
| 701 runs from 8 to 8½ | hours, or 12.4 per cent of the total |
| 1,228 runs from 8½ to 9 | hours, or 21.8 per cent of the total |
| 1,385 runs from 9 to 9½ | hours, or 24.6 per cent of the total |
| 868 runs from 9½ to 10 | hours, or 15.4 per cent of the total |
| 150 runs from 10 to 10½ | hours, or 2.7 per cent of the total |

While out of the total runs on the surface lines for the same group:

| | | |
|------------------------|---------------------|-------|
| 368 or 1.3 per cent | were from 7½ to 8 | hours |
| 1,518 or 5.0 per cent | were from 8 to 8½ | hours |
| 3,287 or 10.8 per cent | were from 8½ to 9 | hours |
| 3,893 or 19.4 per cent | were from 9 to 9½ | hours |
| 6,992 or 22.9 per cent | were from 9½ to 10 | hours |
| 6,763 or 22.2 per cent | were from 10 to 10½ | hours |

In almost every city in which information was given, the regular runs were chosen by the men in the order of seniority of service. This was not true, however, for the lines in Memphis, Nashville, New York (Third Avenue Railway), Norfolk, Richmond, St. Louis, San Antonio, Springfield, Ohio, and Wilmington, Del., where they are assigned by company officials. Generally the selections of runs were made from two to four times a year. Moreover, in all the cities the men are excused from duty upon request to a reasonable extent and their runs given to extra men. Thirteen cities have an established rule as to the number of days off duty that may be taken.

CHANGE IN THE PERSONNEL DURING ONE YEAR

The electric railway industry is, so far as its employees are concerned, comparatively free from industrial depression, bad weather or seasonal variations in the labor demand, but it has long been a problem of the electric railway manager to reduce the percentage of turn-over of his labor force. Some interesting figures are uncovered as the result of the Bureau of Labor's investigation. In computing the percentage of turn-over it was necessary first to get the mean of the number employed at the beginning and at the end of the year and then to use this mean as the basis of computation, in the absence of the more exact figure showing the average employed during the year. "If the force was increased, the net increase was subtracted from the number hired, leaving the net number hired to maintain the force as distinguished from the increase in the force. This number was then divided by the mean force for the year, giving the percentage of the turn-over. If there was a decrease in the force during the year, the number hired was divided by the mean force for the year to ascertain the turn-over."

There is a much greater turn-over of conductors than of motormen, as is illustrated by Table V.

TABLE V—CLASSIFIED PER CENT OF TURNOVER FOR MOTORMEN AND CONDUCTORS

| Classified Per Cent of Turnover | Number of Companies with Each Classified Per Cent of Turnover for | |
|---------------------------------|---|------------|
| | Motormen | Conductors |
| Under 10 per cent..... | 113 | 8 |
| 10 and under 20 per cent..... | 119 | 10 |
| 20 and under 30 per cent..... | 115 | 11 |
| 30 and under 40 per cent..... | 13 | 16 |
| 40 and under 50 per cent..... | 14 | 9 |
| 50 and under 60 per cent..... | 18 | 9 |
| 60 and under 70 per cent..... | 3 | 8 |
| 70 and under 80 per cent..... | 1 | 5 |
| 80 and under 90 per cent..... | 13 | 2 |
| 90 and under 100 per cent..... | 2 | 1 |
| 100 per cent and over..... | 5 | 12 |
| Total companies..... | 296 | 891 |

*Including 1 company for which data for motormen and conductors were not reported separately.

**Including 5 companies for which data for motormen and conductors were not reported separately.

***Not including 5 companies for which data for motormen and conductors were not reported separately.

TABLE IV—AVERAGE RATE OF WAGES OF MOTORMEN AND CONDUCTORS IN CITIES FROM WHICH DATA WERE OBTAINED BY SPECIAL AGENTS

| City | Average Rate of Wages per Hour of | | | | City | Average Rate of Wages per Hour of | | | |
|---|-----------------------------------|---------|------------|---------|---|-----------------------------------|---------|------------|---------|
| | Motormen | | Conductors | | | Motormen | | Conductors | |
| | Regular | Extra | Regular | Extra | | Regular | Extra | Regular | Extra |
| Altoona, Pa. | \$0.243 | \$0.213 | \$0.239 | \$0.202 | Norfolk, Va. | \$0.208 | \$0.182 | \$0.208 | \$0.180 |
| Atlanta, Ga. | .233 | .200 | .230 | .196 | Oakland, Cal. | .351 | .320 | .341 | .309 |
| Augusta, Ga. | .208 | .173 | .197 | .173 | Oklahoma City, Okla. | .252 | .209 | .235 | .202 |
| Binghamton, N. Y. | .215 | .200 | .208 | .200 | Omaha, Nebr. | .275 | .241 | .265 | .241 |
| Birmingham, Ala. | .221 | .187 | .215 | .182 | Peoria, Ill. | .279 | 1.238 | .275 | 1.238 |
| Boston, Mass.: | | | | | Philadelphia, Pa.: | | | | |
| Boston Elevated Ry. Co.— | | | | | Philadelphia Rapid Transit Co.— | | | | |
| Surface lines | .308 | .276 | .300 | .272 | Elevated lines | .329 | .306 | .298 | ... |
| Elevated lines | .325 | .304 | 1.273 | 1.257 | Surface lines | .298 | .272 | .295 | .265 |
| Brockton, Mass. | .275 | .250 | .270 | .247 | Pittsburgh, Pa. | .298 | .267 | .296 | .258 |
| Buffalo, N. Y. | .273 | .233 | .258 | .231 | Portland, Me. | .223 | .225 | .222 | .218 |
| Butte, Mont. | 2.441 | 2.402 | 2.441 | 2.402 | Portland, Ore. | .291 | .261 | .286 | .255 |
| Charleston, S. C. | .204 | .174 | .198 | .172 | Providence, R. I. | .279 | .258 | .277 | .256 |
| Charlotte, N. C. | .189 | .166 | .183 | .165 | Pueblo, Colo. | .285 | .253 | .275 | .248 |
| Chattanooga, Tenn. | .225 | .197 | .228 | .188 | Reading, Pa. | 2.230 | 2.230 | 2.230 | 2.230 |
| Chicago, Ill.: | | | | | Richmond, Va. | .205 | .181 | .199 | .182 |
| Chicago Elevated Railways | .340 | .327 | .268 | .240 | Rochester, N. Y. | .280 | .272 | .280 | .265 |
| Chicago Surface Lines | .315 | .266 | .310 | .259 | Sacramento, Cal. | .316 | .290 | .315 | .290 |
| Cincinnati, Ohio | .258 | .217 | .248 | .206 | Saginaw, Mich. | .221 | .206 | .219 | .204 |
| Cleveland, Ohio | .300 | .278 | .299 | .276 | St. Louis, Mo. | .263 | .232 | .254 | .231 |
| Dallas, Tex.: | | | | | Salt Lake City, Utah | .328 | .280 | .326 | .283 |
| Dallas Electric Corporation | .231 | .202 | .223 | .200 | San Antonio, Tex. | .235 | .213 | .232 | .206 |
| Northern Texas Traction Co., Oak Cliff division of Fort Worth lines | .236 | .207 | .231 | .206 | San Francisco, Cal.: | | | | |
| Davenport, Iowa | .277 | .241 | .270 | .234 | California Street Cable Ry. Co. | 3.311 | 3.257 | 3.308 | 3.250 |
| Denver, Colo. | .296 | .262 | .293 | .254 | Municipal Rys. of San Francisco | 2.375 | 2.375 | 2.375 | 2.375 |
| Des Moines, Iowa | .290 | .275 | .286 | .241 | United Railroads of San Francisco | .308 | .259 | .288 | .259 |
| Detroit, Mich. | .317 | .276 | .314 | .273 | Savannah, Ga. | .187 | .173 | .176 | .174 |
| Evansville, Ind. | .225 | .195 | .216 | .192 | Scranton, Pa. | .264 | .231 | .264 | .230 |
| Grand Rapids, Mich. | .264 | .232 | .258 | .231 | Seattle, Wash.: | | | | |
| Houston, Tex. | .236 | .213 | .228 | .208 | Puget Sound Traction, Light & Power Co. | 2.297 | (*)... | 2.278 | (*)... |
| Indianapolis, Ind. | .256 | .212 | .245 | .210 | Seattle Municipal Street Ry. | 2.375 | 2.375 | 2.375 | 2.375 |
| Jacksonville, Fla. | .200 | .190 | .199 | .190 | Seattle, Renton & Southern Ry. Co. | .296 | .266 | .280 | .238 |
| Kansas City, Mo. | .259 | .224 | .249 | .222 | Sioux City, Iowa | .234 | .200 | .222 | .200 |
| Lincoln, Nebr. | .248 | .202 | .241 | .200 | South Bend, Ind. | .212 | .193 | .211 | .190 |
| Little Rock, Ark. | .222 | .191 | .212 | .185 | Spokane, Wash.: | | | | |
| Los Angeles, Cal. | .282 | .251 | .276 | .251 | Spokane & Inland Empire R. R. Co. | .294 | .271 | .287 | .269 |
| Louisville, Ky. | .237 | .221 | .236 | .221 | The Washington Water Power Co. | .299 | .263 | .297 | .263 |
| Lowell, Mass. | .276 | .250 | .274 | .248 | Springfield, Ill. | .224 | .190 | .213 | .190 |
| Manchester, N. H. | .268 | .234 | .268 | .238 | Springfield, Mass. | 7.308 | 7.305 | 7.307 | 7.297 |
| Memphis, Tenn. | .213 | .173 | .206 | .173 | Springfield, Ohio | .214 | .227 | .240 | .221 |
| Milwaukee, Wis. | .268 | .233 | .265 | .233 | Superior, Wis. | .250 | .225 | .239 | .225 |
| Minneapolis and St. Paul, Minn. | .280 | .239 | .275 | .236 | Syracuse, N. Y. | .280 | .270 | .280 | .266 |
| Mobile, Ala. | .216 | .193 | .208 | .190 | Tacoma, Wash. | 2.256 | 2.240 | 2.252 | 2.232 |
| Nashville, Tenn. | .204 | .185 | .202 | .184 | Toledo, Ohio | .262 | .232 | .257 | .231 |
| Newark, N. J. | .276 | .241 | .262 | .239 | Topeka, Kans. | .219 | .205 | .212 | .200 |
| New Bedford, Mass. | .290 | .255 | .287 | .255 | Washington, D. C.: | | | | |
| New Britain, Conn. | .260 | .231 | .257 | .225 | Capital Traction Co. | 2.240 | 2.227 | 2.234 | 2.227 |
| New Haven, Conn. | .264 | .231 | .260 | .227 | Washington Ry. & Electric Co. | 2.235 | 2.216 | 2.230 | 2.216 |
| New Orleans, La. | .240 | .240 | .240 | .240 | Wheeling, W. Va. | .267 | .220 | .243 | .220 |
| New York, N. Y.: | | | | | Wichita, Kans. | .234 | .209 | .218 | .201 |
| Brooklyn Rapid Transit Co. | .263 | .244 | .259 | .243 | Wilmington, Del.: | | | | |
| New York & Queens County Ry. | .231 | .221 | .228 | .221 | People's Railway Co. | .200 | .187 | .198 | .185 |
| New York Rys. Co.— | | | | | Wilmington & Philadelphia Traction Co. | .240 | .216 | .238 | .216 |
| Horse-car lines | 2.221 | 2.214 | 2.217 | 2.213 | | | | | |
| Storage-battery car lines | 4.250 | 4.250 | 4.225 | 4.225 | | | | | |
| All lines except horse and storage-battery car lines | 4.274 | 4.252 | 4.252 | 4.241 | | | | | |
| Third Avenue Ry. Co.— | | | | | | | | | |
| The Bronx | .268 | .247 | .256 | .243 | | | | | |
| Manhattan | .270 | .252 | .248 | .238 | | | | | |
| Interborough Rapid Transit Co.— | | | | | | | | | |
| Elevated lines | 2.368 | 2.318 | 2.256 | ... | | | | | |
| Subway lines | 2.365 | 2.313 | 2.254 | ... | | | | | |
| Brooklyn Rapid Transit Co. (elevated lines) | .370 | .319 | .246 | .242 | | | | | |

¹Conductors are called guards in Boston.
²Motormen and conductors worked interchangeably.
³Rate for drivers. Computed from daily rate on 10-hour-day basis. Runs of under 8 hours on duty were paid for as 8; over 8 to 9, paid for as 9; over 9 to 10, paid for as 10; over 10, excess over 10 paid for at regular rate.
⁴Computed from daily rate on 10-hour-day basis. Runs of less than 8 hours on duty were paid for as 8, over 8 to 9, paid for as 9; over 9 to 10, paid for as 10; over 10, excess over 10 paid for at regular rate.
⁵Computed from daily rate on 10-hour-day basis.
⁶Rate for gripmen.
⁷Rate for gripmen, including extra men; not reported separately.
⁸Rate for regular and extra men; not reported separately.
⁹Extra men are included with regular men; not reported separately.
¹⁰Computed from daily rate on a 9-hour-day basis.
¹¹Includes bonus.
¹²In addition employees received in the calendar year 1914 from a profit-sharing fund an allowance equivalent to approximately three-fourths of 1 cent per hour.

EXAMINATIONS OF NEW EMPLOYEES

In order to improve the standards of service and the character of men engaged in giving that service, the majority of the companies at the present time are putting their men through rigid physical and mental examinations. In forty-two cities there are physical examinations given to prospective employees similar to that given to applicants for life insurance, while in sixteen other cities there is a general medical examination but of a less rigid character.

In all but four cities applicants are required to be within a certain age limit as a condition of employment. The prevailing age required for entrance is twenty-one years, although Springfield, Mass., employs men eighteen years of age, and Reading and Altoona, Pa., employ those who are but twenty. A number of cities have also established a maximum age limit beyond which the individual will not be employed. The lowest maximum age limit is found in Minneapolis, be-

ing twenty-eight years, and the highest maximum limit is found in four cities where men fifty years old will be employed.

It is an invariable rule that newly employed motormen and conductors must take a course of instruction to learn the duties of their positions. The length of time that the "learner's period" continues in most cases depends upon the individual. In ten cities, the new employee is paid while learning. Many of the companies require bonds or a cash deposit to be furnished by the employee to insure faithful service or to cover short-ages.

ACCIDENT, SICK AND DEATH BENEFITS

The last decade has seen a tremendous increase in the co-operation between employer and employee, and nowhere is this more noticeable in the electric railway industry than in the accident, sick and death benefits bestowed by the companies on their men. Out of the ninety-five companies tabulated by the Bureau of La-

bor, forty-one companies provide relief, exclusive of the state compensation acts, not only for the employees injured while on duty, but sometimes also for dependents of an employee in case of his death caused by accident while on duty. This represents 43.2 per cent of the total ninety-five companies. State compensation acts are operative in forty-two other cities in which these ninety-five companies operate.

EMPLOYEES OTHER THAN CAR CREWS

Chap. V of the report gives in tabular form, covering fourteen pages, the number of laborers and line-men (line and track) and car repairmen (carhouse and shop) with the rate of wages, classified according to cities.

ASSOCIATIONS OF EMPLOYERS AND EMPLOYEES

In Chap. VI the early history of the American Electric Railway Association, organized Dec. 13, 1882, is briefly sketched. The solution of the problems at the time the industry was changing from horse to electricity as a motive power is developed.

The first organization of the street railway employees was a chapter of the Knights of Labor in New York. Eventually various chapters of the assembly of the Knights of Labor were consolidated with the American Federation of Labor in 1893. Considerable space is devoted to the legislative activities of, and the legislation which it is stated has been secured by, the Amalgamated Association of Street & Electric Railway Employees. Since 1893 twenty-nine states have adopted legislation providing for inclosed vestibule cars, while ten states have specific provisions in their statutes, limiting the number of hours which constitute a day's work for the electric railway men. Moreover, as a result of the activities of this association, a number of cities have written into their franchises with the electric railway company, a clause providing for the arbitration of any dispute as to wages or hours between the company and the men. Such a provision now exists in the franchises

TABLE VI—AMOUNT OF DEATH, DISABILITY, AND OLD-AGE BENEFITS PAID EACH YEAR BY THE AMALGAMATED ASSOCIATION, 1896 TO 1914

| Year | Death Claims | Disability Claims | Old-age Benefit Claims | Total |
|-------|--------------|-------------------|------------------------|-----------|
| 1896 | \$200 | ..... | ..... | \$200 |
| 1897 | 375 | ..... | ..... | 375 |
| 1898 | 400 | ..... | ..... | 400 |
| 1899 | 550 | ..... | ..... | 550 |
| 1900 | 675 | ..... | ..... | 675 |
| 1901 | 1,000 | \$150 | ..... | 1,150 |
| 1902 | 1,375 | 150 | ..... | 1,525 |
| 1903 | 6,275 | 925 | ..... | 7,200 |
| 1904 | 15,175 | 675 | ..... | 15,850 |
| 1905 | 12,900 | 400 | ..... | 13,300 |
| 1906 | 12,300 | 1,600 | ..... | 13,900 |
| 1907 | 16,900 | 1,200 | ..... | 18,100 |
| 1908 | 16,700 | 1,300 | ..... | 18,000 |
| 1909 | 17,500 | 800 | ..... | 18,300 |
| 1910 | 22,100 | 600 | ..... | 22,700 |
| 1911 | 24,900 | 500 | ..... | 25,400 |
| 1912 | 109,750 | 5,200 | ..... | 114,950 |
| 1913 | 134,000 | 4,200 | ..... | 138,200 |
| 1914 | 189,793 | 8,700 | \$1,600 | 200,093 |
| Total | \$582,868 | \$26,400 | \$1,600 | \$610,868 |

of Detroit (Mich.), Wheeling, (W. Va.), Monroe, (La.), and East Liverpool, (Ohio).

Probably one of the fundamental features of the employees association is the death, disability and old age benefits, paid by the local chapters to the members thereof. Table VI sets forth the amount of such claims paid yearly by the association, as given in the report.

A feature of no little importance in this portion of the bulletin is a brief narrative statement of the principal facts of the large street railway strikes in the United States.

AGREEMENTS BETWEEN EMPLOYERS AND EMPLOYEES

Under this head a rather complete digest has been made of eighty-four agreements in effect in 1914, between the companies and the Amalgamated Association. This digest applies strictly to employees on city lines or city and interurban lines combined; those sections of the agreements referring solely to interurban employees are omitted. The eighty-four agreements cover 108 local divisions of the Amalgamated Association in 119 cities, and approximately 14,000 miles of track are operated by the companies which are parties thereto.

Generally, the agreements cover all of the employees who are members of the local chapter of the association, irrespective of the nature of their employment. The time for which the agreement is to be enforced varies from one to ten years, and in some cases is an indefinite period. The following table gives an idea of the time that these agreements are to be effective:

| |
|---------------------------------------|
| 23 agreements for a period of 1 year |
| 12 agreements for a period of 2 years |
| 35 agreements for a period of 3 years |
| 4 agreements for a period of 4 years |
| 3 agreements for a period of 5 years |
| 1 agreement for a period of 6 years |
| 1 agreement for a period of 10 years |
| 5 agreements for no definite period |

There is a provision in seventy-seven, or 92 per cent of the total number of agreements, to the effect that the company, through its properly accredited officers, will treat with the officers of the local association upon all differences or grievances that may arise. As to the matter of employees becoming members in the local association, thirty agreements make membership compulsory while the other thirty-seven are optional.

Eighty-one out of the eighty-four agreements deal with the question of suspending and discharging employees. The majority of the sections relating to this topic provide that a member of the association suspended or discharged, if after the investigation is found not guilty of the charges, is to be reinstated to his former position and paid for the time lost by reason of such action at the regular rate of wages.

Sixty-nine of the agreements make provisions for the arbitration of differences between the association and the street railway company. The clause generally used is to the effect that all differences or grievances not amicably adjusted between the officials of the company and the association are to be submitted to arbitration upon the request of either party, although in a few agreements the question must arise under the agreement before they may be arbitrated. Twenty out of the eighty-four agreements contain provisions concerning strikes and lockouts as follows:

| |
|---|
| 10 agreements provide for no sympathetic strike. |
| 1 agreement provides for no sympathetic lockout. |
| 4 agreements provide for no strike during life of agreement. |
| 3 agreements provide for no lockout during life of agreement. |
| 15 agreements provide for no strike pending arbitration. |
| 7 agreements provide for no lockout pending arbitration. |
| 2 agreements provide for no strike unless company refuses to arbitrate. |
| 1 agreement provides for no strike except for violation of agreement. |

Of the seventy-five agreements which refer to the assignment of runs, in seventy-four there is a provision that seniority of service shall prevail in such assignment, while the other one permits the company to assign runs according to the schedule of rotation.

Although seventy-four agreements contain some references to the hours of labor of the employees, the sections referring to this topic cannot be combined to any extent on account of the many variations.

The National Safety Code from the Electric Railway Standpoint—II

In This Issue the Authors Complete the Synopsis Begun in the Issue for Sept. 15, Summarizing Parts 3 and 4 of the Code

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[NOTE—In the first section of this syllabus of the National Electrical Safety Code the authors analyzed the contents of the sections relating to the installation and maintenance of stations, and the installation and maintenance of signal lines. In the following article they analyze those on the installation and maintenance of utilization equipment, and the rules to be observed in the operation of electrical equipment in lines. Electric railway managers and engineers now have in their hands a wonderfully accurate and complete guide to the code which will enable them to study even more effectively the results of its application during the trial year now rapidly approaching a close.—EDS.]

Summary of Part III

Installation and Maintenance of Utilization Equipment

THE rules of Part 3 include a number of subjects specially applicable to the electric railway industry. It is not attempted to summarize them completely. Those items having no direct general bearing on electric railway operation are omitted. A publication in the form of an index supplementing the code is now under preparation. This will become available at an early date, and with its aid one may readily learn in more complete detail the various subjects treated, thus permitting the present syllabus to be briefer.

Scope—The rules apply to the installation of motors, fixtures and other electrical utilization equipment and of the wiring in connection therewith, where such equipment or wiring is accessible to other than qualified electrical operators, and where the operating voltage is between 25 and 750 volts. The conditions are outlined under which any given rule may be modified or waived (300).

Arrangement—For convenient use the rules are divided into ten sections, 30 to 39, covering the subjects noted below.

Section 30. Protective Arrangements—Electrical utilization equipment is required to be so installed as to minimize the attendant life hazard and in addition to complying with the rules of this code compliance with the National Electrical Code and other non-conflicting accepted standards is recommended (302). The installation must thereafter be properly maintained with repairs and changes made only by properly qualified persons (303). Non-current-carrying parts which persons can touch are required generally to be permanently grounded as per methods in Section 9, with the infrequent permissible exceptions noted (304).

Current-carrying parts are required generally to be either guarded (306), isolated by elevation (306) or provided with adequate working spaces, and the voltage and other determining conditions are outlined (305 and 306). Equipment, if in hazardous locations, must have sparking or arcing parts specially inclosed (307). Storage batteries, transformers and lightning arresters, where used in connection with utilization equipment, must be installed generally as station equipment (308). All electrical equipment is to be suitably identified when necessary for safety (309).

Section 31. Conductors—Automatic cutouts are required to protect conductors against excessive current, excepting neutral conductors in three-wire systems and certain other conductors (310). Mechanical guards or flameproof covering are called for under certain given conditions and bare conductors are restricted to certain locations (311). Even where mechanical disturbance is unlikely, effective isolation, guards, mats and other protection is specified, under given determining conditions of voltage and other factors, to safeguard persons in the vicinity of the conductors (312, 313).

Conduit in gaseous surroundings must be sealed to prevent entrance of gases (314). A number of special rules cover the running of conductors to avoid excessive inductance, care in the use of pendants and portables, and requirements for taping of joints and for certain restrictions or safeguarding of temporary wiring. Certain methods for guarding, grounding or isolating service conductors in conduits are also outlined (315).

Section 32. Fuses and Other Cutouts, Switches and Controllers—Detailed requirements are given for the arrangement and design of these protective and control devices, which must be accessible, must identify the equipment controlled, must not be subject to accidental operation (320), and must be suitably inclosed if in gaseous locations (321). Some of the places and conditions are specified where the use of switches or disconnectors is required (322-23). Arrangement for locking or blocking of switches is required under given conditions with certain exceptions noted (320).

Provision must be made for the safe disconnection of fuses from the circuit before the fuses are handled, this disconnection to be automatic where any but qualified operators have access (324). The suitable isolation or shielding of fuses or circuit breakers is required to avoid the burning or striking of persons in their vicinity (325). Grounding of exposed non-current-carrying metal parts of switches or cutouts is required under certain given conditions (326), and the special requirements for suitably guarding live parts of these devices are detailed (327), including use of sufficient working

space, and in general inclosure of such parts as are above 150 volts to ground (327).

Section 37. Portable Devices, Cables and Connectors (Not Including Those for Signal Systems)—The grounding of exterior metal of portable devices is strongly recommended where practicable for devices operating above 150 volts to ground or at even lower voltages wherever located in bathrooms, laundries, etc., where the good contacts possible make extra precaution necessary (371). Cable connectors are required to be so arranged that live parts are not exposed (372). The use of portable cords and connectors having identified parts is required where portable devices are grounded. Detailed requirements are given on the character (373) and arrangement of portable and pendant cords under given conditions of voltage and surroundings (374).

Section 38. Electrically Operated Cars, Cranes and Elevators—Special requirements are given for the guarding of live and moving parts, according to the special conditions existing (380). Grounding is required for non-current-carrying metal parts of electrical equipment over 150 volts to ground, and for similar parts of portable cranes, derricks, etc., in the vicinity (381). The energy supply to cars, elevators and cranes is required to be controllable at readily accessible points, and the movement of such vehicles is required to be controllable only by an authorized operator (382) and conveniently located for him (383). In subways auxiliary systems of emergency lighting are required (384).

Section 39. Telephone and Other Signal Apparatus on Circuits Exposed by Supply Lines—It is required that non-current-carrying parts be made harmless by the use of suitable protectors, by grounding or by installation of the apparatus concerned in insulating booths according to various given conditions (390). The guarding of current-carrying parts in specified manner is also required under certain defined conditions (391). Certain specified protection against induced voltages is required for signaling equipment where under normal operating conditions more than 150 volts to ground would otherwise exist on the signal lines and connected devices (392).

Means for grounding of arresters on signaling systems are specified in some detail, these applying in lieu of the grounding methods of Appendix A, which are elsewhere generally applicable throughout the rules (393).

Summary of Part IV

Rules to be Observed in the Operation of Electrical Equipment and Lines

The rules of Part 4 are summarized in a slightly different manner from the balance of the code, giving rather a review than a summary such as is given for the other parts. However, it is believed that the form in which this is presented will indicate clearly the nature and scope of these operating safety rules.

Necessity for Operating as Well as Construction Rules—Even with all the safeguarding of construction that is feasible, the requirements for continuity of service and maintenance of its efficiency demand the attendance of employees on or about live electrical

equipment. Sometimes the complete guarding of live parts, especially at the lower voltages even where acceptable to operators, would not be practicable; hence dependence on liberal spaces, insulating platforms and portable insulating guards or appliances for working on live parts may be necessary. The operating safety rules are intended to supplement the physical safeguarding where this cannot be complete or where it must be occasionally removed or rendered inoperative.

Scope—The rules are divided into two principal parts, one for electrical operations in general and one covering commercial signal operation. The rules are preceded by a statement on their scope calling attention to the fact that while most of the rules find application in larger industrial or private plants, and even in moderate-sized utilities, some do not apply or apply less fully in the smaller. Attempt was not made to restrict their scope to rules applicable to all installations, large and small, because such a restriction would have required omission of many rules necessary in many instances as a guide, and tending to no confusion in cases where they do not apply.

Rules for Employers—In the rules for electrical operation in general two sections on organization and protective methods and devices are addressed to the employer, the first section calling for the issuance of rules, the proper choice and instruction to employees to assure their qualifications for the duties assigned and the arrangement of the organization to avoid dangerous misunderstandings. The protective methods specified in the second section cover the supervision of uninstructed persons, the use of diagrams to assist persons in direction of operation, the use of clear instructions to employees and the provision of adequate protective appliances and signs.

Rules for Employees—The rules addressed to the employees comprise five sections addressed to electrical employees in general, and eight sections covering different special kinds of electrical operations, including work around supply stations and switchboards, work on underground and overhead lines, work about series lamps, work about meters, testing operations about the electrical equipment of tunnels and subways, and work about signal lines used in conjunction with supply lines.

The sections addressed to electrical employees in general begin with one covering general precautions requiring familiarity with the rules, fitness for the work in hand, proper supervision of assistants, simple precautions about live parts, and the use of proper safety appliances, safety belts, etc., the use of proper types of extinguishers only about live parts and the repetition of messages to avoid dangerous misunderstandings.

A second section deals with the relations and procedures in general necessary for workmen in order to avoid the hazards through misunderstandings, including the duties of chief operator, the duties of foremen, the necessity for special authorizations for hazardous work, the precautions in restoring service afterward and the tagging of circuits being worked on, and measures to protect traffic where work is being done. The next section covers the specific precautions to be observed in handling live equipment or lines of varying voltages, including the stringing and tapping of wires.

The next two sections include a detailed procedure for assuring that the killing of lines to protect workmen is carried out in a reliable manner to avoid subjecting men to danger through misunderstandings.

Rules for Commercial Signal Systems—The rules for commercial telephone and telegraph systems are to a large extent substantially repetitions of rules already given for electrical employers and employees in general, but with such of the former rules omitted as have no particular bearing on the commercial signal operation. This has permitted a briefer set of rules, which is regarded by both employers and employees in commercial signal work as more suitable for placing in the hands of employees who usually have no occasion to acquaint themselves with the hazards of other than signal operation.

Copper - Zone System Approved for Boston & Worcester Street Railway

Massachusetts Commission Authorizes Rate of Two Cents a Mile for Six Months' Trial—Tickets at Rate of 100 Miles for \$1.70

THE Public Service Commission of Massachusetts on Sept. 22 authorized the installation of a copper-zone system on the Boston & Worcester Street Railway, Boston, Mass., the most representative interurban system of the State. The commission approved the schedule of the company with the exception of certain minor fare limits and with the addition of the sale of twenty-trip ticket books.

The company has had irregular, over-lapping zones, in each of which the cash fare was 6 cents. Including transfer privileges, these zones varied from 9.85 to 3.16 miles in length and averaged about 5.1 miles. Fifty-ride tickets were sold for \$2.75, with round-trip tickets at a substantial reduction from the regular fare between important points. The average fare per revenue passenger on all lines in 1916 was 5.51 cents.

The new schedule is based on a uniform charge of 2 cents a mile, with a minimum fare of 6 cents for a three-section ride. Books of 100 miles are to be sold for \$1.70, with a minimum charge of three mileage coupons for any single ride. Round-trip tickets with a similar discount of 15 per cent are to be sold between the principal points and the easterly terminus of the road at Chestnut Hill. As at present, workingmen's tickets in the city of Marlborough will be sold at the rate of thirty for \$1, each coupon good for a ride covering not more than three fare sections within the city limits during specified hours. In general, the new schedule effects an upward revision of fares, the company estimating that the average fare per revenue passenger will be 6.43 cents, an increase of 16.7 per cent. In view of a reduction in traffic, however, it is estimated that the total increase in revenue, based on the 1916 figures, will be but \$74,000 or about 10 per cent.

DEMONSTRATED NEED OF MORE REVENUE

The railway, which began operation in 1903, now operates 83.13 miles of track, of which 31.22 miles are second main track. About 25 miles are on private right of way. The average speed of operation is 16.8 m.p.h., as compared with a general Massachusetts average of 9.9 m.p.h. Nearly all the service is of the in-

terurban type. The population of the territory served, exclusive of Brookline, Worcester and Boston, increased from 95,585 in 1905 to 110,953 in 1915 (16.08 per cent); and including the above, from 842,536 in 1905 to 1,032,579 in 1915 (24.93 per cent).

The passenger revenue increased from \$385,060 to \$689,338 from 1904 to 1917; the revenue from freight and express increased from \$200 to \$116,674; the total operating revenue rose from \$390,998 to \$805,545, and operating expenses increased from \$210,962 to \$553,905. The operating expenses per car-mile increased from 12.01 cents to 25.11 cents, due chiefly to the growth of maintenance expense caused by the advancing age of the property and the increases, especially rapid in the last two years, in the prices of materials, supplies and labor. The company has never paid dividends in excess of 6 per cent, and since 1911 the rate has ranged from 2.5 to 3.75 per cent. The commission finds that the company has been well managed; that its securities have been issued without overcapitalization and that its need of additional revenue is plain. The capitalization is \$61,000 per mile of track, due largely to roadway construction expenses.

The company frequently increased its charges in the past. Originally the one-way fare from Chestnut Hill to Lincoln Park, Worcester, was 30 cents. This was gradually increased to 50 cents in 1909, and now 62 cents is authorized. In general, these increases were introduced through the creation of additional zones, and coincident with such changes various reduced rate tickets were provided. The unit of cash fare remained 5 cents until 1909, when the present 6-cent unit was adopted. The last increase, in 1913, was a slight raising of the prices of certain round-trip tickets. No other company in Massachusetts has so large a percentage of its income derived from freight and express service.

SIX PER CENT RETURN APPROVED

The commission holds that the company is justly entitled to earn 6 per cent upon the full amount of capital honestly and prudently invested in the property. This conclusion is reached in full recognition of the fact that 6 per cent upon the entire investment would mean, in a case where a substantial portion of the investment was represented by funded debt bearing lower rates of interest, a return in excess of 6 per cent upon the stock. "In the present instance," says the board, "taking into account the character and risk of the enterprise and the meager returns hitherto received, we think the fair return should not be computed upon any lower basis." The total investment exclusive of floating debt is \$5,041,920, and 6 per cent upon this is \$302,515. In the year ended June 30, 1917, the income available for interest and dividends, after deducting operating expenses and taxes, was \$201,480. Adding to this \$90,000 as a rough figure for the maximum results of the installation of the copper-zone system and \$16,000 for increased freight rates, the total becomes \$307,480.

NO LIKELIHOOD OF EXCESSIVE RETURN

In considering the probable earnings under the new schedule, the commission states that the following factors must be considered:

1. The company is in direct competition, as far as the main line is concerned, with the Boston & Albany line between Boston and Worcester. While the single ticket rates

between common points and Boston, over the Boston & Albany, are higher than the rates proposed for the Boston & Worcester, the rates available by the use of monthly season tickets are lower, and the running time is quicker over the steam road. In view of this, it is unlikely that the company's estimate of the gain from the new schedule is too low, and it is quite possible that it is too high.

2. In the computation of necessary net earnings, no allowance has been included for further provision for depreciation. The present amount set aside for this purpose, \$12,000 per year, appears as "obviously inadequate" to the commission, being less than 2 per cent of the book value of the equipment alone.

3. Prevailing wages are now under arbitration between the company and its employees, and, in view of the present cost of living, it is reasonable to assume that increases will be granted, and any increase allowed will be retroactive to November, 1916.

4. Until recent months the company has not felt the full effect of the prevailing high prices of fuel, and of materials and supplies in general. Thus, in the case of coal, the average price paid per gross ton in 1916 was \$4.66. For the year ended June 30, 1917, it was \$5.36, and the prices now being paid are even higher. Materials and supplies up to the first of this year were largely taken from a stock accumulated when prices were lower, but this is no longer the case.

Taking all factors into consideration, the commission finds that there is no reason to believe that the company will be able to earn under the new schedule of passenger rates more than a fair return upon its investment. Unless conditions change, it will be fortunate if it is able to earn 6 per cent upon its common stock.

COMMISSION MEETS POPULAR OBJECTIONS TO THE COPPER-ZONE SYSTEM

In this case some of the remonstrants strongly urged that even if the company's need for additional revenue should be conceded, the proposed method of obtaining it is illogical and unjust in many respects. It was urged that the new schedule would fall with unequal weight upon various sections; that it would operate with injustice to many people who have established their homes upon the basis of the general system of rates now in force; that the minimum fare of 6 cents for any ride, however short, is inconsistent with a mileage system of rates; and that the sections of approximately 1 mile in length, upon which the new system of fares is based, are in certain cases made to end at points unnecessarily inconvenient to the public.

The decision, however, points out that if rates are to be raised, the choice is between the present structure with a 7-cent unit and some entirely new system such as is proposed. The board says:

"A minimum of 7 cents for any ride however short is open to objection. If the increase should be made in this way, the irregularities and inconsistencies would remain, with the prospect that the commission would some day be asked the perplexing question why 7 cents should carry a passenger but 3.16 miles on one part of the road and 9.85 miles on another with no greater density of traffic. On the other hand, the adoption of a mileage system would make possible a general advance in rates without increasing the minimum for short hauls, and it would place fares upon a reasonably uniform and consistent basis. It is the system followed in the case of practically all steam railroads and is quite as logical in its application to many electric interurban lines.

"The Boston & Worcester Street Railway was built primarily for fast through service rather than for local service. If it were just beginning operation, the reason-

ableness and the propriety of a mileage system of charging would hardly be questioned. It seems to the commission that the mileage system is on the whole more equitable, is likely to prove more generally satisfactory, and holds forth greater promise for the future, both to the company and to the public.

"It is the regular rider, however, rather than the occasional rider, who is particularly entitled to consideration. The company has partially recognized this principle by proposing to sell mileage and round-trip tickets at a discount of 15 per cent, but this does not wholly meet the situation. Even with the use of such tickets, the fare between Chestnut Hill and Overbrook (in Wellesley) would still be increased from 7.5 cents to 13.6 cents, or 81.3 per cent, whereas 50 per cent ought reasonably to be the maximum. The mileage and round-trip tickets, moreover, can be used by the occasional as well as the regular rider. Both these objections can be met by selling twenty-trip ticket books, limited to the person named thereon and good for a period of one month, which will enable the purchaser to ride between any two designated points at a rate of 50 per cent in excess of the existing cash rate or the trip ticket rate where such tickets are now sold. The purpose of these twenty-trip tickets would be to provide a link between the old and the new tariffs and to prevent throwing too severe a burden upon regular riders."

The commission overruled the plea that the minimum fare be made 5 cents instead of 6 cents. On this point it said:

"Once a mileage system is established, it is true that there is, in theory at least, no necessary reason why 6 cents should be the minimum, and 5 cents would have certain obvious advantages. Where sections 1 mile in length are used, and the rate is 2 cents per mile, however, it is difficult to apply a 5-cent minimum. It can be done, but complexities result which make the collection of fares difficult. The company is reluctant to introduce these complexities and asserts that it has, in effect, established a minimum of approximately 5 cents through the mileage tickets, whereby a passenger will be able to ride any distance up to three miles for 5.1 cents."

Railway Signal Association Meeting

The annual meeting of the Railway Signal Association was held at Atlantic City, N. J., on Sept. 18 and 19. President Charles A. Dunham in his opening address made a plea for the adherence to the present high standards of railway signal work in spite of the fact that many signal engineers had joined the army or navy.

The committee on electric railway and a.c. signaling presented a long report, the first part of which was taken up with the description of a.c. signal installations on fifteen different railways, most of them being electrically operated lines. The second part of the report covered specifications on the following subjects: Impedance bonds, electric alternators, reactors, resistors, single-phase line transformers, and general clauses to be used in unit specifications. Additions and changes in these specifications were made.

The following officers were unanimously elected for the ensuing year: President, William H. Elliott; vice-president, C. J. Kelloway; secretary and treasurer, C. C. Rosenberg.

Electric Railways and Safety

Speakers at the New York Meeting of the National Safety Council Urged Greater Interest on the Part of Executives and a Heartier Spirit of Co-operation Among Departments

A HIGHLY successful meeting of the National Safety Council was held in New York City during the week of Sept. 10, with an exhibition of safety appliances and practices conducted by the American Museum of Safety. The electric railway section held two sessions on Thursday, Sept. 12, with E. C. Spring, chairman of the section, in the chair. A brief report of these was printed in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 15, page 445. Following is a more extended abstract of the proceedings at these sessions:

DISCUSSION ON THE RAILWAY EXECUTIVE AND SAFETY WORK

H. W. Clapp was to have presented a paper on "What Does the Safety Worker Want the President of His Company to Know?" He was kept away by ill health, but Mr. Spring announced that the subject would be discussed extemporaneously. He opened with the statement that safety work absolutely requires the co-operation of the heads of departments, and it is the duty of the president to insure such co-operation. The president will not do this unless personally interested in the work.

C. B. Scott, manager Bureau of Safety, Chicago, Ill., emphasized the need of "executive force" backed by real interest. A comparatively small number of railways have organized safety work, and presidents in general do not appreciate this work. A casual inspection of the attitude of platform men toward patrons will show whether or not the man at the head of the company is interested in the safety movement. Even as an element in fostering good public relations the movement is a good thing. Executives are apt to think that safety work is being overdone, and as far as paraphernalia go this may be true. But essentially safety is a matter of discipline and this phase is not overemphasized. There may be too much of rewards, prizes, pouring of safety talk into the ears of employees, but there is not enough discipline. Foreman will obey rules backed by the executive, hence the work must appeal to the latter as important, and then he must get behind it.

Mr. Scott's points were reinforced by several other speakers who gave illustrations to show what can be accomplished through personal interest and sympathy between employer and employee. They all agreed that there is a deplorable lack of discipline throughout the country generally and this is reflected in the electric railway industry. In contrast to this is the discipline in the army where success in battle is the aim, and the purpose of the discipline is to show the men how to attain it. The root of successful discipline in the army and elsewhere is obedience through inclination. In the utility field there are difficulties in the way of enforcing discipline that do not exist in the army, but personal interest by the executive in the men will go a long way to overcome these.

To sum up the whole discussion on this topic it may be said that the president must, if necessary, be convinced that safety work is profitable and practicable, and he must use his authority to reinforce the efforts of those from whom the initiative in the work is expected.

REPORT AND DISCUSSION ON AUTOMOBILE HAZARDS

Following the discussion on railway presidents and safety work Mr. Scott gave an abstract of a report covering investigations of collisions between automobiles and electric railway cars. The investigation had been begun by Capt. H. A. Bullock, secretary New York Municipal Railway Corporation, and the data had been turned over to Mr. Scott when the former went into federal service. For the purposes of the investigation reports on more than 19,000 accidents had been collected from nearly fifty electric railway companies. The data were studied to determine the proportion of these due to the negligence of the automobile driver, and that chargeable to the motormen. Another purpose of the study was to bring out the circumstances characterizing the accidents together with the preventable causes involved.

As a general classification the accidents were segregated under the following headings: Urban, suburban, interurban or country, and grade crossing. Along with the accident data themselves went statements as to the efforts being made by organizations to reduce accidents, and suggestions as to co-operation. Mr. Scott stated that the report was to be considered as informational only, the field being a very large one which will require years to cover. Some of the information compiled from the monthly reports sent in by the co-operating companies is summarized below.

Arranging the accidents by geographical groups, and weighting the numbers by multiplying by factors to take account of the population served by the several companies, it appears that the following figures represent the relative rates of accident occurrence: in the East, 13,874; in the Central district, 20,592; in the South, 18,602; in the Central West, 36,172, and on the Pacific coast, 25,857.

Of preventable accidents the data showed that the causes in order of seriousness for the whole country were these: 1, automobile pulling onto track in front of car; 2, automobile operating at excessive speed; 3, insufficient clearance attributable to automobile driver; 4, miscellaneous; 5, other negligence of automobile driver; 6, inattentiveness of automobile driver; 7, automobile struck stopped car; 8, disobedience of traffic rules by automobile driver; 9, insufficient clearance chargeable to motorman; 10, defective or slippery pavement; 11, inattentiveness of motorman; 12, other negligence of motorman; 13, defective or slippery rail; 14, excessive speed of car; 15, defective equipment of automobile; 16, defective equipment of car; 17, view ob-

structed by snow, rain or fog; 18, interference of passengers with motorman; 19, disobedience of traffic rules by motorman.

In the Eastern district the greatest number of accidents were due to the automobile driver pulling onto the track; in the Central district to excessive speed of the automobile; in the Southern district to automobile driver pulling onto track and excessive speed of automobile; in the Central West to insufficient clearance chargeable to the automobile driver and to sudden stop of the car causing the automobile to strike it; on the Pacific coast to the automobile driver pulling onto the track. The percentage of all accidents occurring on account of negligence chargeable to the automobile driver was 64.2. The actual number of accidents reported from the several districts were: East, 4735; Central district, 6690; South, 828; Central West, 3703, and Pacific coast, 3303.

and this effectiveness can be increased by city ordinances requiring limited speeds at such points.

The tendency of manufacturers and others to combine warnings with advertising announcements was deplored, as these distract attention from the distance warnings of electric and other railways, and tend to neutralize the effect of the latter by introducing unnecessary confusion. One speaker stated that his company is furnishing painted signs to be hung in garages, warning of danger points and the necessity for the exercise of caution.

The closing part of the discussion referred to the securing of co-operation from automobile owners in reducing the number of collisions. One good suggestion was that "near" accidents be reported to the proper railway official, giving him an opportunity to show the owner of the automobile concerned how he could have avoided even the risk of accident. This practice has been followed in at least one city with good results. In some cases, however, automobile clubs and individual owners appear to wish to throw the whole burden of responsibility upon the electric railways, and by their lack of interest prevent the fostering of the co-operative spirit. It is essential to secure co-operation of the authorities in passing legislation to regulate vehicular traffic and in enforcing it.

In closing the above discussion Chairman Spring introduced as the next speaker H. V. Drown, an abstract of whose paper with the accompanying discussion appears below.

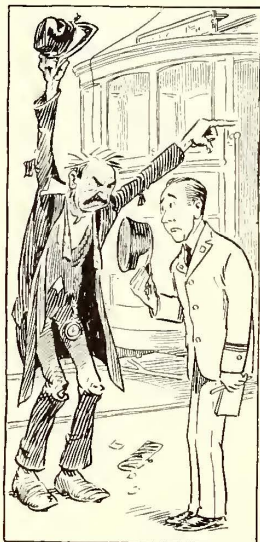
Co-operation Between the Claims and Transportation Departments

BY H. V. DROWN

General Claim Agent Public Service Railway, Newark, N. J.

It seems to me that if I were asked what one accomplishment is most desired by the men in the claims department I would reply: "A real, whole-hearted co-operation with the transportation men." Where many claims men report that the transportation officials co-operate with them fully, others, alas, feel that they are greatly handicapped through lack of team work. No claims man, however competent he may be, can keep the damage account where it belongs without real, earnest, sympathetic help from the transportation department. At the same time no transportation official can "make good" without support from the claims department. Lack of co-operation between the two departments spells failure, or at best mediocre results will be produced.

Most of the trouble, I believe, is based on the lack of knowledge of each other's problems. The transportation man may believe that the claims attorney is too liberal in his settlements; that he is making settlements on account of accidents for which the car crews are not to blame. On the other hand, the claims department man may be convinced that the operating department is not giving proper attention to safeguarding against accidents and is not promptly and fully reporting the accidents which occur. Once the spirit of criticism and distrust is aroused antagonism and discord grow apace. I remember one case which occurred on the Public Service Railway in which a division superintendent criticized the claims department for making a certain settlement. When he understood all of the details of the case



Courtesy

Every bit you have—is needed when a passenger attempts to board a moving car and falls, is bruised and shaken, and has his clothes torn.

Be careful what you say.

Use all your tact, but take advantage of the opportunity. If possible, to caution him against the danger in such practice.

Every word of caution HELPS YOUR RECORD

SAMPLE POSTER ISSUED UNDER AUSPICES OF SAFETY EDUCATION COMMITTEE, ELECTRIC RAILWAY SECTION NATIONAL SAFETY COUNCIL

Mr. Scott stated that an appendix to the report would consist of the report of the American Railway Association committee on prevention of accidents at grade crossings.

In the discussion of Mr. Scott's report all speakers agreed that collision accidents constitute a very serious operating difficulty. The importance of the co-operation of electric railway, steam railroad and automobile interests is pressing. In this connection the section voted to authorize the chair to appoint a committee of three on this subject to confer with representatives of other national societies.

Several speakers emphasized the desirability of simplicity and standardization in all kinds of warning signals, as there is a tendency now to multiplicity and confusion. It appears that some electric railways are co-operating with police departments in municipalities in marking danger points with suitable signals. In some cases red lamps at such points are found to be effective,

he saw that the claimant was not to blame, as he had supposed, and he finished by considering the settlement very reasonable. From distrusting our department at the beginning this superintendent became one of its strongest supporters.

Worth-while co-operation must be based on cordial personal relations. If each official has a brotherly interest in the other's welfare, such co-operation is assured. A little recreation together, or a dinner now and then, goes a long way toward bringing this about. It is remarkable how easy it is for men to merge their points of view and to realize that they are working for the same cause and are consequently necessary for each other's success. Once cordial relations are established and the necessity for co-operation realized the details of bringing the latter about follow automatically.

It is highly important for the transportation department to have certain reports from the claims department on the accident situation. On every accident of any consequence the claims department should furnish a résumé of the investigation. Such a report furnishes a basis for action to prevent the recurrence of the accident, and is also valuable as a part of the records of the employees involved. Monthly comparative statements, by carhouses and divisions, covering the numbers and character of accidents and claims are essential. Our experience indicates that comparisons based on the number of claims presented are much more reliable than those based on the accidents which occur.

In safety work, which is now conceded to be absolutely essential to good management, co-operation between the claims and transportation departments is most necessary. Officials of both departments should appear before employees as advocating safety measures and, if a property is large enough to justify the expense, one man should devote all or at least part of his time to this work. He should, if possible, be one who has had both operating and claims department experience.

All that I have said concerning co-operation between the officials of two departments applies with equal force to the whole supervisory staff and, in a measure, to the rank and file. When a manager of a property hears of such indications of co-operation as the following he may be sure that two of his departments, at least, are well on the way to the attainment of maximum efficiency: Admission by a superintendent that too many accidents of a certain type are occurring, with the request that the claim agent meet with the supervisory board to offer suggestions for betterments. The furnishing by a conductor of the names of witnesses to an accident in which he was not involved, it having been caused by one of his fellow employees. The submission by the claim agent to the superintendent of a careful study of accident figures upon which he can base intelligent efforts for improvement. The furnishing of reports by an investigator of defects in equipment or violation of rules coming under his notice, with suggestions as to how certain types of accidents may be prevented.

There are many forms of organization, including the now almost universal safety committee, through which we can work, but they are merely foundations upon which we build. Correct organization and detail are necessary, but the machine we create must be alive, it must have a heart. There must be charity and sym-

pathy in the operation of this machine, and above all, an earnest desire to make good.

Discussion of Mr. Drown's Paper

In response to a number of questions Mr. Drown supplemented his paper with suggestions as to how the co-operation which he advocated could best be secured. He believed that safety work should always be conducted jointly between the two departments. The statements by the claims department which he advocated should, he said, give general data of the accidents, a summary of the statement of the employee most involved, the claimant's statement, and a synopsis of the information furnished by witnesses. It is not necessary to furnish to the transportation department statements of all accidents, but only those of consequence or having some particular lesson to teach.

The other points brought out in the discussion showed a general agreement with the points covered by Mr. Drown. Particular emphasis was laid upon the importance of analyzing all accidents having specific features, with a view to preventing their repetition. It is not always easy, said one speaker, to convince an operating official that his service could be improved, as he is apt to think that this interferes with his own prerogatives. There is a tendency toward a prejudice against the legal department in a railway company, anyway. This, however, could be overcome by co-operation. Finally, the two departments under discussion can co-operate by impressing the public with the fact that everything possible is being done to make the railway operation safe.

The concluding paper on the program of the electric railway section was by H. A. Nicholl. This is abstracted below.

Some Methods of Securing and Sustaining Co-operation of Trainmen in Accident Prevention Work

BY H. A. NICHOLL

General Manager Union Traction Company of Indiana,
Anderson, Ind.

Securing the interest of trainmen in safety is one thing; sustaining it is another. It should not be difficult to interest them in accident prevention at the start of the work, for almost anything that is new will excite interest for a time. There would seem to be no better method of securing interest than by inaugurating a carefully considered plan for the formation of safety committees. The larger the property the more numerous and diversified as to membership should the committees be. Committees may be assigned to divisions, carhouses, departments, power stations, etc.

The safety program should contemplate sustaining interest by exciting the spirit of rivalry, loyalty, self-interest, co-operation, etc. As co-operation is the keynote to success in all undertakings requiring organized effort, committees should be formed with membership including workers from as many different departments as conditions will permit. In that way many of the problems with which each department has to contend will be better understood by employees of other departments. Committee membership should be changed frequently, permitting as many employees as possible to serve for a reasonable time, although a certain permanent membership is also desirable. In making appoint-

ments it is desirable to secure not only men who are already interested in safety work, but also some whose interest is lukewarm, thus developing greater interest.

The work of the local safety committees will consist largely in handling suggestions from their own members and from other employees. A general safety board of permanent members, heads of departments, etc., is desirable also in order that suggestions of a general nature coming up from the local safety committee may be handled in a democratic manner. The appointment of committees tends, of course, to democratize the operation of the property and furthers the co-operative management ideas, at least in so far as safety matters are concerned. Such a democratic spirit will not in any way interfere with discipline.

When safety committees are installed a general educational campaign should be undertaken, and appeals as strong as possible should be made to all employees, particularly to heads of departments. The impression should be given that, while all suggestions will have careful consideration, it will be manifestly impossible to adopt all of those made, for reasons which could be explained. Adopted suggestions increase the interest of the employees making them. They feel they have a share in the operation of the property and in the improvement of conditions, which adds to their feeling of proprietorship.

Personal responsibility is what we want when it comes to the reduction of accidents, and special stress should be laid on the benefit which comes to the employee himself when they are reduced. Self-interest is after all the strongest moving force in the world and it should never be lost sight of.

There are, I think, three general factors in successful safety work: supervision, co-operation and self-interest. Supervision is absolutely necessary, of course, whether the matter of safety is treated or not, but certainly the greater the ability of supervision the more efficient will be the work of accident prevention. Co-operation affects the spirit in which men do their work. Good feeling—the absence of knocking, bucking and friction—increases safety and efficiency. The man with a grouch is like set brakes on a car going up hill. Co-operation, like supervision, must start at the top. If officers and department heads cannot work together without friction, and in the interests of the company as a whole, then there will surely be friction all the way down the line.

Self-interest can be depended upon to furnish strong incentives for the sustaining of general interest in safety work. I have felt that the principal need for efficient and safe operation is some form of premium which will appeal to a man's self-interest. It can either be individual or general. In the first case the premium would be paid to a few who excel in personal efforts in the line of reducing accidents and operating expenses. If general it could be provided by some form of profit-sharing. Closely related to self-interest are fitness of the employee for his job and satisfaction in it. If working conditions are pleasant and the work is profitable, self-interest will prompt a man to do what is necessary to retain his position, and this should include his co-operation in accident prevention. Whatever can be done should be done to "sell the man his job" so that he will be disinclined to listen to extravagant claims of agitators as to what can be obtained for him in the way

of better working conditions and increased wages for less work.

The safety methods used by the Union Traction Company of Indiana are essentially along the lines outlined. To promote interest in the committee work the company gives a dinner every six months to the members of the safety committees at which eighty to ninety men are usually present. Every six months there is also a contest to produce the best papers on some subject having relation to safety. The three prize papers are read at the dinner by the winning contestants. The prize papers are also published in the company's magazine *Safety*, which is distributed to all employees monthly. This magazine is an important factor in keeping up the interest in the work.

In order to have employees feel personal responsibility in relation to safety matters, we have tried to give "Safety First" a sort of separate entity on the property, and matters peculiarly and essentially concerned with safety are given preference.

There is no panacea that will positively sustain interest in accident prevention, but one means is the securing and developing of men of the type whose interest in accident work will not flag as time goes on. It is almost useless to attempt to sustain this interest without the right material to work with. A man must have in his heart the desire to obey or else he will disregard any restraint placed upon him, and that is where sustaining interest in safety will obtain good results. It will not do to confine our efforts to preaching safety first and fail in the training and drilling of men in their work so that they will automatically know what to do in the face of an unexpected situation. In other words, by training the men we practise accident prevention. Finally, skill in applying the personal touch by those higher up and the exhibition of friendly feeling of the men for their superiors and therefore for the company may, while not directly sustaining interest, aid by keeping employees satisfied.

Of course, interest in safety could be maintained by keeping up a big campaign if that were possible, but there are difficulties in the way of doing so. We have tried doing a little constantly in order to make safety work what might be called "the bread and butter" the steady diet in our operation.

Discussion of Mr. Nicholl's Paper

The discussion on Mr. Nicholl's paper consisted largely in an exchange of information as to methods for training employees, as this was felt to be the first essential to safety. Mr. Scott pointed out that the best results will be secured by focusing attention on the fundamentals. The external and tangible elements of the safety movement have their place but after all it is the application of the ideas outlined by Mr. Nicholl that will yield the best results. Principles are important, details are incidental.

The Industrial Commission of Wisconsin has issued a special report dealing with the extent of female labor in positions heretofore occupied exclusively by men. The report indicates that the employment of women is increasing very rapidly. The commission is co-operating with employers in securing women employees and making suitable provisions for their comfort and convenience.

Steam Roadmasters' Annual Convention

Track Labor Problem, Conservation of Materials, Oiling of Track Fastenings and Inspection of Ties Were Subjects Discussed of Interest to the Electric Railway Field

At the thirty-fifth annual convention of the Roadmasters' & Maintenance of Way Association at the Auditorium Hotel, Chicago, on Sept. 18, 19 and 20, there were several papers which dealt with subjects of interest to electric railway maintenance of way engineers. In a paper by E. T. Howson, engineering editor, *Railway Age-Gazette*, on "The Economy of Oiling Track Fastenings," it was brought out that the practice of oiling track fastenings to protect them against corrosion has now been developed sufficiently to demonstrate the fact that oil of the proper grade will protect the rails and fastenings from corrosion and thereby extend their life materially. The paper pointed out that the principal causes of corrosion are the action of the atmosphere, the action of salt water or spray on lines located along the sea coast, the action of brine drippings from refrigerator cars, local conditions at tunnels, etc.

The selection of the proper grade of oil for the purpose of arresting corrosion is important. It must not be so thin that it will not remain on the fastenings and run off freely onto the ties and ballast, yet it should not be so thick that it will not distribute itself over the metal readily. Where the proper grade of oil is used, it has been possible to retain this coating on the fastenings for a year or more. When experimenting has been done in a limited way, the paper points out, the oil is usually applied by a track walker or section man, who carries a bucket of oil and a small broom, brush or swab. This was the method used by the Chicago & Northwestern Railway in oiling the joints on 6 miles of track in which new rails were laid last year. Ordinary crude oil was used. The cost was about \$4 per single track-mile, divided 50 cents for material and \$3.50 for labor.

The Union Pacific Railroad oiled the joints in 1 mile of track in each roadmaster's district in Wyoming last fall. The bolts were not tightened for two or three days after the oil had been applied, and thereafter it was found that they could be tightened more easily and that the threads on the bolts and nuts were maintained in better condition, thus bringing about a saving in both labor and material. A direct comparison of results from oiling the joints was secured when an equal number of joints, oiled and not oiled, were removed for examination. It was found that while the bolts which had not been oiled showed evidence of corrosion and cutting of the threads, the others showed no such tendency.

The Chicago, Burlington & Quincy Railroad adopted the practice a year ago of oiling all the joints and bolts when laying new rail or relaying second-hand 85-lb. rail or heavier section on main line. The bolts to be used in main line relaid track are oiled about a month in advance of their removal from the old rail. This practice permits a much larger percentage of the bolts to be reclaimed. This road has decided recently to oil

not only the joints but also the base of the rail and other fastenings on certain divisions.

The Illinois Central Railroad, after experiments on its Southern lines, found such good results that the practice of oiling all joints twice a year has been extended over the entire system. The oil is ordinarily applied by hand with an ordinary whitewash or paint brush. Approximately 10 gal. of low-grade fuel oil is required per mile. The total cost of this application varied from \$2.50 to \$4.25 per mile, averaging somewhat over \$3.

The Atchison, Topeka & Santa Fé Railroad has found that the practice of oiling track fastenings has increased the life of the bolts 25 per cent. Careful records have also shown a saving of over 30 per cent in the number of bolts required for replacement purposes on the Eastern lines, while it has been estimated that the amount of labor required to tighten loose bolts has been reduced at least 40 per cent. About 75 gal. of fuel oil, costing about 5 cents per gallon, is required per mile, making a total cost for material of \$3.75 per mile and \$2.50 for labor. Where the bolts and joints alone are oiled the total cost is approximately \$2.50 per single track-mile.

The Delaware, Lackawanna & Western Railroad has developed this practice of oiling track fastenings further than any other road and has brought out several special devices for conducting the oiling process. The latest machine for this purpose comprises a closed car which is equipped with air compressors, air storage tanks, sand boxes, rail wiper, oil drainer, air-operated oiling devices, an automatic device for clearing obstructions on the track and adjustable circular nozzies. This car, which is a remodeled caboose, is also equipped with a headlight, speedometer and pressure gages, so that the operator may know the conditions under which he was working at all times. Approximately 1100 miles of track was oiled with this machine in the fall of 1916 at a cost of \$5.60 per mile, divided as follows:

| | |
|------------------------------------|-----------------|
| 10,400 gal. of oil at 5 cents..... | \$520.00 |
| Engine and crew..... | 30.00 |
| Operator | 5.00 |
| Materials and supplies..... | 5.00 |
| Total cost per day..... | \$560.00 |

SECURING AND RETAINING TRACK LABORERS

A committee report on the labor situation in the track department said that the best method of securing laborers to work on track is to offer them inducements equal or superior to those tendered by other employers of similar help. Of these inducements, permanency of employment is an important one. If possible the men used in summer should be continued in the service of the company during the winter. No more pernicious custom obtains than where the men in a section gang are kept guessing during the summer months as to who will be laid off when the first snow begins to fly.

Section foremen should be permitted to hire their

own men, but when a foreman cannot secure his own laborers, these men should be furnished by the railroad's authorized agent, but that agent's connection with the men should end there. The custom of having the labor agent furnish the food and wearing apparel of the men should be discouraged, as this system often results in charges and deductions against the laborers' wages that the men do not know of, and in many cases do not owe, causing no end of trouble on pay day. The employment agent of the company should receive a salary rather than a commission to preclude as far as possible any charge by him to the men for their jobs.

The committee recommendation for uniform section forces throughout the year aroused considerable discussion. In this it was brought out that much work such as gaging track and tightening bolts can be done satisfactorily during the winter, thus keeping the men busy in constructive work. The lengthening of the working season by all year employment also reduces the number of men required at any one time. The present practice of hiring men for a few months creates an abnormal demand during the summer, leading to excessive competition and abuses. It was thought that permanent forces were applicable on 80 per cent of the railway mileage. One railway man described a plan in effect on his road for the last three years, whereby men are guaranteed permanent employment for the entire year. As a result, more than 90 per cent of the men now in the service have been with the road for more than one year, in spite of the present unsettled labor conditions.

Boarding camps were strongly condemned by some of the railway men present, and they urged that the railway companies should take them over.

CONSERVATION OF MATERIALS

A paper by W. A. Summerhays, assistant purchasing agent Illinois Central Railroad, dealt with the difficulty in maintaining customary stocks of material and in obtaining enough of the most necessary items to keep the railroads and equipment in safe operating condition. He said that it is very necessary that each roadmaster and storekeeper should know exactly what is available at every point on the railroad. This may be best accomplished by having, for each division, a tabulated list, kept up to date, of every item of material on the division, with its location. In emergencies a record of this sort might prove invaluable.

There is a tendency to keep a larger stock of material on hand than the working conditions on the division justify. A record such as the one mentioned above would show at a glance just how long each item has been on hand and whether it should be transferred to some other point where needed. No requisition should be passed to the purchasing agent until it has been checked carefully against the record of line stock as well as of the storehouse stock and an effort made to supply the items needed from the stock on hand.

An interesting sidelight on the handling of scrap was brought out. The author states that while the prices of new material have advanced 30 per cent to 200 per cent, the price of scrap has risen to an even greater extent. This has given rise on many railroads to a campaign toward cleaning up all scrap and putting it on the market. It is desirable at all times to market all scrap as soon as it is available and not to permit it to accumu-

late, but great care must be exercised to avoid selling as scrap any item which can be put to further use.

It is a very human tendency for section foremen, although they may be fully instructed carefully to inspect scrap before it is loaded for the market and to hold out every usable article, to discard with the scrap all second-hand material for which the foreman in question has no immediate need. Therefore a competent inspector should pass upon all scrap and set aside all material which is fit for further use or can be re-worked. Where facilities are provided for reworking and assorting scrap at one point on a division or railroad system, a very decided saving can be effected by employing a blacksmith to rework this material.

The great delay and practical impossibility of getting guard rails, etc., is a special reason why the roadmasters should make a careful inspection of every piece of track scrap removed. Many spring frogs and bolted rigid frogs can be made fit for use when removed from the track because of having only one part broken, by the addition of a similar part from another scrap frog. A great deal of this kind of work is being done on various railroads, some even going to the extent of fitting up small shops where second-hand pieces can be planed and fitted to supply the needed parts in frog repair. Owing to the wide difference between the cost of new material and the value of scrap material, the present is an exceptionally favorable time for installing a plant of this nature.

THE INSPECTION OF TIES IN TRACK FOR RENEWALS

A committee report on this subject recommended that special inspectors reporting directly to the supervising officer be employed to mark ties for renewals. This would secure uniform practice, prevent the removal of ties from track before their safe service life had been exhausted and distribute renewals properly. To determine the necessity for replacing the tie, its condition as to decay and wear, the amount and character of the traffic carried, its position in the track, the kind of timber, the condition of neighboring ties and the weight of the rail and tie plate should all be considered.

In any tests for soundness, the tie should not be mutilated more than is absolutely necessary. Ties should not be tested on the top except for decay around the tie plate and spikes. To test a tie for strength, one end of a pick should be inserted under the end of the tie and used as a lever. If a tie is broken under the rail this method will usually determine it.

If two ties of only one year's safe service are adjacent, one should be removed so as to leave each doubtful tie with one good neighbor. Sap rot alone should not condemn a tie for service. A tie cut down by rail wear should not be removed unless the rail is cut into the face more than 1 in. Very careful attention should be given to the inspection of red oak and pin oak and other kinds of timber which decay from the heart, as such ties usually rot from the center, leaving a hard shell which tends to hide the true condition of the tie. Where track is subject to heaving and where shimming is necessary, care should be taken to insure enough good sound timber for spiking and bracing, and careful attention should be given to the inspection of ties through road crossings, station platforms and other places where they are covered and, therefore, apt to be overlooked by the section foremen in charge.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?

—*Pass It Along*

These Articles Have Been Selected to Provoke Thought and Stimulate Discussion. All of the Technical Departments Are Represented

Construction and Test of Two-Section Steel Pole

Poles Worth \$148 at Present Prices Made for \$43.77
—Test Shows Satisfactory Strength
and Stiffness

BY W. C. LANCASTER

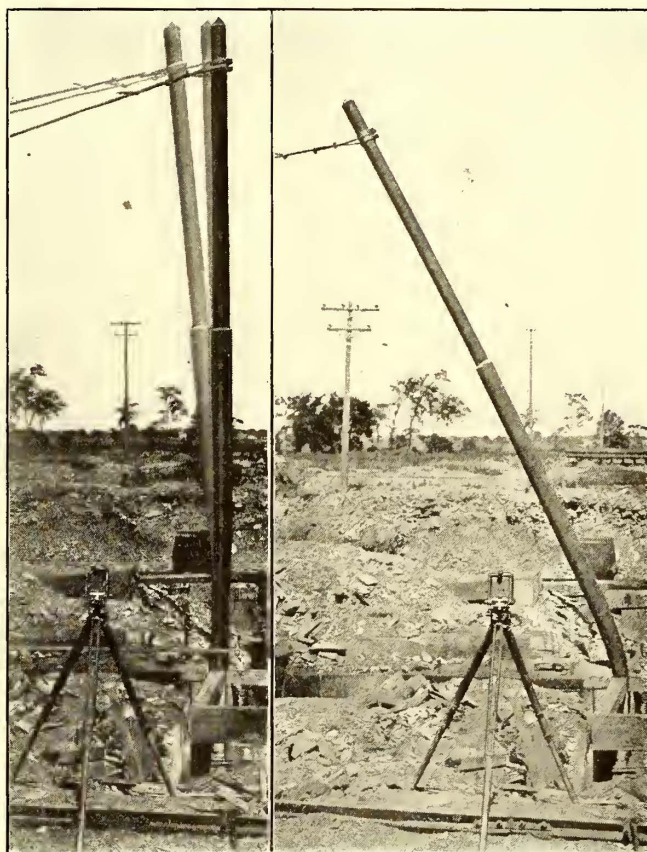
Electrical Engineer Mount Royal Tunnel & Terminal Company,
Montreal, Canada

Anything made of steel these days is costly and its shipment is quite indefinite. Therefore any economy in the use of steel poles rather than wood poles on new construction work is questionable. The writer had to decide recently whether to use wood or steel poles for the electrification of the terminal yard of the Canadian Northern Railway in Montreal. It seemed desirable to use steel poles if possible, chiefly because of their more sightly appearance, but the prices quoted by the manufacturers were prohibitive. The lowest price on a suitable tubular steel pole, delivered in Montreal, was \$148.

A quantity of 8-in. and 6-in. standard steel pipe which had been used for a compressed-air line during the construction of the tunnel and terminal was available. It was in good condition and free from rust, and the suggestion was made that poles be constructed of this material. Accordingly a sample pole was made up from a 17-ft. length of 8-in. pipe and a 13-ft. length of 6-in. pipe.

Two bands, made of $\frac{3}{4}$ -in. x 2-in. iron, were shrunk on the length of 6-in. pipe, one close to the end and the other 34 in. from the end. A light cut in a lathe was then taken off these bands so that a driving fit was obtained between them and the 8-in. pipe. These were then driven together and two steel pins put through the joint. A small amount of cement was placed in the annular space between the 6-in. pipe and the end of the 8-in. pipe, and this was bevelled off to make it waterproof.

This pole was then tested. It was braced in the corner of an old concrete foundation so that the butt was 5 ft. below the surface. A wire cable was fastened 18 in. from the top and carried out to such a distance that the pull was practically horizontal. The tension on the cable was applied gradually by means of a chain block, and the deflections were measured with a transit. A camera was set up behind the transit and three exposures were made on the same plate showing the pole before load was applied and also at 1550-lb. and 2200-lb. tension on the cable. A stress-strain diagram shown on the next page was plotted, from which it will be observed that the elastic limit was reached at



TEST OF HOME-MADE STEEL POLE SHOWING DIFFERENT DEGREES OF DEFLECTION AND TRANSIT WITH WHICH DEFLECTIONS WERE MEASURED

about 2000 lb. The pole failed by buckling near the ground line.

Calculating the fiber stress at the elastic limit:

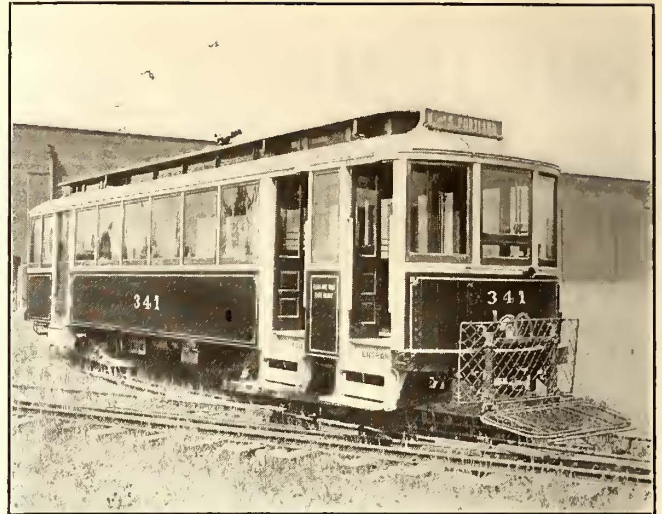
$$\text{Fiber stress} = \frac{\text{moment}}{\text{modulus}} = \frac{492,000}{16.81} = 29,260 \text{ lb. per square inch.}$$
 This value corresponds approximately to the value 30,000 lb. per square inch for "soft, mild steel" given in the handbook of the National Tube Company, and is considerably higher than 24,000 lb. per square inch, the figure used in the American Electric Railway Engineering Association's tables of steel poles.

The actual deflection of the pole at 1400 lb. pull was $7\frac{1}{2}$ in. The deflection of the nearest standard pole of the American Electric Railway Engineering Association, which is a pole having three sections made of 8-in., 7-in. and 6-in. pipe respectively, is given in its tables as 3.68 in. at 1400 lb. pull. This deflection is calculated as follows:

$$X = \frac{Pl^3}{3EI} = \frac{1400 \times (20.5 \times 12)^3}{3 \times 26,000,000 \times 72.5} = 3.68 \text{ in.}$$

where X = deflection in inches,
 P = pull in pounds,
 l = length of pole from point of application of P to ground line in inches,
 E = modulus of elasticity,
 I = moment of inertia.

The above calculation assumes that the pole is 8 in. in diameter throughout its whole length, the smaller top sections making little difference in the stiffness. The A. E. R. E. A. tables have apparently been all calculated on this assumption. A comparison of the actual deflection obtained on the pole tested with tabulated deflections of standard poles gives: Actual deflection of test pole at 1400 lb., 7.5 in.; calculated deflection of test pole, assuming 8-in. diameter throughout, 3.68 in.; calculated deflection of test pole, assuming 6-in. diameter throughout, 9.48 in.; deflection given in



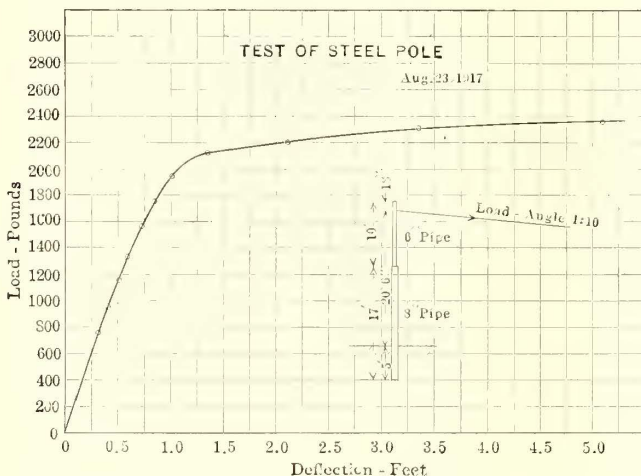
PORTLAND REBUILT ONE-MAN CAR

Portland Builds a One-Man Car

The Portland Railway, Light & Power Company, Portland, Ore., has recently rebuilt one of its old three-compartment city cars for use as a one-man car on an outside line where the traffic is light. The principal change in the body has been to replace longitudinal seats with cross-seats, and owing to the narrowness of the car, single seats are used on one side for one half of the car, and on the other side for the other half of the car. This seating arrangement is seen in one of the illustrations. While arranged for double-end operation, this car will probably be used on a loop to reduce lay-over time consumed in changing the vestibules. The car seats thirty-seven passengers, nine finding room in the rear vestibule and four on a bench in the front.

The two-leaf entrance and exit doors are separated by a panel and are controlled by separate handles. Should a departing passenger leave the sliding body door open, the operator can manipulate a door-closing pulley on a vertical rod behind so that he does not have to leave his post. This door carries the curtain which cuts off light from the car interior.

Five-cent tickets and transfer fares will be collected in accordance with the Ohmer system, which is standard at Portland. Fares are indicated and registered by setting a horizontal dial directly behind the operator and pulling a hand-hold which is placed on the other vertical rod shown in the illustration below.



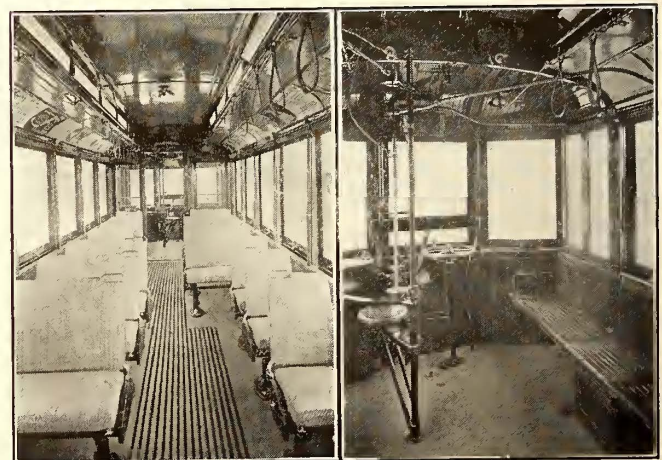
STRESS-STRAIN DIAGRAM FOR HOME-MADE STEEL POLE

A. E. R. E. A. for standard 8-in., 7-in. and 6-in. poles at 1400 lb., 3.68 in.; deflection given in handbook of National Tube Company for 27-ft. pole, 8-in. and 7-in. pipe, at 1940 lb., 3.15 in.

From the above values it would appear that the stiffness of the swaged points of standard tubular poles must compensate for the effect of the smaller diameters of the top sections, if the assumption on which the tables are calculated is correct.

The test of the pole as regards strength and stiffness was considered satisfactory, as the poles are to be heavily back-guyed. A number have been made up at a cost for labor of \$3.77 each. As the pipe from which they are made has a market value of \$40 per pole, the poles are considered to have actually cost \$43.77 each.

Recent warnings from Washington to conserve our gasoline supply have led railway men to wonder what effect the threatened restrictions placed upon its consumption will have upon the autobus and jitney traffic. A big oil producer voiced the opinion that when our vast fleets of airplanes and motor trucks required for war purposes impose their full tax upon the available supply of gasoline there will be little of this fuel left for hauling passengers that may be carried just as well by the electric and steam railways.

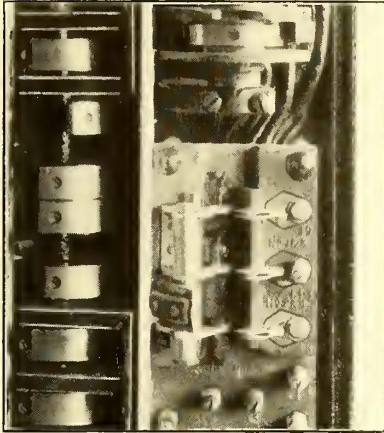


SEATING ARRANGEMENT AND VESTIBULE OF ONE-MAN CAR

Life of Controller Cutout Switch Prolonged

BY MAX PASSLER

Armature Foreman Spokane & Inland Empire Railroad, Spokane, Wash.



IMPROVEMENTS TO CONTROLLER CUTOUT SWITCH

On type K-28 controllers on the Spokane & Inland Empire Railroad, Spokane, Wash., considerable trouble was experienced with the cutout switch located just above the contact block. The mechanical strain of the switch was relieved by inserting red fiber stop blocks on both sides, as shown in the illustration. These were fastened to the base by two countersunk

screws. The current-carrying capacity of the switches was increased by soldering second-hand copper pigtails between the switch blade and the main lead, thus shunting the hinge of the switch. These pigtail shunts can also be seen in the illustration.

Templets for Measuring Track Special Work

BY THOMAS B. McMATH

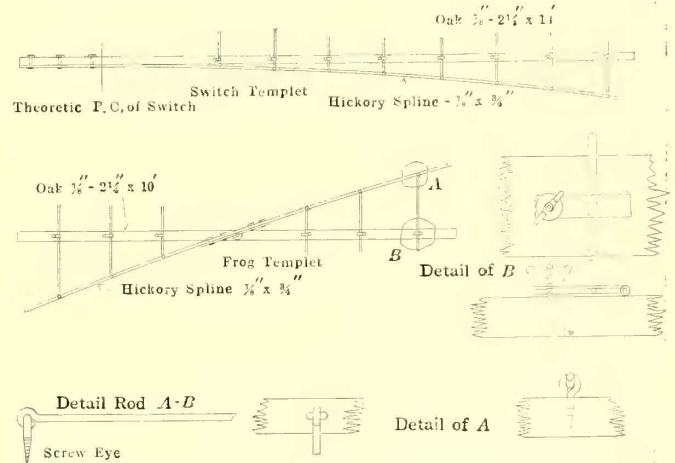
Chief Engineer Indianapolis Traction & Terminal Company

It frequently happens in taking measurements for the replacement of track special work that reliance must be placed on labor which is not altogether dependable. This often results in there being a necessary dimension lacking, or in the making up of a new track piece in the shop which does not fit the location. To make the work of securing the dimensions as nearly error-proof as possible, we have developed a set of adjustable templets which can be taken to the location, fitted to the special work piece to be renewed, and clamped in this

position. The templet can then be taken to the yard and the fit of any similar piece in storage determined, or taken to the shop and the new piece made up to fit the pattern, with the assurance in either case that it will meet all of the requirements when placed in the ground.

These templets consist of two pieces of lumber. One piece is of oak, straight and stiff, to fit the straight rail, and the other is a spring hickory spline which can be bent to fit the curved rail. For measuring a frog the two pieces are hinged together at their centers and connected together at various points by 3/16-in. round rods hinged in screweyes on the spline and extending through clamps on the stiff piece. For measuring a switch or mate the spline is clamped to the straight piece at the theoretical point of curvature and then the two pieces are fitted to the track work and held to proper curvature by the same system of iron rods and clamps.

We frequently have to make frogs for temporary service and for quick replacements. These frogs are made in the following manner: The rail receiving the



DETAILS OF TEMPLETS USED FOR MEASURING FROGS AND SWITCHES WHICH ARE TO BE REPLACED

most frequent car service is made the through rail. The crossing rail is coped to fit by means of an oxy-acetylene torch. The rails forming the frog are then arc welded onto a bottom plate. Angle bars are bent and welded on by means of an arc welder at each corner. The top is then filled smooth, and the tread of the rail finished with the grinder.

An ordinary frog or curve cross can be made of 9-in. girder rail at an expense of about \$30. Such frogs can be made rapidly when the men become accustomed to the work. We have set a templet at 7 a. m. and had the frog in the track by 4 p. m. The usual time required to make a frog, however, is about fourteen hours, using two men in addition to the labor of smithing the angle bars.

The switch templet is of great service where partially-worn switches are on hand for temporary repairs. Many of the older switch pieces while 12 ft. long and of standard radius have a variation in the distance from the end of the switch piece to the theoretic point of curvature of the switch. The switch templet readily determines this distance. These templets are made for the Indianapolis Traction & Terminal Company's use by the Drew Electric Company of Indianapolis.



VIEW SHOWING TEMPLETS USED IN MAKING SPECIAL WORK RENEWALS

Cost Data on Special Work Renewals—IV

By M. BERNARD

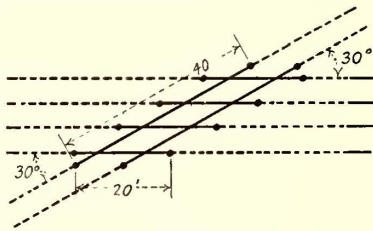
Assistant Engineer Way & Structures Department.
Brooklyn (N. Y.) Rapid Transit System

This is the fourth plate of the series of Cost Data on Special Work renewals. The previous plates were published in the issues for July 21, page 108; Aug. 18, page 279; and Sept. 8, page 406.

Fig. 11—Single Track Crossing Double Track (30 Deg.)

Length—80 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

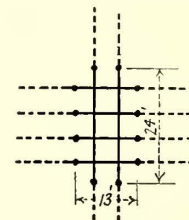


| | Light Traffic | Average Traffic | Heavy Traffic |
|------------------------------------|-----------------|-----------------|-----------------|
| Labor | \$210.00 | \$260.00 | \$290.00 |
| Handling | 65.00 | 70.00 | 85.00 |
| Miscellaneous | 39.00 | 48.00 | 55.00 |
| Total (except materials) .. | \$314.00 | \$378.00 | \$430.00 |
| Cost per single track foot.. | 3.93 | 4.73 | 5.38 |

Fig. 12—Single Track Crossing Double Track (90 Deg.)

Length—50 ft. single track

Construction removed—9-in. girder rail*—8-in. granite on sand
New construction—9-in. girder rail*—8-in. granite on concrete

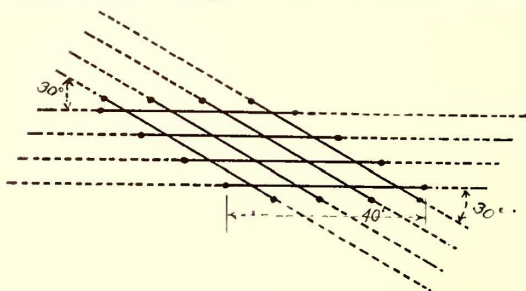


| | Light Traffic | Average Traffic | Heavy Traffic |
|------------------------------------|-----------------|-----------------|-----------------|
| Labor | \$135.00 | \$165.00 | \$190.00 |
| Handling | 37.00 | 45.00 | 55.00 |
| Miscellaneous | 25.00 | 30.00 | 35.00 |
| Total (except materials) .. | \$197.00 | \$240.00 | \$280.00 |
| Cost per single track foot.. | 3.94 | 4.80 | 5.60 |

Fig. 13—Double Track Crossing Double Track (30 Deg.)

Length—160 ft. single track

Construction removed—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete

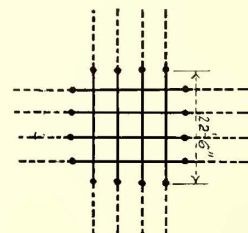


| | Light Traffic | Average Traffic | Heavy Traffic |
|------------------------------------|-----------------|-----------------|-----------------|
| Labor | \$430.00 | \$520.00 | \$600.00 |
| Handling | 125.00 | 140.00 | 175.00 |
| Miscellaneous | 75.00 | 95.00 | 100.00 |
| Total (except materials) .. | \$630.00 | \$755.00 | \$875.00 |
| Cost per single track foot.. | 3.94 | 4.72 | 5.47 |

Fig. 14—Double Track Crossing Double Track (90 Deg.)

Length—90 ft. single track

Construction replaced—9-in. girder rail—8-in. granite on sand
New construction—9-in. girder rail—8-in. granite on concrete



| | Light Traffic | Average Traffic | Heavy Traffic |
|------------------------------------|-----------------|-----------------|-----------------|
| Labor | \$238.00 | \$297.00 | \$335.00 |
| Handling | 73.00 | 81.00 | 101.00 |
| Miscellaneous | 45.00 | 54.00 | 63.00 |
| Total (except materials) .. | \$356.00 | \$432.00 | \$499.00 |
| Cost per single track foot.. | 3.96 | 4.80 | 5.54 |

*Hard-center construction. *Explanation:* By "light traffic" is meant either the divergence of cars during progress of work, or a traffic of not more than 150 cars per day of twenty-four hours. "Average traffic" denotes the passage of about 325 cars per day of twenty-four hours, and "heavy traffic" that of 750 or more.

By "labor" is meant the labor cost of tearing out the old paving and special work and installing the new at the location where the work is done. "Handling" signifies the cost of loading the necessary materials at the various storage yards as well as the unloading of same at the place of renewal. It also includes the cost of transportation and the cost of removal of old or left-over material. Since the transportation

is done by a subsidiary company, which adds profit and overhead expense to the net cost, this item may differ considerably from that obtained on other railways. Under "miscellaneous" are included the expense of city inspectors, expense incurred when portable crossovers are used for divergence of cars during renewal, watchmen's wages, and incidental engineering expense. The total of these three items—labor, handling and miscellaneous—therefore includes everything except the cost of materials.

On account of the unsettled labor conditions prevailing since the beginning of the war, the costs given are based on pre-war wages, the average track labor on which these costs are based is 20 cents per hour, including the foreman's wages.

Lightning Arresters a Guard Against Rotary Flashovers

Flashovers Caused by Potential Surges Can Be Greatly Reduced by Connecting D.C. Aluminum Lightning Arresters Directly Across the Commutator

Protecting rotary converters against flashovers is a matter of vital importance in maintaining continuity of service, and it has been observed that many railway engineers have for some time been using aluminum lightning arresters to guard against such disturbances. However, as there seems to be a misunderstanding as to exactly what protection the arresters can furnish, and as to the best way for connecting them to the rotary, the following review of the recommendations of the General Electric Company is given to clarify the subject.

Flashovers on rotary converters may be due either to potential or current surges. Those due to potential surges may be prevented by the installation of d.c. aluminum arresters, but this arrester will not prevent flashovers due to heavy current rushes, or to improper operation of the rotaries. The arrester operates on excess potential—not on excess current. The arresters should not be used on rotary converters which operate on the same busbars with storage batteries. The latter perform the function of a lightning arrester, as they short-circuit abnormal potentials that occur on the section of the circuit to which they are connected.

Potential surges on rotaries may be the result of high potential disturbances on the a.c. side, voltage disturbances due to sudden changes in load, short-circuits on the d.c. side, or they may come from internal disturbances in the rotary itself.

As potential disturbances causing flashovers are undoubtedly of various wave forms and frequencies, and in many cases involve a large amount of energy, aluminum arresters which combine the safety valve and condenser properties are especially effective. The efficacy of the aluminum arrester is due chiefly to its safety valve effect and its high discharge rate. Connected directly across the bus rings of the rotary, kept continually charged to the normal voltage of the rotary, and having an extremely low internal resistance, the slightest rise in voltage causes a free and heavy discharge through the arrester, quickly and thoroughly relieving the rotary of the dangerous surges. As this type of arrester also has a high capacitance, high frequency disturbances involving a limited quantity of electricity will be relieved by the condenser effect. This, however, is of slight importance in comparison with the valve effect.

The arresters should be connected directly across the bus rings of the rotary, that is, with the series and commutating fields outside of the arrester, in order to reduce to a minimum the impedance in the discharge path at the point desired to protect, namely, the brushes. It is recommended that the arrester be connected directly to the circuit without an intervening spark gap. A spark gap would have the advantage of increasing the life of the aluminum part, but would decrease the protection. The former, however, is not of serious importance as is indicated by the results of hundreds of installations of similar arresters on electric railway cars. As to the number of arresters

to be used, one cell for every 500-kw. rotary capacity has given satisfactory results.

Labor-Saving Brush for Car Washing

Car washing at the Hooker Street carhouse of the Springfield (Mass.) Street Railway is much expedited



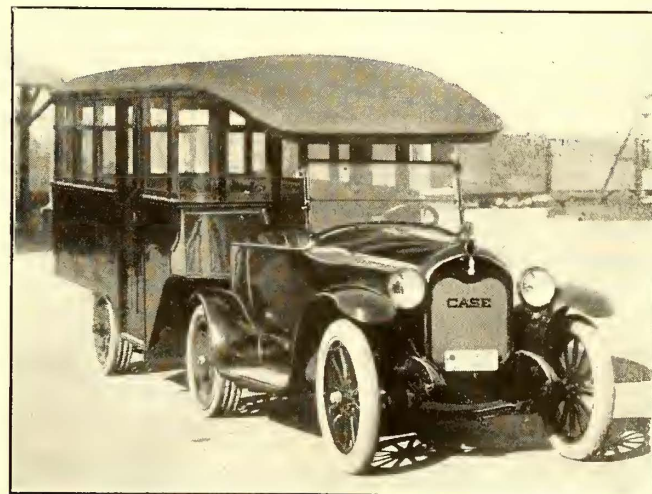
CAR WASHING WITH LABOR-SAVING BRUSH

by the home-made brush equipment shown in the illustration. A continuous water supply is obtained by mounting the usual brush on the end of a pipe rod, which in turn is connected to the water main by a rubber hose. At the lower end of the handle a valve and universal joint are provided for convenient use. A rubber disk 8 in. in diameter is provided near the top of the handle to protect the user's hand against water drip. With this equipment no dipping is required, no pails have to be filled or utilized, and the time of washing is reduced about 50 per cent

compared with the usual method of brush and pail.

Flexible Buses in Larger Sizes

The Pacific Electric Railway has under construction additional buses of the Fadgl flexible type which will be put into auxiliary service at an early date. The first of these cars to be put in service by the company is still in use at Fresno, Cal. They were described on page 314 of the ELECTRIC RAILWAY JOURNAL for Aug. 10, 1916.

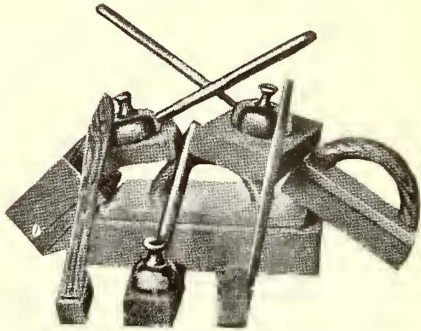


NEW ENLARGED TYPE OF FLEXIBLE MOTOR BUS

The new buses will have a seating capacity of thirty passengers and there are also improvements in the design of the bus body. A more powerful motor has been used in the larger cars, and by employing heavier construction throughout it is expected that the life of the bus will be materially increased. The new type is shown in the accompanying illustration.

Commutator Dresser Made in Various Shapes

A new variety of commutator dresser which is being placed on the market by the Ideal Commutator Dresser Company of Chicago, Ill., is a composition substance of uniform hardness claimed to have particularly efficient properties of both abrasive and lubricating character. It retains a sharp grinding or cutting surface which cuts down the ridges and high spots of both commutator segments and mica. Despite its cutting or



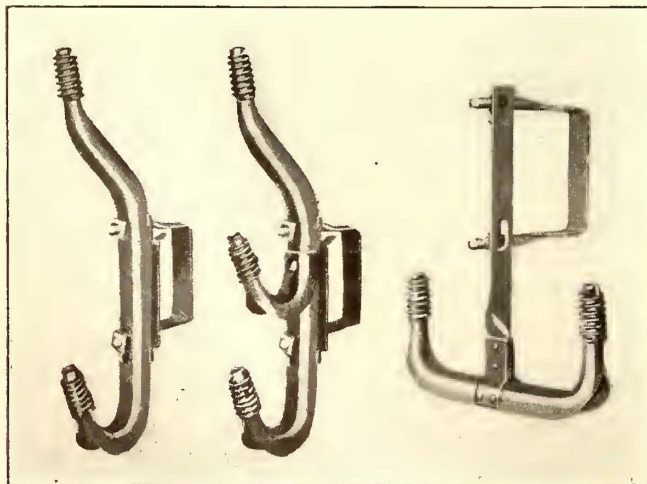
SEVERAL STYLES OF THE NEW COMMUTATOR DRESSER

grinding characteristics it is non-metallic and a non-conductor. It is also claimed that it does not clog up, wear smooth or collect copper dust. Because of these characteristics, it can be applied to a commutator while the machine is under service and carrying full load without danger of short-circuiting the commutator bars.

The dresser is made up in a variety of sizes to fit all kinds of commutator conditions, and the blocks are equipped with convenient handles for holding against the commutators.

Insulator Brackets of Pressed Steel for Crossarm Service

Unusually heavy pressed-steel insulator brackets designed to be clamped to crossarms are shown in the illustration. These brackets are made from open-hearth steel, and it is believed that if there is the slightest flaw in the steel it will break in the forming dies. This, therefore, eliminates any flaws from the finished product. All the brackets clamp around the crossarms instead of bolting through them, thus avoid-



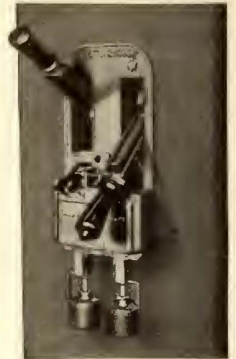
HEAVY PRESSED-STEEL INSULATOR BRACKETS

ing the splitting and rotting of the crossarms caused by bolt holes. The brackets were developed by Hubbard & Company, Pittsburgh, Pa.

A Substitute for Inverse-Time-Limit Relays

In order to obtain an inverse-time-limit control on circuit breakers, relays are commonly used, but when considered for use with circuit breakers of small capacity the price is often prohibitive. This condition has led to the development of an inexpensive inverse-time-limit attachment which can be mounted directly on the overload tripping magnets below the operating handles as illustrated.

On 100 per cent overload a time element of approximately five seconds is obtainable, and by adjustment this may be varied down to zero. By using a heavier oil time limits up to ten seconds may be attained. These attachments are made by the Westinghouse Electric & Manufacturing Company.



INVERSE-TIME-LIMIT ATTACHMENT FOR CIRCUIT BREAKERS

Hanger Wrench Perfected by Lineman

To attach or detach a trolley hanger from a span wire, Charles Boulton, lineman of the Tulsa (Okla.) Street Railway, has made the hanger wrench shown in the illustrations. The left-hand end of the tool is used to throw in the hanger, and to do this it is hooked over the span wire and around the hanger arm as shown in Fig. 2. Then the wrench is turned around the span wire, Fig. 3, and the hanger is forced into place when the wrench reaches the position shown in Fig. 4.

The other end of the wrench is used to throw out the hanger. This end has a flat chisel edge and a hook. The latter is hooked over the span wire and the chisel edge is inserted under the lip of the hanger arm, Fig. 5. The wrench is then rotated and the hanger is unhooked when the position shown in Fig. 6 is reached.

This wrench has been found very convenient in handling trolley hangers. The sales rights have been acquired by the Ohio Brass Company.

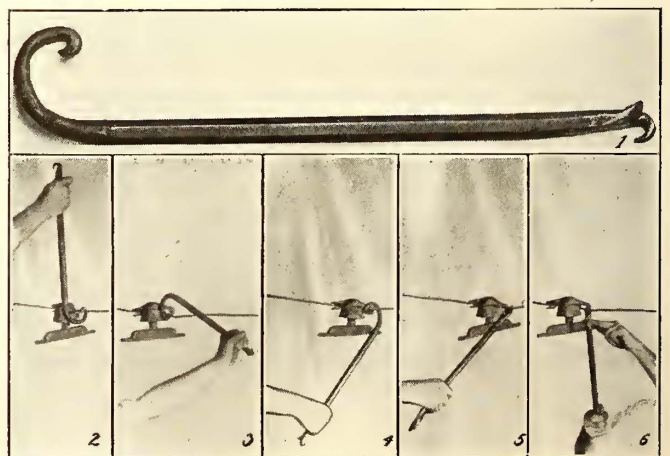


FIG. 1—TROLLEY-HANGER WRENCH. FIGS. 2-6—USING HANGER WRENCH TO ATTACH AND DETACH TROLLEY HANGER

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

Another Philadelphia Hearing

Change in Wording of Proposed Philadelphia Lease
May Overcome Objections Raised Previously
—Another Hearing on Oct. 5

Another hearing was held on Sept. 21 on the proposed lease of the Philadelphia high-speed lines to the Philadelphia Rapid Transit Company. The hearing was before the joint committee on finance and street railways of the Council and was presided over by Chairman Gaffney. Among those who sat with the committee were Mayor Smith and James Alcorn, a member of the Public Service Commission of Pennsylvania. Dr. William Draper Lewis, the Mayor's special legal adviser, was accompanied by City Transit Director William S. Twining. A. Merritt Taylor, former director of city transit at Philadelphia, who is opposed to some of the terms and conditions of the grant as now proposed, was attended by counsel.

DR. LEWIS BEGINS PROCEEDINGS

The proceedings were begun by Dr. Lewis, who submitted his opinion on the suggestions made by Ford, Bacon & Davis, New York, N. Y., who some time ago reported to the city with reference to the proposed lease. As noted in the *ELECTRIC RAILWAY JOURNAL* for Sept. 8, page 409, Ford, Bacon & Davis, in concluding their report, expressed the opinion that the proposal constituted a businesslike basis of contract, fair alike to the company and the city.

At the outset of the hearing Dr. Lewis said that undue emphasis had been laid on the section of the proposed lease dealing with fares. The Public Service Commission controlled the making of reasonable and just rates of fares. He added that if at any time it was desired to provide an increase or to bring about a reduction of fares the city officials could relieve the company in whole or in part from the obligation to pay rent for the use of the city's transit facilities. Dr. Lewis again insisted that the idea that the lease guaranteed a dividend to the company was not supported by any expression contained in the lease. On this point there was considerable discussion between Dr. Lewis and the lawyers of Mr. Taylor regarding the meaning of the words and of the phraseology of the lease.

MR. TAYLOR READS OPINION

Mr. Taylor read the legal opinion rendered to him in which the criticisms he had made previously of certain provisions of the lease were sustained. This opinion aimed at a clarification of the provisions of the lease with special reference to dividends, fares and the purchase of the company's properties. Dr. Lewis insisted that the lease was clear in the main, but that if changes were needed to make it legally perfect, these would be carefully considered.

Some of the members of the committee felt that Dr. Lewis should have more time to consider the objections raised by Mr. Taylor. The doctor, however, did answer several criticisms and is to prepare a brief in relation to the opinion of the Taylor lawyers. In a summary of the hearing the Philadelphia *Public Ledger* of Sept. 22 said it appeared at the conclusion of the hearing that the only thing left to do was to agree on the right wording for the right place and then go ahead with the adoption of the lease between the city and the company.

It was expected that Director Twining would have an opportunity to make an address, but instead he submitted to the committee a printed discussion of the basic principles and provisions of the proposed lease.

There will be another hearing on the proposed lease on Oct. 5.

Purchase of U. R. R. Lines Favored

Public Utilities Committee of San Francisco Supervisors Recommends Purchase of Private Lines by City

The public utilities committee of the Board of Supervisors of San Francisco, Cal., unanimously adopted a resolution on Sept. 25 recommending that the city purchase the property of the United Railroads if it can be obtained on equitable terms. The city engineer was also authorized to confer with the officers of the United Railroads to ascertain the valuation of the property.

This action followed a meeting held on Sept. 24 by the Mayor, a committee of citizens and the members of the re-organization committee of the United Railroads at which it was proposed to appraise the physical property now and buy on the installment plan, and also to agree with the United Railroads on a year determined to be a fair measure of its net earnings or take an average of five years' net earnings as the price to be paid by the city each year for every year of the franchises. The method proposed contemplates no bond issue, but would be carried into effect through a charter amendment which on adoption by a vote of the people and ratification by the Legislature would give the city possession of the system. The charter amendment vote cannot be legally taken until July 19, 1918, according to the city attorney. The valuation of the United Railroads now being made by the Railroad Commission of California will probably not be used under the new plan of negotiation.

Reports state that on Sept. 26 the United Railroads carried to the Supreme Court its appeal from the decision of the District Court in favor of the city in the case regarding the four-tracking of Market Street. Service on the United Railroads continues to improve. On Sept. 26 cars were run until 10.30 p. m.

Coal Case Carried to Washington

Kentucky Traction & Terminal Company Appeals Direct to the Fuel Administrator at Washington for Relief

The threatened coal famine in Lexington, where the supply recently became so low that the Kentucky Traction & Terminal Company suspended operation of its interurban lines for several hours, has resulted in a personal appeal for intervention by the office of Fuel Administrator Garfield. This was made in Washington on Sept. 21 by S. H. Dailey, general manager of the company named, and Richard Stoll, one of the leading business men of the city of Lexington. They made the statement that there was less than a week's supply of coal in Lexington and that the plant of the railroad as well as other utility plants and numbers of manufacturing plants faced an absolute shutdown. Not only would Lexington be affected but a situation similar in every respect exists in the other towns around Lexington. Citizens of Lexington drafted an appeal for help at a mass meeting, which resulted in telegrams to the district representative in Congress.

In a statement given out by Mr. Dailey at Lexington relating to the suspension of service on the interurban lines he said that there has been a shortage of coal for the last six months. The company's contractor failed to keep it supplied even when a bonus was paid on the coal, due to shortage of labor and cars, and then the strike in the eastern Kentucky field developed. During the last six months the company has found it necessary on several occasions to pay three times the amount of the contract price in order to have coal.

Objections to St. Louis Ordinances

Pending Ordinances Will Likely Be Redrafted— Franchise Expert to Be Retained

At a meeting of the public utilities committee of the Board of Aldermen of St. Louis, Mo., on Sept. 17, a committee of the Chamber of Commerce attacked the proposed ordinances looking toward the settlement of the differences between the city and the United Railways. The committee of the Chamber of Commerce which appeared before the aldermanic committee was headed by John M. Atkinson, formerly chairman of the Missouri Public Service Commission. The report opposed several features of the pending ordinances, but approved the measures in general. It recommended that Delos F. Wilcox, New York, be employed to co-operate with the Aldermen in drafting a substitute bill.

It was expected that at the meeting on Sept. 17 Charles E. Smith, consulting engineer for the city, would explain in detail his method of arriving at \$60,000,000 as the valuation of the United Railways, but consideration of this matter was deferred. Mr. Smith's valuation is recognized in each of the two pending bills looking to a settlement between the city and the corporation. Further consideration of the objections to the ordinances voiced previously by the St. Louis Civic League was postponed for another meeting.

EMPLOYMENT OF FRANCHISE EXPERT UNDER CONSIDERATION

Subsequently the public utilities committee decided to recommend to the Aldermen that an appropriation of city funds be made to employ an expert to aid the committee in solving the franchise problem. It seems likely that there will be no further public hearings before the aldermanic committee until a substitute ordinance has been drafted.

The public utilities committee reported on Sept. 21 at the meeting of the Board of Aldermen, which reconvened after two months' vacation, that it is unable at present to submit recommendations on the pending United Railways settlement ordinances. According to the committee, so many conflicting views were expressed at the public hearings that it was difficult to come to any definite decision.

The committee later reversed itself on its stand taken previously in favor of hiring an expert to assist the Chamber of Commerce in drafting a substitute ordinance to settle the differences between the city and the company. On Sept. 22 the members declared that if an expert is employed he should aid the Aldermen.

The Chamber of Commerce recently submitted the two ordinances to Mr. Wilcox for an expression of expert opinion. In his reply to the chamber Mr. Wilcox said that he had not had time to make a careful study of the two ordinances, but that it required only "a superficial examination to show that they contain certain radical defects, on account of which they ought not to be considered in their present form." He mentions as major defects the lack of adequate provisions for extensions, the presence of elected city officials on the company board of directors, the absence of any provision for the avoidance of strikes, the lack of an adequate forfeiture clause and the vague and inadequate provisions for interurban facilities and rapid transit lines.

CITY COUNSELOR'S ADVICE SOUGHT

City Counselor Daves of St. Louis on Sept. 22 in a formal opinion to Barney L. Schwartz, chairman of the public utilities committee of the Board of Aldermen, answered several legal questions asked by the Aldermen relating to the proposed settlement ordinances. The Counselor was asked: (1) How extensions would be made and paid for under the ordinances. (2) Whether the United Railways would have the exclusive use of a subway for fifty years if one is built either by the city or the company. (3) Whether the Missouri Public Service Commission has jurisdiction to make rates or interfere with the clauses in the proposed ordinances if they are passed.

The opinion declares that, under the so-called partnership ordinance, the board of control would have authority to order the company to make extensions, and that the matter of extensions must be taken up for consideration within sixty days after the ordinance becomes effective.

Mr. Daves holds that the United Railways would not have an exclusive right to use a subway, if one is built.

The ordinances authorize the city to build a subway and compel the United Railways to use it and pay the city a reasonable interest on the investment—whether or not the subway is a paying proposition. The city has the right to permit other lines to use such a subway, and to determine what share of the expense shall be paid by the using companies, the opinion says.

According to Mr. Daves, the State Public Service Commission has authority to make or change the fare or rates and to ignore the provisions of the ordinance if it desires.

Seattle Evidence All In

Puget Sound Wage Arbitration Well on Way to Conclusion—Wage Base Line to Be Established— Decision Probable by Nov. 1

Arbitration of the demands of the employees of the Puget Sound Traction, Light & Power Company and the Tacoma Railway & Power Company was completed on Sept. 20 as far as the presentation of evidence in Seattle is concerned. Hearings were resumed in Tacoma on Sept. 24 and were to occupy not more than two days. The entire matter will then be in the hands of the arbiters, composed of Dr. Henry Suzzallo, president of University of Washington; C. J. Franklin, Portland, Ore., representing the company, and James Duncan, president of the Seattle Central Labor Council, representing the trainmen. After the evidence is all presented Chairman Suzzallo will appoint a corps of investigators to determine the authenticity of the facts and figures in relation to living expenses, earnings of the men, conditions affecting the men, and other evidence submitted, before the board announces its findings. A month will probably elapse before the board arrives at any decision.

The last witness called in Seattle was W. H. McGrath, vice-president at Seattle, who testified to the differences between the two organizations. C. A. Reynolds, attorney for the men, had made the statement that the companies in Seattle and Tacoma were identical, and that Stone & Webster owned 99 per cent of the stock. Mr. McGrath testified that the companies are separate corporations; that Stone & Webster do not control them; that they are owned by separate groups of stockholders only a minority of whom are identical; that the bonds are held by separate groups of investors, and that the companies have separate officials and boards of directors. He said that Stone & Webster hold only 12 per cent of the stock of the Puget Sound Traction, Light & Power Company. The Stone & Webster Management Association manages both properties under a management contract with the companies. Stone & Webster specialize in public utility management and manage some properties in which the firm does not own a share of stock. The services of Stone & Webster as managers are available to any public utility anywhere.

COMPANY OFFICERS AS WITNESSES

The important witnesses for the company during the week were the various officials. A. L. Kempster, division manager at Seattle; G. A. Richardson, superintendent of railways; D. W. Henderson, superintendent of transportation; E. V. Minich, superintendent of employment; Division Superintendent Nice, and other officials, testified that they had all risen from the ranks. Mr. Kempster started with the company as an office boy twenty-six years ago in Seattle. Others had been motormen, gripmen or conductors. These men testified to intimate knowledge of the men, their living conditions and to the policy of the company to develop the men and to promote them from time to time to better positions as they qualified in the service.

The testimony for the company established the facts that the employees earn from an average of \$87.25 for the lowest paid trainmen to \$103.71 for the highest per month. In addition, the men receive unlimited free transportation for themselves and families. Men in other classes of employment with the company are paid in proportion. In every branch of the service except platform work an eight-hour day is the rule. The company requires a basic ten-hour day from trainmen because the requirements of traffic and the demand of the public for service compel it.

Employment lists were filed to show what the federal

government and the State considered to be living wages for employment similar to that with the railway. Mail carriers and clerks are paid from \$800 to \$1,100 a year, and assistant instructors, janitors, patrolmen, engineers and firemen in the University of Washington from \$800 to \$1,200 a year.

Dr. Suzzallo announced on Sept. 19 that the board had decided to establish a wage base line below which wages would not be allowed to go, regardless of all other operating obligations. He defined this as a bare living wage, having priority over even the obligation to pay interest on money borrowed to construct and develop the company's property. Chairman Suzzallo also announced that consideration must be given to the probability of relief being afforded the company by the State, in case the board, in its final decision, added to the burdens of the company. The most important ruling was that upon the admissibility of evidence as to the company's ability to pay increased wages from present or past earnings.

Charles A. Reynolds, attorney for the trainmen, opposed the admission of any such evidence, on the admitted theory of principal and agent, contending that the company's ability or inability to pay had nothing to do with hours and wages, the matter at issue. He declared that the discussion of such evidence before the board would be unfair to the men.

The question of the fairness of the "swing run" and the possibility of eliminating it came up for much discussion during the week. It was conceded by both sides that it would be impossible to eliminate it and to furnish the standard of service demanded by the public. The men agreed with the company that the employment of two shifts to care for what is virtually a fifteen-hour day would bring unreasonable expense upon the company. Mr. Richardson, called as an expert witness, explained the schedules and runs, and presented charts showing the demand of the public for transportation and the manner in which that demand had been met. He said that schedules are arranged with a view to providing the smallest possible number of swing runs.

Twin Peaks Tunnel Line

Road Nearing Completion Which Will Afford Connection Between San Francisco Business and Residential Sections

The first electric car was run through Twin Peaks tunnel in San Francisco, Cal., on Sept. 5. It was a municipal work car loaded with crushed rock. The road will probably be put in regular operation on Dec. 1. It is expected that by this time the outer tracks for the municipal electric railway will be completed on Market Street between Church Street and the tunnel, permitting operation of the tunnel cars down Market Street to Van Ness Avenue to Geary Street to the ferry. The system will afford a much-needed rapid transit connection between the business district and a desirable residential section heretofore undeveloped.

In the construction of the railway through the tunnel the contractors installed the overhead work simultaneously with the laying of the rails on the subgrade and are using the skeleton track for hauling the ballast. It was originally intended to use a third-rail through the tunnel, but an overhead trolley system was installed instead. This will permit all surface cars to be used on the tunnel lines without modifications. Seventy-pound A. S. C. E. rails in 60-ft. lengths are used.

The tunnel is of a horseshoe section, but has a false ceiling, consisting of a 4-in. suspended slab running through practically its entire length. The space above the slab forms the ventilation duct. Owing to the possibility of noisy operation should the usual trough and trolley be supported on barn hangers from this slab ceiling, it was decided to use catenary suspension. As the headroom is limited, the hangers are quite short, and the suspension cable was pulled up flat under 1800-lb. tension, with frequent points of support. A block signal system will be installed through the tunnel.

The entire work is under the supervision of M. M. O'Shaughnessy, city engineer of San Francisco. Eaton & Smith are the contractors.

Portland Men Insistent

Unwilling to Wait Longer Than Oct. 1 for Decision in Fare Case Before Pressing Their Wage Demand

A strike in Portland, Ore., was forecast on Sept. 20, when the recently organized car men's union notified the Portland Railway, Light & Power Company that the men's recent demands for increased wages and the eight-hour day must be met by Oct. 1. The company recently announced that it felt the men were entitled to more pay, but said it could not afford to meet the increase under the conditions that existed at the time. A petition for permission to increase fares from 5 cents to 6 cents, filed by the company, is now before the Public Service Commission of Oregon.

The official statement of the union says in part:

"The demands take effect on Oct. 1, irrespective of any action by the Public Service Commission. We made our demands to the company and President Griffith said the company could not pay it."

Information from Salem from the Public Service Commission is to the effect that the commission's decision regarding an increase in fares will be made about Oct. 1. It has been unofficially reported that instead of ordering a 6-cent fare the commission may issue orders to the company which will result in a sufficient number of small economies to enable the company to meet the demands of the car men.

More Careful Subway Studies Suggested for Cleveland

An adverse report on the proposed rapid transit commission ordinance, to be voted on in Cleveland, Ohio, at the November election, has been made by the executive board of the Cleveland Engineering Society. This followed a report made to the board by a special committee.

It is the belief of the board that the City Planning Commission should first make a careful study of the subway matter, formulate plans and acquaint the public thoroughly with the proposed improvement. Then it might be advisable to appoint a commission under the provisions of the state law to execute these plans, but not before. According to the board, only in this way will it be possible to formulate plans for both the present and future needs and it is argued that whatever is done in the way of improvements to meet immediate demands should be a part of a general scheme which will also take care of the future growth of the city.

The society is not opposed to the construction of subways. On the other hand, it is the belief of members that subways and underground terminals are necessary now, but it is felt that such an important improvement should be well planned, so that there may be no mistakes that might block extensions later on.

Three-Car City Trains Discussed

Fielder Sanders, street railway commissioner of Cleveland, Ohio, informed the street railway committee of the City Council on Sept. 24 that the time was not far distant when three-car railway trains will become necessary in the city. In this Joseph Alexander of the Cleveland Railway agreed with Mr. Sanders.

Councilman Kadlecck has introduced an ordinance for the regulation of the weight of electric railway cars. For some time he has been endeavoring to make some move that would take the interurban cars off the local tracks and this ordinance is intended to further this end. Councilman McGinty proposed that the interurban lines entering the city charge the same rate of fare per mile within the city that they receive outside and turn the extra amount over to the Cleveland Railway for the purpose of maintenance of tracks. He thought that this would produce about \$300,000 a year.

The street railway committee has approved the purchase by the Cleveland Railway of twelve acres of land at Lorain Avenue and West 117th Street, on which a new carhouse is to be erected. It is expected that a cross-town line will be built near there and the new house and yards will thus take care of two lines. The cost of the land was \$22,500.

Key Route Men Finish Case

The testimony of platform men of the San Francisco-Oakland Terminal Railways, Oakland, Cal., before the board of arbitration has been concluded after eight meetings. On Sept. 18 representatives of the company outlined its case. The principal questions raised by the company were: (1) What is the economic maximum that the company can afford to pay? (2) What is the social minimum that the men can afford to work for? The company states that three rights are to be considered, as follows: (1) The right of the public to receive adequate service; (2) the right of the utility to fair remuneration on its investment; (3) the right of the employee to a fair living wage.

It is claimed that platform men on the East Bay lines are paid higher schedules than in the majority of cities of this class and under similar conditions; that the cost of living is no higher than elsewhere; and, finally, that the company is unable to pay interest on its investment at the present time and therefore cannot afford to meet the demands for higher wages.

It is expected that the company's side of the case will be concluded by Oct. 15. The testimony already presented is to be charted in order that the material may be summarized with the least confusion.

Missouri Short Line Increases Wages

The Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., known as the Missouri Short Line, has increased the wages of its trainmen, effective on Sept. 15. The old schedule, in force a year, and the new follow:

| Period | Wages | |
|------------------------|-----------|----------|
| | Old | New |
| First six months..... | 26 cents | 27 cents |
| Second six months..... | 27 cents | 28 cents |
| Second year..... | 27½ cents | 29 cents |
| Third year..... | 28½ cents | 30 cents |
| Fourth year..... | 29 cents | 31 cents |
| Fifth year..... | 29½ cents | 32 cents |
| Sixth year..... | 30 cents | 33 cents |

J. R. Harrigan, general manager of the company, gave to the men their first intimation that they would receive a raise after the strike of the Kansas City Railways had been settled. He called the men into his office and said that he had hoped to readjust their salaries eventually, but that in view of their commendable conduct, particularly during the recent strike in Kansas City, he would hasten the action.

Bay State Duties Assigned

The Bay State Street Railway, Boston, Mass., announces in *Triangle Talks* for Sept. 22, a division of the positions of vice-president and general manager in order to relieve R. S. Goff, vice-president and general manager, of some of his exacting duties. The duties of first vice-president have been assigned to R. B. Stearns, in charge of all departments. The duties of general manager have been assigned to Mr. Goff as head of a new department as follows: All matters before legislative committees, all matters before the Public Service Commission, all matters before the State Highway Commission, all matters including franchises and fare details with cities and towns, all matters relative to labor agreement. Mr. Sparks is appointed assistant to the first vice-president.

Arbitration Rejected in Chattanooga

F. W. Hoover, vice-president of the Chattanooga Railway & Light Company, Chattanooga, Tenn., late on Sept. 18 informed John B. Colpoys, federal mediator, that his company would not consider settlement of the strike of the employees of the company on the basis proposed by him. The proposal of Mr. Colpoys was to the effect that the company resume contractual relations with the former employees, reinstating all men who had not been guilty of acts obnoxious to the company and that all matters in dispute should be submitted to a board of arbitration selected by the parties to the controversy.

Increase in Wages in Atlantic City.—An increase in wages of 2 cents an hour, dating from Sept. 15, has been granted

to the motormen and conductors employed by the Atlantic City & Shore Railroad, Atlantic City, N. J. The increase will bring the wage rates of the men on the Atlantic Avenue line up to 25, 27 and 29 cents an hour, and the rates for the men on the Ocean City line up to 27, 29 and 31 cents an hour. A. J. Purinton, superintendent of the company, said the increase was given as an evidence of the company's good-will and an appreciation of the rising cost of living.

Recalcitrant Police of Seattle on Trial.—The trial of E. W. Benjamin and twelve other policemen of Seattle, Wash., who on July 20 refused to obey orders of Charles L. Beckingham, chief of police, and ride on cars of the Puget Sound Traction, Light & Power Company, to protect the motorman and conductor from violence from strikers and their sympathizers, has been set for Oct. 1. The case will be heard before Judge Kenneth Mackintosh. The thirteen striking policemen are joined in one information charging failure of duty as public officers. Following the refusal of the men to board the cars, Chief Beckingham discharged them, and their appeals from that order are now before the City Civil Service Commission.

Centre Street Loop Hearing Continued.—Continuing its inquiry into the conditions in the Centre Street loop subway as to service and equipment, the Public Service Commission for the First District of New York on Sept. 24 had Clifton W. Wilder, electrical engineer of the commission, on the stand. Mr. Wilder told the commission that the Brooklyn Rapid Transit Company, which operates the loop, had 300 steel cars ready, 100 nearly ready, eighteen cars partly built, an option on 100 more cars, and had a tentative option on still another 300. The railroad at present is using about 325 wooden cars a day in the loop. The witness explained that it would be difficult to have the wooden cars removed from storage on the tracks in the loop because the East New York storage yard of the company was not ready for use. The company has been unable to secure steel to complete the work now under way at East New York.

Strike in Vicksburg Settled.—After a strike lasting two days, an agreement running for a year was reached on Sept. 8 between the conductors and motormen of the Vicksburg Light & Traction Company, Vicksburg, Miss., and the management of the company. The men demanded an increase in wages of 4 cents an hour, making the scale 25 cents an hour. They also demanded that the company continue to operate its cars on the Clay and College and the Washington Street lines with two men. As an alternative to the original demand of the men O. H. Simonds, manager of the company, suggested the following wage scale: First six months, 20 cents an hour; second six months, 21 cents an hour; second year, 22 cents an hour; third and fourth years, 23 cents an hour; fifth year, 24 cents an hour. In addition to this Mr. Simonds proposed to pay the equivalent of approximately three-quarters of a cent an hour as an incentive to trainmen to render highly efficient service. The full terms of the settlement have not been made public, but it is said that the matter was finally adjusted on the basis of the company granting approximately the scale demanded by the men.

Government to Refund Excess Excise Tax.—The dismissal by the United States Supreme Court of a six-year-old suit by the Union Traction Company of Indiana against the federal internal revenue department to recover \$1,543 paid as excise tax in 1911 is expected to be followed by the dismissal of three similar suits brought by other Indiana properties. The government will refund the tax to the Union Traction Company in the settlement of its suit, and it is probable that a like settlement will be made in the other cases. The three pending suits are by the Indianapolis Street Railway to recover \$11,800; the Indianapolis & Northwestern Traction Company to recover \$697, and the Terre Haute Traction & Light Company to recover \$4,586. These properties are operated under lease by the Terre Haute, Indianapolis & Eastern Traction Company. The taxes involved in the suits were levied under the corporation tax bill of 1909, and payments were made under protest by the corporations which contended they were not doing business and were not subject to tax, their properties being operated by other companies under leases. Since the filing of the suit the Supreme Court has held that ownership is not necessarily doing business, and this ruling therefore eliminates the Indiana cases.

Financial and Corporate

Annual Report

New York Railways

The comparative income statement of the New York (N. Y.) Railways for the years ended June 30, 1916 and 1917, follows:

| | 1917 | | 1916 | |
|---|--------------|----------|--------------|----------|
| | Amount | Per Cent | Amount | Per Cent |
| Revenue from transportation | \$11,195,730 | 97.40 | \$13,379,048 | 97.55 |
| Other railway operating revenue | 298,379 | 2.60 | \$335,483 | 2.45 |
| Total operating revenue | \$11,494,109 | 100.00 | \$13,714,531 | 100.00 |
| Operating expenses: | | | | |
| Maintenance of way and structures | \$1,249,171 | 10.87 | \$1,042,356 | 7.60 |
| Maintenance of equipment | 910,467 | 7.92 | 855,916 | 6.24 |
| Total maintenance | \$2,159,638 | 18.79 | \$1,898,272 | 13.84 |
| Horse power—revenue car service | 53,151 | 0.46 | 82,426 | 0.60 |
| Operation of power plant | 608,615 | 5.30 | 752,718 | 5.49 |
| Operation of cars | 3,526,824 | 30.68 | 3,458,264 | 25.22 |
| Injuries to persons and property | 1,051,400 | 9.15 | 1,054,651 | 7.69 |
| General and miscellaneous | 597,697 | 5.20 | 528,105 | 3.85 |
| Total actual expenditures | \$7,997,325 | 69.58 | \$7,774,436 | 56.69 |
| Maintenance of way and structures—reserve | \$99,768 | 0.87 | \$569,475 | 4.15 |
| Maintenance of equipment—reserve | 39,416 | 0.34 | 275,158 | 2.01 |
| Injuries to persons and property—reserve | †267,699 | †2.33 | †244,990 | †1.79 |
| Total reserves | †\$128,515 | 1.12 | \$599,643 | 4.37 |
| Total expenditures and reserves | \$7,868,810 | 68.46 | \$8,374,079 | 61.06 |
| Taxes assignable to railway operations | 1,032,011 | 8.98 | 1,038,122 | 7.57 |
| Operating expenses and taxes | \$8,900,821 | 77.44 | \$9,412,201 | 68.63 |
| Income from railway operations | \$2,593,287 | 22.56 | \$4,302,330 | 31.37 |
| Non-operating income | 647,600 | 5.64 | 567,869 | 4.14 |
| Gross income | \$3,240,887 | 28.20 | \$4,870,199 | 35.51 |
| Deductions from gross income | 2,666,053 | 23.20 | 2,707,883 | 19.75 |
| Net income available for interest on 4 per cent bonds | \$574,834 | 5.00 | \$2,162,316 | 15.76 |
| Interest on 4 per cent bonds | 722,887 | 6.29 | 722,609 | 5.27 |
| Balance | †\$148,053 | †1.29 | \$1,439,707 | 10.49 |
| Add surplus account | †996,679 | †8.67 | 146,509 | 1.07 |
| Net income—surplus | †\$1,144,732 | †9.96 | \$1,586,216 | 11.56 |
| Interest paid on adjustment mortgage 5 per cent bonds | | | 1,584,946 | 11.56 |
| Surplus | †\$1,144,732 | †9.96 | \$270 | ... |

†Decrease or deficit.

The gross passenger revenue for 1917 showed a decrease of \$2,183,318 or 16.32 per cent. The greater proportion of this decrease may be attributed to the strikes on the company's lines in August and September, 1916, continuing thereafter with gradually diminishing effect. The other railway operating revenue decreased \$37,104. This is accounted for principally by a decrease in sale of power. The larger portion of such a decrease, however, is not real, owing to an adjustment having been made this year under a change in the accounting classification. The actual decrease was \$12,502 or 3.73 per cent. As the result of these decreases the gross operating revenue showed a loss of \$2,220,422 or 16.19 per cent.

The operating expenses decreased \$505,269 or 6.03 per cent. The ratio of operating expenses to total revenue from operation was 68.46 per cent—an increase of 7.40 per cent as compared with the preceding year. The total charge for maintenance during the year, including reserve for maintenance and depreciation, was \$2,298,822, which amount is equal to 20 per cent of the total operating revenue, in compliance with an order of the Public Service Commission. There was actually expended in maintenance of way and structures and equipment \$2,159,638—an increase as com-

pared with the preceding year of \$261,366, and there was set aside in reserve \$139,184.

The transportation expenses decreased \$104,817 or 2.44 per cent. The power supply costs showed a decrease of \$173,377, while there was an increase of \$68,559 in the account "Operation of Cars," the latter being accounted for principally by increases in wages granted during the year. There was charged to operating expenses during the year for injuries and damages to persons and property \$783,701, an amount equal to 7 per cent of the gross passenger revenue.

Advances in daily, weekly and monthly rates of pay were granted during the year, resulting in an annual increase of approximately \$637,000, distributed between the various departments of the system as follows: transportation department, \$270,000; car equipment department, \$135,000; engineering department, \$115,000; motive power department, \$17,000 and other departments and offices, \$100,000.

Taxes assignable to railway operations fell off \$6,111. The charge for taxes in 1917 was equal to 8.98 per cent of the gross revenue. Proceedings to review the special franchise assessments for 1912, 1913 and 1914 were tried in the Supreme Court in June, 1916. The issues were somewhat involved and the court still has the cases under consideration, no decision having been rendered. The special franchise valuations for 1917, as fixed by the State Tax Commission, showed a still further decrease as compared with the valuations for 1916.

There was an increase of \$79,731 or 14.04 per cent in non-operating income, which is accounted for principally by additional interest revenue received on special funds. The gross income for the year showed a loss of \$1,629,312 or 33.45 per cent. Income deductions during the year decreased \$41,552, the greater portion of this being accounted for by a reduction in interest on unfunded debt. The deficit for the year totaled \$148,053, a decrease of \$1,587,760 as compared to the preceding year's results.

The annual report states that a reappraisal of the property (in addition to that in the reorganization proceedings in 1910) is now being made for submission to the Public Service Commission in the approaching hearings on the application for a 2-cent transfer charge. It is said also that the company "is in a receptive mood toward any proposition contemplating a partnership with the city whereby the service to the public may be protected and the burdens of giving that service equitably adjusted in the public interest."

Miscellaneous operating and traffic statistics follow:

| | 1917 | 1916 | Change |
|---|-------------|-------------|-------------|
| Rates per car mile: | | | |
| Total revenue from operation | 39.75c. | 39.91c. | —0.16c. |
| Operating expenses: | | | |
| Maintenance of way and structures: | | | |
| Expended | 4.32c. | 3.03c. | +1.32c. |
| Reserved | 0.34c. | 1.66c. | —1.32c. |
| Maintenance of equipment: | | | |
| Expended | 3.15c. | 2.49c. | +0.66c. |
| Reserved | 0.14c. | 0.80c. | —0.66c. |
| Operation of power plant | 2.29c. | 2.43c. | —0.14c. |
| Operation of cars | 12.20c. | 10.06c. | +2.14c. |
| Injuries and damages: | | | |
| Expended | 3.63c. | 3.07c. | +0.56c. |
| Reserved | 0.93c. | 0.71c. | —0.22c. |
| General and miscellaneous expenses | 2.07c. | 1.54c. | +0.53c. |
| Total | 27.21c. | 24.37c. | +2.84c. |
| Number of passengers carried: | | | |
| Cash fares | 215,672,697 | 257,028,563 | —41,355,866 |
| Revenue transfers | 13,866,986 | 17,752,628 | —3,885,642 |
| Free transfers | 85,088,109 | 108,521,893 | —23,433,784 |
| Total | 314,627,792 | 383,303,084 | —68,675,292 |
| Ratio of free transfer passengers to revenue passengers | 37.07% | 39.49% | —2.42% |
| Average fare per passenger: | | | |
| Per passenger (including transfers) | 3.559c. | 3.490c. | +0.069c. |
| Per revenue passenger | 4.877c. | 4.869c. | +0.008c. |
| Operating expenses per passenger: | | | |
| Per passenger (including transfers) | 2.501c. | 2.185c. | +0.316c. |
| Per revenue passenger | 3.42c. | 3.048c. | +0.380c. |
| Car miles | 28,918,483 | 34,360,986 | —5,442,503 |

Eastern Power and Light Consolidation

Pennsylvania Public Service Commission Approves Consolidation of Railway and Light Properties at Reading Into Two Units

Bonbright & Company, Inc., and W. S. Barstow & Company, Inc., New York, N. Y., announce the consummation on Sept. 13 of an important consolidation of public utility companies in Pennsylvania, controlled by the Eastern Power & Light Corporation.

By consolidation of the Metropolitan Electric Company, Reading, Pa., the Edison Electric Illuminating Company, Lebanon, Pa., and the Lebanon Valley Electric Light Company, a new company known as the Metropolitan Edison Company was formed, which now owns all of the properties of the above companies, comprising the electric light and power, generating and distribution systems which supply practically the entire electric light and power service in the cities of Reading, Lebanon and surrounding territory. The Metropolitan Edison Company also acquired the entire outstanding common stock of the Pennsylvania Utilities Company, which does practically all the gas and electric light and power business in Easton, Pa., Phillipsburg, N. J., Nazareth and Stroudsburg, Pa. The Guaranty Trust Company, New York, and Reilly, Brock & Company, Philadelphia, have purchased \$3,250,000 of first and refunding 5 per cent five-year bonds of the Metropolitan Edison Company, and Reilly, Brock & Company have purchased \$950,000 of one-year 6 per cent notes of the Metropolitan Edison Company.

The Reading Transit & Light Company, United Traction Company, Front & Fifth Street Railway, all of Reading, Pa., the Boyertown & Pottstown Railway Company, Birdsboro Street Railway and Reading & Womelsdorf Railway, all of which are connecting lines of the Reading street railway system, were merged in a new company to be known as the Reading Transit & Light Company. The company will operate, through ownership or lease, the street railway system in and about the cities of Lebanon and Reading, and extending from the latter to Philadelphia. The Reading Transit & Light Company acquired the stock of the Oley Valley Railway and the Neversink Mountain Railway and the entire outstanding common stock of the Metropolitan Edison Company. Bonbright & Company, Inc., have purchased \$2,300,000 of two-year 6 per cent notes of the Reading Transit & Light Company.

Announcement of the plan for the consolidation of the companies was made originally on Feb. 5, and on Feb. 20 formal application for the approval of the plan was made to the Public Service Commission of Pennsylvania. The consolidation of the several companies was approved by the Public Service Commission in August. Reference to the plan was made in the ELECTRIC RAILWAY JOURNAL of Feb. 10, Feb. 24, April 28, Aug. 25 and Sept. 1.

Milwaukee Physical Value Established

Commission Finds Reproduction Cost of \$37,319,297 —This and Working Capital Greater than Capitalization

After more than three years of work the engineering staff of the Wisconsin Railroad Commission has submitted to the commission its report on the reproduction cost of the physical properties of The Milwaukee Electric Railway & Light Company and Milwaukee Light, Heat & Traction Company. This valuation was made as of Jan. 1, 1914, and showed a reproduction cost on that date of \$37,319,297 for the property of the two companies. The capital expenditures of the two companies during the intervening years up to Jan. 1, 1917, were \$3,206,700. The reproduction cost on Jan. 1, 1917, would accordingly be \$40,525,997. This figure does not include any allowance for working capital or going value. The companies had cash and accounts receivable of \$1,174,000, which, when added to the reproduction cost, gives a total valuation of \$41,699,997.

Against this valuation of \$41,699,997 the company had outstanding in the hands of the public and owned by The Wisconsin Edison Company, \$41,006,000 par value of securities, or about \$694,000 less than the reproduction cost of the properties. In order to determine the present value of debt represented by bonds sold at a discount, the unamortized discount may be deducted therefrom. If this is done, the present value of bonded debt and outstanding capital stock and notes is \$39,500,856 as of Jan. 1, 1917, or \$2,199,141 less than the reproduction cost of the properties.

New Jersey Statistics for 1915

The Board of Public Utility Commissioners of New Jersey has just issued its compilation of statistics for the calendar year 1915. The general revenue and expense figures for the various groups of utilities in the State are as follows:

| | Operating Revenues | Operating Expenses | Operating Ratio (Per Cent) |
|---------------------------------|--------------------|--------------------|----------------------------|
| Electric railways | \$19,110,000 | \$10,230,000 | 53.5 |
| Gas companies | 13,190,000 | 6,535,000 | 49.5 |
| Private electric utilities..... | 12,650,000 | 5,095,000 | 40.3 |
| Municipal electric utilities... | 163,000 | 101,000 | 62.2 |
| Private water utilities..... | 4,720,000 | 1,610,000 | 34.1 |
| Municipal water utilities..... | 5,350,000 | 1,945,000 | 36.4 |
| Telephone companies | 9,815,000 | 4,325,000 | 44.1 |
| | \$64,998,000 | \$29,841,000 | 45.9 |

The foregoing table includes the revenues and the expenses of every utility whose gross revenues for the year exceeded \$10,000—or 99 per cent of the total gross revenues of all utilities in the State. The accompanying table shows miscellaneous statistics for electric railways in 1915.

MILEAGE, TRAFFIC AND MISCELLANEOUS STATISTICS OF NEW JERSEY ELECTRIC RAILWAYS FOR 1915

| | Miles of Track Owned | Capitalization Per Mile of Track | Miles of Road Operated | Operating Revenues Per Mile of Road | Revenue Car Miles Per Mile of Road | Revenue Car Miles Per Car Hour | Average Fare Per Passenger (Cents) | Transportation Revenue Per Car Mile (Cents) | Transportation Revenue Per Car Hour | Total Operating Revenue Per Car Mile (Cents) | Operating Expenses Per Car Mile (Cents) | Operating Ratio (Per Cent) |
|-------------------------------------|----------------------|----------------------------------|------------------------|-------------------------------------|------------------------------------|--------------------------------|------------------------------------|---|-------------------------------------|--|---|----------------------------|
| Atlantic & Suburban Ry..... | 17.0 | \$49,475 | 16.0 | \$8,000 | \$28,090 | 11.7 | 4.77 | 17.7 | \$2.07 | 17.8 | 13.1 | 73.8 |
| Atlantic City & Shore R. R..... | 7.7 | 253,245 | 24.5 | 22,283 | 68,937 | 10.8 | 4.74 | 31.7 | 3.46 | 32.3 | 22.8 | 70.5 |
| Atlantic Coast Electric Ry..... | 36.1 | 77,562 | 20.3 | 17,883 | 65,083 | 9.4 | 5.00 | 22.4 | 2.11 | 27.5 | 15.9 | 57.9 |
| Bridgeton & Millville Traction Co.. | 37.9 | 26,385 | 36.3 | 3,225 | 16,136 | 9.6 | 4.32 | 19.7 | 1.90 | 20.0 | 17.9 | 89.6 |
| Burlington County Transit Co..... | 14.8 | 8,108 | 15.8 | 4,453 | 23,350 | 9.5 | 5.00 | 18.5 | 1.76 | 19.0 | 16.9 | 87.3 |
| Cape May, D. B. & S. Pt. R. R..... | 13.7 | 21,898 | 10.4 | 1,671 | 13,033 | 8.3 | 3.00 | 12.8 | 1.08 | 12.8 | 22.1 | 172.4 |
| Central Passenger Ry..... | 2.8 | 104,354 | 2.1 | 10,544 | 56,300 | 5.6 | 2.10 | 17.8 | 1.00 | 18.7 | 17.6 | 94.1 |
| Five Mile Beach Electric Ry..... | 5.7 | 44,859 | 4.9 | 9,298 | 54,759 | 8.3 | 5.00 | 16.6 | 1.38 | 16.9 | 9.3 | 54.7 |
| Jersey Central Traction Co..... | 35.4 | 84,746 | 36.8 | 6,356 | 25,500 | 10.8 | 4.90 | 23.7 | 2.58 | 24.8 | 12.8 | 51.0 |
| Millville Traction Co..... | 12.5 | 30,640 | 12.5 | 4,019 | 25,511 | 9.6 | 4.82 | 14.6 | 1.41 | 15.8 | 17.1 | 108.6 |
| Monmouth County Electric Co..... | 17.7 | 46,610 | 15.0 | 5,111 | 35,316 | 10.7 | 5.00 | 13.9 | 1.40 | 14.5 | 14.0 | 96.8 |
| Morris County Traction Co..... | 66.8 | 68,093 | 50.0 | 6,914 | 27,621 | 10.6 | 5.80 | 25.7 | 2.73 | 25.8 | 17.6 | 68.0 |
| New Jersey & Penna. Traction Co.. | 14.9 | 107,382 | 13.3 | 5,963 | 23,159 | 15.6 | 4.94 | 25.5 | 3.98 | 25.7 | 17.5 | 67.9 |
| New Jersey Rapid Transit Co..... | 6.0 | 53,333 | 6.0 | ..... | ..... | ..... | 5.00 | ..... | ..... | ..... | ..... | 121.7 |
| Northampton-Easton & W. Tr. Co.. | 18.0 | 112,431 | 18.0 | 3,341 | 12,125 | 16.3 | 5.00 | 27.0 | 4.41 | 27.6 | 14.3 | 51.8 |
| North Jersey Rapid Transit Co.. | 14.5 | 110,345 | 15.2 | 3,879 | 19,569 | 15.1 | 9.08 | 19.7 | 2.97 | 19.8 | 14.2 | 71.7 |
| Ocean City Electric R. R..... | 10.0 | 17,500 | 10.0 | 2,143 | 16,060 | 9.2 | 5.00 | 13.3 | 1.22 | 13.3 | 11.2 | 83.9 |
| Phillipsburg Horse Car R. R..... | 7.1 | 4,360 | 6.9 | 16,959 | 77,288 | 8.4 | 5.00 | 21.8 | 1.83 | 21.9 | 15.5 | 70.5 |
| Point Pleasant Traction Co..... | 3.2 | 62,112 | 3.1 | 2,557 | 15,927 | 6.7 | 5.00 | 15.8 | 1.06 | 16.1 | 12.4 | 77.0 |
| Public Service Railroad Co..... | *46.7 | †48,536 | 39.8 | 4,328 | 17,066 | 23.5 | 18.72 | 25.1 | 5.89 | 25.4 | 15.8 | 62.4 |
| Public Service Ry..... | *835.6 | †161,310 | 491.2 | 32,236 | 104,116 | 9.2 | 4.98 | 30.6 | 2.83 | 31.0 | 17.3 | 55.8 |
| Trenton & Mercer Co. Tr. Corp.... | *74.1 | †67,902 | 53.2 | 14,420 | 59,226 | 8.8 | 4.33 | 24.2 | 2.12 | 24.3 | 13.3 | 54.6 |

*Miles of track operated.

†Capitalization per mile of track operated, including capitalization of lessor companies.

Electric Railway Statistics

Comparison of Returns for June, 1917, and for the Six Months, January-June, 1917, with Those for 1916 Show Rising Costs

A comparison of electric railway statistics for the six months, January-June, 1917, with figures for the corresponding months of 1916, made by the information bureau of the American Electric Railway Association, indicates that the expenses during this period have increased faster than the revenues. The rising costs of materials and supplies, together with increases in wages and taxes paid, have disastrously affected electric railways throughout the country and particularly those operating in the Eastern district.

Data for the six months ending June 30, 1917, representing 8388 miles of line of electric railways scattered throughout the country, figured on the per mile of line basis, indi-

cate an increase in operating revenues of but 3.14 per cent, while operating expenses increased 7.67 per cent and net earnings decreased 4.70 per cent. Passenger revenues increased but 2.57 per cent, while all other railway operating revenues increased 12.61 per cent. Data representing approximately 80 per cent of the above mileage show an increase in the amount of taxes paid of 6.46 per cent and a decrease in operating income of 7.74 per cent.

The returns from the city and interurban electric railway companies as shown in detail in the accompanying tables 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 and the Western apparently indicate a slight degree of improvement over the corresponding period of the previous year,

TABLE I—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR SIX MONTHS, JANUARY-JUNE, 1917 AND 1916

| Account | UNITED STATES | | | | EASTERN DISTRICT | | | | SOUTHERN DISTRICT | | | | WESTERN DISTRICT | | | |
|--|---------------------------|------------------|----------|------------|---------------------------|------------------|----------|------------|---------------------------|------------------|---------|------------|---------------------------|------------------|----------|------------|
| | Amount January-June, 1917 | Per Mile of Line | | | Amount January-June, 1917 | Per Mile of Line | | | Amount January-June, 1917 | Per Mile of Line | | | Amount January-June, 1917 | Per Mile of Line | | |
| | | 1917 | 1916 | % Increase | | 1917 | 1916 | % Increase | | 1917 | 1916 | % Increase | | 1917 | 1916 | % Increase |
| Operating revenues | \$97,795,096 | \$11,659 | \$11,303 | 3.14 | \$60,749,153 | \$12,073 | \$11,833 | 2.03 | \$8,138,170 | \$8,202 | \$7,881 | 4.07 | \$28,907,773 | \$12,229 | \$11,622 | 5.22 |
| Passenger revenues | 91,654,289 | 10,927 | 10,653 | 2.57 | 56,129,096 | 11,155 | 11,030 | 1.13 | 7,692,877 | 7,753 | 7,468 | 3.81 | 27,832,316 | 11,774 | 11,197 | 5.15 |
| Other railway operating revenues | 6,140,807 | 732 | 650 | 12.61 | 4,620,057 | 918 | 803 | 14.32 | 445,293 | 449 | 413 | 8.71 | 1,075,457 | 455 | 425 | 7.05 |
| Operating expenses | 64,730,751 | 7,717 | 7,167 | 7.67 | 41,191,266 | 8,186 | 7,515 | 8.93 | 4,624,657 | 4,661 | 4,455 | 4.62 | 18,914,828 | 8,001 | 7,575 | 5.62 |
| Net earnings | 33,064,345 | 3,942 | 4,136 | 14.70 | 19,557,887 | 3,887 | 4,318 | 19.98 | 3,513,513 | 3,540 | 3,426 | 3.32 | 9,992,945 | 4,228 | 4,047 | 4.47 |
| Operating ratio, per cent. | 1917, 66.18; 1916, 63.40 | | | | 1917, 67.80; 1916, 63.51 | | | | 1917, 56.83; 1916, 56.53 | | | | 1917, 65.42; 1916, 65.17 | | | |
| Average number of miles of line represented. | 1917, 8,388; 1916, 8,307 | | | | 1917, 5,032; 1916, 4,977 | | | | 1917, 992; 1916, 989 | | | | 1917, 2,364; 1916, 2,341 | | | |

COMPANIES REPORTING TAXES

| | | | | | | | | | | | | | | | | |
|--|--------------------------|----------|----------|-------|--------------------------|----------|----------|-------|--------------------------|---------|---------|-------|--------------------------|----------|----------|------|
| Operating revenues | \$91,253,987 | \$12,963 | \$12,606 | 2.83 | \$58,068,248 | \$13,714 | \$13,504 | 1.56 | \$4,707,240 | \$8,729 | \$8,363 | 4.38 | \$28,478,499 | \$12,568 | \$11,954 | 5.14 |
| Passenger revenues | 85,564,600 | 12,155 | 11,888 | 2.24 | 53,790,752 | 12,704 | 12,617 | 0.69 | 4,356,683 | 8,079 | 7,789 | 3.72 | 27,417,165 | 12,100 | 11,518 | 5.05 |
| Other railway operating revenues | 5,689,387 | 808 | 718 | 12.53 | 4,277,496 | 1,010 | 887 | 13.87 | 350,557 | 650 | 574 | 13.24 | 1,061,334 | 468 | 436 | 7.34 |
| Operating expenses | 60,569,801 | 8,604 | 8,010 | 7.41 | 39,425,253 | 9,311 | 8,598 | 8.29 | 2,568,309 | 4,763 | 4,470 | 6.55 | 18,576,239 | 8,198 | 7,768 | 5.54 |
| Net earnings | 30,684,186 | 4,359 | 4,596 | 15.16 | 18,642,995 | 4,403 | 4,906 | 10.25 | 2,138,931 | 3,966 | 3,893 | 1.88 | 9,902,260 | 4,370 | 4,186 | 4.40 |
| Taxes | 6,264,973 | 890 | 836 | 6.46 | 3,855,521 | 911 | 849 | 7.30 | 382,108 | 709 | 651 | 8.91 | 2,027,344 | 895 | 858 | 4.31 |
| Operating income | 24,419,213 | 3,469 | 3,760 | 17.74 | 14,787,474 | 3,492 | 4,057 | 13.93 | 1,756,823 | 3,257 | 3,242 | 0.46 | 7,874,916 | 3,475 | 3,328 | 4.32 |
| Operating ratio, per cent. | 1917, 66.37; 1916, 63.54 | | | | 1917, 67.89; 1916, 63.67 | | | | 1917, 54.57; 1916, 53.45 | | | | 1917, 65.23; 1916, 64.98 | | | |
| Average number of miles of line represented. | 1917, 7,039; 1916, 6,963 | | | | 1917, 4,234; 1916, 4,179 | | | | 1917, 539; 1916, 539 | | | | 1917, 2,266; 1916, 2,245 | | | |

↓Decrease.

NOTE.—There were twenty-nine days in February, 1916, and only twenty-eight days in February, 1917.

TABLE II—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR JUNE, 1917 AND 1916

| Account | UNITED STATES | | | | EASTERN DISTRICT | | | | SOUTHERN DISTRICT | | | | WESTERN DISTRICT | | | |
|--|--------------------------|------------------|---------|------------|--------------------------|------------------|---------|------------|--------------------------|------------------|---------|------------|--------------------------|------------------|---------|------------|
| | Amount June, 1917 | Per Mile of Line | | | Amount June, 1917 | Per Mile of Line | | | Amount June, 1917 | Per Mile of Line | | | Amount June, 1917 | Per Mile of Line | | |
| | | 1917 | 1916 | % Increase | | 1917 | 1916 | % Increase | | 1917 | 1916 | % Increase | | 1917 | 1916 | % Increase |
| Operating revenues | \$19,727,549 | \$2,193 | \$2,074 | 5.73 | \$13,339,219 | \$2,364 | \$2,232 | 5.91 | \$1,437,080 | \$1,448 | \$1,371 | 5.62 | \$4,951,250 | \$2,100 | \$1,995 | 5.26 |
| Operating expenses | 12,449,478 | 1,384 | 1,287 | 8.04 | 8,468,207 | 1,501 | 1,375 | 9.16 | 808,284 | 815 | 768 | 6.12 | 3,172,987 | 1,346 | 1,277 | 5.40 |
| Net earnings | 7,278,071 | 809 | 797 | 2.01 | 4,871,012 | 863 | 857 | 0.70 | 628,796 | 633 | 603 | 4.98 | 1,778,263 | 754 | 718 | 5.01 |
| Operating ratio, per cent. | 1917, 63.11; 1916, 61.76 | | | | 1917, 63.50; 1916, 61.60 | | | | 1917, 56.28; 1916, 56.02 | | | | 1917, 64.10; 1916, 64.01 | | | |
| Average number of miles of line represented. | 1917, 8,993; 1916, 8,901 | | | | 1917, 5,643; 1916, 5,578 | | | | 1917, 992; 1916, 989 | | | | 1917, 2,358; 1916, 2,334 | | | |

COMPANIES REPORTING TAXES

| | | | | | | | | | | | | | | | | |
|--|--------------------------|---------|---------|------|--------------------------|---------|---------|-------|--------------------------|---------|---------|-------|--------------------------|-------|---------|------|
| Operating revenues | \$14,514,297 | \$2,180 | \$2,080 | 4.81 | \$8,807,214 | \$2,283 | \$2,186 | 4.43 | \$828,517 | \$1,536 | \$1,458 | 5.35 | \$4,878,536 | 2,158 | \$2,053 | 5.11 |
| Operating expenses | 9,287,870 | 1,395 | 1,306 | 6.81 | 5,719,053 | 1,483 | 1,380 | 7.46 | 453,286 | 841 | 772 | 8.94 | 3,115,531 | 1,378 | 1,310 | 5.19 |
| Net earnings | 5,226,427 | 785 | 774 | 1.41 | 3,088,191 | 800 | 805 | 0.62 | 375,231 | 695 | 686 | 1.31 | 1,763,005 | 780 | 743 | 4.98 |
| Taxes | 950,388 | 143 | 134 | 6.71 | 537,224 | 139 | 131 | 6.10 | 70,909 | 131 | 109 | 20.18 | 342,255 | 151 | 146 | 3.42 |
| Operating income | 4,276,039 | 642 | 640 | 0.31 | 2,550,967 | 661 | 674 | 11.93 | 304,322 | 564 | 577 | 12.25 | 1,420,750 | 629 | 597 | 5.36 |
| Operating ratio, per cent. | 1917, 63.99; 1916, 62.78 | | | | 1917, 64.95; 1916, 63.12 | | | | 1917, 54.75; 1916, 52.95 | | | | 1917, 63.86; 1916, 63.81 | | | |
| Average number of miles of line represented. | 1917, 6,657; 1916, 6,570 | | | | 1917, 3,857; 1916, 3,793 | | | | 1917, 539; 1916, 539 | | | | 1917, 2,261; 1916, 2,238 | | | |

while returns for the Eastern are decidedly unsatisfactory. Data for the latter district representing 5032 miles of line indicate an increase in operating revenues of 2.03 per cent and in operating expenses of 8.93 per cent, and a decrease in net earnings of 9.98 per cent. Returns representing approximately 80 per cent of the above mileage show an increase in the amount of taxes paid of 7.30 per cent and a decrease in operating income of 13.93 per cent.

Returns for the Southern and Western groups indicate that expenses have increased at approximately the same percentage rate as the earnings. The Southern group, however, shows an increase in net earnings of about 3 per cent, while the Western has gained about 4 per cent. The operating income of the Southern group has increased less than one-half of 1 per cent, while that of the Western has increased approximately 4 per cent.

The operating ratio for the country as a whole has increased from 63.40 in 1916 to 66.18 in 1917. The operating ratio of the Eastern district has increased from 63.51 in 1916 to 67.80 in 1917. The operating ratios of the Southern and Western groups have changed but little.

Rochester-Syracuse Line Reorganized

The Rochester & Syracuse Railway, Inc., Syracuse, N. Y., has been incorporated as the successor to the Rochester, Syracuse & Eastern Railroad, the property of which was sold under foreclosure on Aug. 28. The new company will have \$3,000,000 of preferred and \$1,500,000 of common stock. Arthur W. Loasby will be president of the new company; T. C. Cherry, vice-president and general manager, and Elbert A. Hervey, treasurer.

Interest in default on the bonds of the Rochester, Syracuse & Eastern Railroad will be paid in full. This interest amounts to \$100 on each \$1,000 bond up to last May. The new company will take control on Oct. 31. It will have \$250,000 cash, representing the amount saved by the bondholders' protective committee and C. Loomis Allen, the receiver of the company, during the last eighteen months and profits expected during the next seven and one-half weeks.

The reorganization committee will deliver to the certificate holders in the plan for each \$1,000 first mortgage gold bond of the Rochester, Syracuse & Eastern Railroad bonds and stocks of the new company as follows: \$500 par value of first mortgage 5 per cent bonds, \$500 of 6 per cent cumulative preferred stock; \$100 of 6 per cent cumulative preferred stock, for unpaid interest, and \$200 of common stock.

Originally there were outstanding \$4,897,000 of Rochester, Syracuse & Eastern Railroad bonds. Of this amount \$4,850,000 was turned over to the bondholders' protective committee when the Empire United Railways, Inc., of which system the Rochester, Syracuse & Eastern Railroad was a part, went into the hands of receivers. By the reorganization junior securities, including preferred and common stock of the old company, are wiped out as far as possessing value are concerned.

A digest of the plan of reorganization was published in the *ELECTRIC RAILWAY JOURNAL* of May 26, page 977.

Receiver for Hornell Traction

Increased Cost of Operation One of Factors Contributing to Trials of Company

Robert W. Bull was appointed receiver for the Hornell (N. Y.) Traction Company on Sept. 20 by Federal Judge John R. Hazel of the United States District Court. Application for the appointment for a receiver was made by the Anstock Company, Carson City, Nev. It is set forth in the application to the court that on Aug. 1 last the Hornell Traction Company defaulted in the payment of \$1,400 interest on bonds due on that date, and that the company is threatened with a multiplicity of court actions as the result of an accident on April 21, 1917. Charles Adsit, president of the company, admitted the allegations in the application for a receiver and said that a resolution was passed by the directors of the company in which they joined in the request for the appointment of a receiver. It is stated that the company has been able to pay all current bills and that there are no general creditors.

Henry Adsit Bull, secretary and treasurer of the Anstock Company, and attorney for the complainant, says in an affidavit filed with the court that the financial difficulties of the Hornell Traction Company have resulted from a decrease of earnings and an increase in the cost of operations. He says the defendant has filed application with the Public Service Commission for leave to put into effect a 6-cent rate of fare.

In addition to being a creditor to the extent of \$25,652 with interest from Aug. 8, the Anstock Company is the owner and holder of thirty-five shares of the capital stock of the Hornell Traction Company.

On April 21, 1917, the company had a serious accident, and there are now pending in the courts almost a score of claims for personal injuries so that the Anstock Company says that the property of the company is subject to judgment executions.

The receiver has been instructed by the court to continue the lines in operation.

The company was formed on Oct. 1, 1908, by the consolidation of the Hornellsville Electric Railway and the Hornellsville & Canisteo Railway. It owns and operates the local lines in Hornell, N. Y., and a 4.8 mile interurban line between Hornell and Canisteo.

Danbury & Bethel Street Railway, Danbury, Conn.—A change in the ownership and management of the Danbury & Bethel Street Railway and the Bridgeport & Danbury Electric Railway has been announced. S. W. C. Jones, Greenwich, who held a controlling interest in the properties, and John Sanders, president and general manager, have retired. Stephen Crute, New York, one of the new owners, has succeeded Mr. Sanders as president, and George P. Klinzing, Danbury, becomes secretary and treasurer in place of Mr. Jones.

Jamestown, Westfield & Northwestern Railroad, Jamestown, N. Y.—The Jamestown, Westfield & Northwestern Railroad has applied to the New York Public Service Commission, Second District, for permission to execute a mortgage of \$5,000,000 and to issue thereunder \$1,000,000 of 5 per cent thirty-year gold bonds. The commission proposed to hold a hearing on the application on Sept. 26.

Leavenworth & Topeka Railway, Leavenworth, Kan.—The Leavenworth & Topeka Railway has been sold by the Santa Fé and the Union Pacific Railroads to a corporation headed by F. L. Wells, Chicago, Ill. New directors, officers and an executive committee were named. A plan for permanent operation of the road will be worked out at once by the executive committee, it was announced. Until Judge John C. Pollock of the federal court lifts the receivership and approves the new ownership, W. A. Austin, Leavenworth, the receiver, will continue to operate the road. The railway is 47 miles long. It has many times been the subject of consideration for electrification.

London & Lake Erie Railway & Transportation Company, London, Ont.—In its issue of Sept. 19 the *Toronto Globe* said in part under a London date line: "The bondholders of the London & Lake Erie Railway & Transportation Company met here to-day and decided to sell the road, either in bulk or in parcels, unless the municipalities interested decide to assist it financially. This is London's pioneer radial railway, having been constructed about thirteen years ago through Lambeth, Talbotville, St. Thomas and Union to Port Stanley, and it is claimed would have paid the company had not the city electrified the London & Port Stanley Railway. As the municipalities traversed by the railway will be seriously affected by the withdrawal of the present service, it was considered probable that they would take some action to retain the railway, possibly by purchase for conversion into a hydro-radial. A resolution was passed by the bondholders instructing a committee to communicate with the clerk of each municipality and to report back at an early date."

Providence & Fall River Street Railway, Swansea Center, Mass.—The Providence & Fall River Street Railway suspended service at noon on Sept. 22. Karl André, Boston, Mass., who purchased the property under foreclosure, has announced that he has given a one-week option on the road to A. H. Barney and others of Swansea, Mass. If the option is not taken up, the work of tearing up the rails will

begin at once. The Rhode Island Company, Providence, R. I., which has brought the "Snake Line" cars to Providence from the State line, has announced a new schedule to Luther's Corners, giving hourly service. It is announced that the Bay State Street Railway will continue to operate cars from the Somerset and Swansea lines. This leaves a break of about 11 miles in which there is no electric railway service because of the suspension of the Providence & Fall River Street Railway. Mr. Andr en has sold some of the rolling stock to the Newport & Providence Railway and the Fitchburg & Leominster Street Railway. He says he will saw the 60-ft. rails in half and redrill them for foreign shipment unless Mr. Barney takes up the option. Mr. Andr en at first offered it to the committee for \$100,000, but as he has now sold four of the cars, he has cut the price to \$90,000. He requires a deposit of \$20,000 by noon on Sept. 29, if the option is taken up, the remainder of the purchase price to be paid within sixty days from that time, and the first payment of \$20,000 to stand as forfeited if the remainder is not paid within the time allowed.

Traffic and Transportation

Oregon Commission Has Fare Power Attorney General of Oregon Advises Commission That It Has Full Control of Railway Rates in Cities

Attorney General Brown of Oregon recently advised the Public Service Commission that that body is vested with full powers to raise or lower electric railway rates in the cities of the State, provided that after a full and complete hearing the facts justify such action. The opinion was asked for by Commissioner Buchtel to determine to what extent the commission has power to pass upon the application of the Portland Railway, Light & Power Company for an increased fare on its railway lines. In his opinion the Attorney General said:

WHAT THE ATTORNEY GENERAL SAID

"It has been the opinion of this office ever since preparing and filing brief in the Supreme Court of Oregon in the Woodburn case, 82 Oregon 114, that the Public Service Commission of this State is vested with the power to raise or lower passenger rates in the various cities of the State. The public utility law of Oregon was adopted by the Legislative Assembly of 1911, referred to the people and adopted by them at the November, 1912, election. This law is a general law, which affects all towns and cities alike, within the boundaries of Oregon. The utility act plainly provides whenever upon investigation the commission shall find any existing rate or rates unjust, unreasonable, insufficient, or unjustly discriminatory, it shall determine and by order fix reasonable rates of tolls, to be imposed and followed in the future, in lieu of those found to be unjust, unreasonable, insufficient, or unjustly discriminatory."

In referring to an act of 1901, which provides a maximum 5-cent fare for railways in cities of more than 50,000 inhabitants, Attorney General Brown said:

LEGISLATURE CURTAILED CITY'S POWER

"The records of the Circuit Court of Multnomah County show that in the case of the State of Oregon, ex rel. vs. Portland Railway, Light & Power Company, an action of mandamus was instituted against said company, and it was held by Judge Cavanaugh that the public utilities law superseded said act. I have carefully examined the various charters under which the franchises here involved were given. All but two of the charters were granted before the passage of the public utility act. There can be no question that the Legislature by the passage of the public utility act took away from the cities of the State the power to fix rates in future franchises. The only question remaining, therefore, is as to whether or not the cities of Portland and East Portland had authority under any of the numerous charters of the Legislature referred to to fix the rates irrevocably. I have made a careful study of all of these charters, and find no such provisions."

Reduced-Rate Tickets Eliminated

This Measure Authorized by Massachusetts Commission to Provide Sufficient Revenue in Conjunction with Six-Cent Fare

Reduced-rate tickets are eliminated and a straight 6-cent fare authorized on the New Bedford & Onset Street Railway, New Bedford, Mass., by a recent decision of the Public Service Commission of Massachusetts. In September, 1915, the commission issued a finding permitting the company to increase its unit cash fare from 5 cents to 6 cents, and to sell tickets, good at any time, at the rate of twenty for \$1. On June 25, 1917, the company petitioned for authority to withdraw these tickets. The company sought this concession because the increase already permitted had failed to produce the desired financial results, and because of the

Electric Railway Monthly Earnings

| BATON ROUGE (LA.) ELECTRIC COMPANY | | | | | |
|--|-------------------|--------------------|------------------|---------------|------------|
| Period | Operating Revenue | Operating Expenses | Operating Income | Fixed Charges | Net Income |
| 1m., July, '17 | \$19,992 | *\$10,426 | \$9,566 | \$3,548 | \$6,018 |
| 1 " " '16 | 17,421 | *8,516 | 8,905 | 3,501 | 5,404 |
| 12 " " '17 | 224,722 | *109,727 | 114,995 | 42,354 | 72,641 |
| 12 " " '16 | 205,216 | *104,420 | 100,796 | 36,264 | 64,532 |
| BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS. | | | | | |
| 1m., July, '17 | \$15,560 | *\$11,067 | \$4,493 | \$1,239 | \$3,254 |
| 1 " " '16 | 15,256 | *9,795 | 5,461 | 1,109 | 4,352 |
| 12 " " '17 | 125,866 | *120,294 | 5,572 | 13,926 | †8,354 |
| 12 " " '16 | 118,790 | *102,389 | 16,401 | 13,244 | 3,157 |
| CLEVELAND, PAINESVILLE & EASTERN RAILWAY, WILLOUGHBY, OHIO | | | | | |
| 1m., July, '17 | \$56,772 | *\$33,540 | \$23,232 | \$11,439 | \$11,793 |
| 1 " " '16 | 50,976 | *24,555 | 26,421 | 11,468 | 14,953 |
| 7 " " '17 | 300,093 | *186,100 | 113,993 | 82,007 | 31,986 |
| 7 " " '16 | 261,592 | *146,017 | 115,575 | 79,630 | 35,945 |
| COLUMBUS (GA.) ELECTRIC COMPANY | | | | | |
| 1m., July, '17 | \$87,491 | *\$35,953 | \$51,538 | \$31,075 | \$20,463 |
| 1 " " '16 | 70,246 | *28,591 | 41,655 | 28,651 | 13,004 |
| 12 " " '17 | 1,005,468 | *381,253 | 624,215 | 344,726 | 279,489 |
| 12 " " '16 | 795,636 | *335,427 | 460,209 | 344,115 | 116,094 |
| DALLAS (TEX.) ELECTRIC COMPANY | | | | | |
| 1m., July, '17 | \$163,707 | *\$103,895 | \$59,812 | \$35,164 | \$24,648 |
| 1 " " '16 | 144,235 | *93,484 | 50,751 | 31,296 | †21,455 |
| 12 " " '17 | 2,139,920 | *1,289,073 | 850,847 | 414,661 | †440,329 |
| 12 " " '16 | 1,901,270 | *1,176,633 | 724,637 | 364,966 | †374,870 |
| GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX. | | | | | |
| 1m., July, '17 | \$175,143 | *\$116,321 | \$58,822 | \$37,192 | \$21,630 |
| 1 " " '16 | 172,935 | *100,904 | 72,031 | 36,280 | 35,751 |
| 12 " " '17 | 1,962,079 | *1,301,593 | 660,486 | 443,142 | 217,344 |
| 12 " " '16 | 1,902,376 | *1,200,898 | 701,478 | 436,822 | 264,656 |
| HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH. | | | | | |
| 1m., July, '17 | \$31,927 | *\$17,127 | \$14,800 | \$5,098 | \$9,702 |
| 1 " " '16 | 31,808 | *15,966 | 15,842 | 5,241 | 10,601 |
| 12 " " '17 | 340,201 | *200,597 | 139,604 | 62,095 | 77,509 |
| 12 " " '16 | 310,051 | *172,408 | 137,643 | 65,324 | 72,319 |
| LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO | | | | | |
| 1m., July, '17 | \$171,234 | *\$106,242 | \$64,992 | \$35,120 | \$29,872 |
| 1 " " '16 | 164,595 | *90,293 | 74,302 | 36,704 | 37,598 |
| 7 " " '17 | 985,156 | *671,306 | 313,850 | 241,163 | 72,687 |
| 7 " " '16 | 886,916 | *574,179 | 312,737 | 254,517 | 58,220 |
| NORTHERN TEXAS ELECTRIC COMPANY, FT. WORTH, TEX. | | | | | |
| 1m., July, '17 | \$190,881 | *\$116,601 | \$74,280 | \$29,149 | \$45,131 |
| 1 " " '16 | 155,966 | *98,260 | 57,706 | 28,692 | 29,014 |
| 12 " " '17 | 2,123,306 | *1,245,755 | 877,551 | 349,706 | 527,845 |
| 12 " " '16 | 1,836,071 | *1,123,367 | 712,704 | 340,559 | 372,145 |
| PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY. | | | | | |
| 1m., July, '17 | \$25,180 | *\$19,240 | \$5,940 | \$7,545 | †\$1,605 |
| 1 " " '16 | 26,379 | *18,087 | 8,292 | 7,161 | 1,131 |
| 12 " " '17 | 308,693 | *226,846 | 81,847 | 87,504 | †5,657 |
| 12 " " '16 | 304,669 | *194,841 | 109,828 | 88,063 | 21,765 |
| PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH. | | | | | |
| 1m., July, '17 | \$586,369 | *\$401,049 | \$185,320 | \$192,735 | †\$7,415 |
| 1 " " '16 | 663,746 | *418,230 | 245,516 | 184,645 | 60,871 |
| 12 " " '17 | 8,734,738 | *5,318,965 | 3,415,775 | 2,263,456 | 1,152,319 |
| 12 " " '16 | 7,709,641 | *4,954,027 | 2,755,614 | 2,202,476 | 553,138 |
| SAVANNAH (GA.) ELECTRIC COMPANY | | | | | |
| 1m., July, '17 | \$78,072 | *\$53,543 | \$24,529 | \$24,352 | \$177 |
| 1 " " '16 | 69,445 | *45,193 | 24,252 | 23,705 | 547 |
| 12 " " '17 | 897,533 | *595,688 | 301,845 | 286,972 | 14,873 |
| 12 " " '16 | 791,697 | *532,425 | 259,272 | 280,073 | †20,801 |
| TAMPA (FLA.) ELECTRIC COMPANY | | | | | |
| 1m., July, '17 | \$78,623 | *\$45,136 | \$33,487 | \$4,369 | \$29,118 |
| 1 " " '16 | 74,625 | *41,162 | 33,463 | 4,396 | 29,067 |
| 12 " " '17 | 1,001,735 | *546,826 | 454,909 | 52,228 | 402,681 |
| 12 " " '16 | 970,873 | *519,362 | 451,511 | 52,287 | 399,224 |

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

burden imposed by higher wages and prevailing abnormal prices for coal and other materials.

In the year following the increase to a 6-cent fare unit, beginning in October, 1915, the traffic fell off 9.13 per cent, while passenger revenue increased about 4.45 per cent. The actual increase in earnings was \$5,360.95. In the nine months ended June, 1917, the results were only slightly more favorable. The increase in the number of passengers using reduced-rate tickets for the years ended June 30, 1915, and 1917, is shown in the following table:

| | 1915 | | 1917 | |
|-------------------------|-----------|----------|-----------|----------|
| | Number | Per Cent | Number | Per Cent |
| Cash fares | 1,890,022 | 69.44 | 1,112,553 | 47.23 |
| Reduced-rate tickets... | 678,811 | 29.94 | 1,122,265 | 47.64 |
| School tickets | 128,610 | 4.72 | 96,968 | 4.12 |
| Excursion tickets | 24,433 | 0.90 | 19,230 | 0.19 |
| Through tickets ..... | ..... | ..... | 4,587 | 0.82 |
| | 2,721,876 | 100.00 | 2,355,603 | 100.00 |

The results in net income have been even less satisfactory on account of increased operating expenses; the net income fell from \$19,209 in 1912 to \$6,807 in 1917, with a deficit of \$9,286 in the year following the fare increase. Since 1915 the total wage increase has been about \$9,500 a year. Maintenance expense has been increased by grade changes required by the State and by extensive renewals of pole lines. Some of these expenses are probably abnormal, but the commission sees little prospect of a decrease in the total expense of operation while prices of materials and supplies remain at their present level. The company now buys its power and the unit price fluctuates, under the terms of the contract, with the market price of coal. On this account it is estimated that power will cost \$7,000 more than last year. The abolition of reduced-fare tickets, it is thought, will not yield more than \$11,000, and that if the company meets its requisite maintenance and fixed charges there can be no excessive return upon the investment.

DECREASED PATRONAGE NOT DUE TO FARE INCREASE

The company held that the decrease in passengers riding cannot be attributed solely or even principally to the increase in fares. A constant falling off of both business and pleasure riding had been noted before the higher fare went into effect. The company maintains that the higher fare yielded at least 10 per cent more in receipts than otherwise would have been attained. The increased use of automobiles is said to be a primary factor in the decrease in traffic.

Rehearing of Seattle Fare Case

Court Orders Rehearing of Evidence in Case Eliminating Four-Cent Fares

A writ of review ordering a rehearing of the evidence in the case of the petition of the Puget Sound Traction, Light & Power Company, Seattle, to the Public Service Commission of Washington, for the rescinding of the 4-cent fare in Seattle, was granted by the Superior Court of Thurston County at Olympia, on Sept. 19. The writ is returnable on Oct. 10. At that time the case will be reopened and the evidence reviewed before the attorneys of the company and of the city of Seattle. The writ was issued upon the petition of Hugh M. Caldwell, corporation counsel for Seattle. It was contended, among other things:

"That the order signed by the commission was and is unreasonable and unlawful, especially in that it assumes that \$15,000,000 is the value of the railway properties of the company when, in truth and in fact, the commission has never determined the valuation of the respondent's system in Seattle, and had before it at the time of accepting said valuation as the basis of its order that the 4-cent ticket was an unreasonably low rate no competent evidence of the value of the company's property upon which it should be permitted to figure a reasonable return. That the commission is not authorized by law to direct or permit the elimination of a commutation ticket which the company has specifically agreed to furnish and sell as a condition to its right to occupy the streets of Seattle. That the commission based its order upon incompetent and secondary evidence, and denied to the complainant, the city of Seattle, the right to cross-examine witnesses and the right to examine the evidence considered by the commission."

Ambitious Auto Service Proposed

The General Motor Transportation Company has been authorized by the Railroad Commission of California to issue \$40,000 of common capital stock, to be sold at not less than \$90 a share, and to operate jitneys between Oakland and San Jose. The proceeds from the sale of stock is to be deposited in a bank as trust funds on condition that at least \$36,000 shall be deposited before Dec. 15, 1917, or a later date to be determined by the commission, and if this sum is not deposited all money shall be repaid to stock purchasers. The company intends to operate six twenty-six passenger motor buses on an hourly service between Oakland and San Jose on the east side of San Francisco Bay. Permission was also asked by the company to operate between San Jose and Palo Alto, but this was denied by the commission, the evidence showing that the auto service at present operating between these points is satisfactory and adequate to take care of the present business.

Indianapolis Regulates Jitneys

The City Council of Indianapolis, Ind., has passed an ordinance regulating the operation of jitney buses in that city. It provides that no more than the comfortable seating capacity of the car shall be carried, based on the designated seating capacity of the model of car used. A license is fixed at \$10 for cars seating five passengers, \$15 for cars seating seven passengers, and \$25 for cars seating twelve or more passengers. Jitney operators must also file indemnity bonds providing for damages not exceeding \$2,500 for one person and \$5,000 for any one accident. The ordinance also provides that the route to be followed must be designated, and that this route cannot be changed until the operator has filed a notice of the new route with the city controller. The driver must charge a 5-cent fare unless the amount is specified by a large sign displayed on the front of the car.

Jitney buses were not in operation in Indianapolis to any extent until during the past winter when the work of elevating the railroad tracks through the Union Station and across the city closed up temporarily some of the main streets, making necessary a rerouting of some of the South Side lines of the Indianapolis Traction & Terminal Company. A jitney organization was formed then and a number of buses have since been in operation between the center of the city and points on the South Side. Carelessness in operation, fast running and incompetent drivers have caused many accidents, and the ordinance passed by the City Council was the result of the protest of business men and petitions from residents along the streets over which the jitneys operated.

Springfield Fare Case Continued

A second hearing was held recently on the application of the Springfield (Mass.) Street Railway for permission to establish two fare units and rearrange its fare zones. The Public Service Commission of Massachusetts granted attorneys for the small towns opposing the petition an extension of time to enable their experts to make investigations into the operation of the company's property. The first hearing in the case was reviewed on page 416 of the ELECTRIC RAILWAY JOURNAL for Sept. 8.

Chairman Macleod of the commission stated there was little doubt that the company needed additional revenue, and suggested that a conference of both sides be held in two weeks which might result in an agreement upon how much additional revenue is needed by the company, and how it should be obtained.

Competition with jitneys has deprived the company of approximately \$300,000 during one year, according to an estimate by an official of the company. This competition has been eliminated by an ordinance which recently went into effect requiring drivers to file a bond for \$1,000. The jitneys had been running under a \$250 bond required by the city of Agawam, and they contended that an additional bond in Springfield was unconstitutional. In a test case against the constitutionality of the ordinance the jitneys were recently defeated in police court.

New Time Schedule Issued by Meralco

The Manila Electric Railroad & Light Company, Manila, P. I., recently issued 50,000 time schedules in convenient form with the idea that they would be of mutual benefit to the public and the company. The printed matter is arranged in the most condensed way practicable and gives all the information that would be useful regarding the electric railway service. The folders give the time of regular cars; transfer points from route to route; a map showing the points served by the company, with figures to indicate the routes on each of the different lines; a rate card covering passenger service on special cars, and other useful information.

The distribution of the new schedules was made as follows: A copy was given to each passenger on the cars on Monday, Aug. 20, steamship lines and railroad ticket offices and hotels were supplied with copies, framed copies were hung in the company's waiting station and other public places and copies were distributed in China, Japan and Honolulu through steamship companies. The company used advertising in the local papers and car signs in the cars before the schedules were published to inform the patrons that every passenger would receive one of the folders on Aug. 20. Posters also were used to urge everyone to secure a schedule for future reference.

Higher-Fare Problem in Vermont

The St. Albans & Swanton Traction Company, St. Albans, Vt., contemplates placing an application with the Public Service Commission for authority to increase its revenue in order to give the public the service it requires. An open letter from George A. Murch, general manager, addressed to the citizens of the community which the company serves, states that relief from the present high costs of operation is imperative. It is pointed out that an increase of 20 per cent in fares would mean only a small increase to the company's patrons on a basis of their total earnings. For instance, a daily car rider earning \$2 per day would be affected to the extent of only 1 per cent of his income and this percentage is even less for those receiving higher wages.

In an effort to acquaint the people with this step to be taken by the company, Mr. Murch made a statement to the public in which he said:

"It has been only by ingenuity and initiative genius that electric railway managers, and those engaged in the manufacture of electric railway supplies, have averted destruction to the industry. We feel sure that our patrons will uphold us, and be willing to pay a little more in order that we may be able to keep the lines in operation, and give a service which shall be requisite to the demands."

Skip Stops Spread in Buffalo

Elimination of Stops Has Now Been Extended to Nearly All the Lines

Although less than two months have elapsed since the skip-stop system was adopted as an experiment on two lines of the International Railway, Buffalo, N. Y., the plan has worked out so successfully that it has been extended to almost every line in the city. The skip stop has been adopted very recently on eleven additional lines, and the municipal traffic commission believes that before winter it will be made effective on all of the company's Buffalo lines. The running time on the various lines has been materially cut down and the delay caused by the bunching of cars has been entirely eliminated. The speeding up of traffic has been realized by the public and letters of appreciation of the company's efforts to better the service are being received daily.

The first announcement that the skip stop is to be made effective on a certain line is displayed in the cars by a poster signed by the municipal traffic commission. The changes are always made on a Sunday morning and the list of streets at which stops will be made is published in an advertisement in all the daily newspapers of the day previous. Streets at which cars will stop are indicated by a white band painted on the nearest trolley pole and upon which has been painted the words "Car Stop."

Route Numbers on Rockford Cars.—The Rockford (Ill.) City Traction Company will install route numbers on all its city cars in Rockford.

Hearing Held on Easton Fares.—The Public Service Commission of Pennsylvania sat at Easton on Sept. 26 to hear argument on the increase of fares by the Easton Transit Company.

Skip Stop Suggested for Memphis.—E. W. Ford, general superintendent of the Memphis (Tenn.) Street Railway, has taken up with H. H. Litty, Mayor of that city, the question of installing the skip stop on certain of the lines of the electric railway.

Fares on Philadelphia & Western Railway Before Commission.—A formal hearing on the proposed increase in unit fares from 5 to 6 cents by the Philadelphia & Western Railway, Upper Darby, Pa., was held before the Public Service Commission of Pennsylvania on Sept. 28.

Rate Increase for Illinois Road.—A general increase in the rates of fare on the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., was made effective recently in accordance with a ruling by the Illinois Public Utilities Commission. The rates were increased in most instances from 1½ cents a mile to 2 cents.

Service Changes for Harrisburg Soon.—The recommendations of Bion J. Arnold, whose report on transportation conditions in Harrisburg, Pa., was briefly digested in the *ELECTRIC RAILWAY JOURNAL* for Sept. 15, page 460, will be put into effect at once in so far as they do not involve questions to be decided after conferences with the Public Service Commission.

Coasting Records in Providence.—The Rhode Island Company, Providence, R. I., during the week ended Sept. 22, installed Rico coasting recorders on the cars of the Woonsocket division. One motorman had a record of coasting 35.4 per cent for the entire run. The lowest was 20.8 per cent. On the North Main to Pascoag line the best record was 30.8 per cent, and the lowest 16.3. On the Manville-Fairmount line a high record of 28.6 was made and the low was 14.2. On the Social-South Main line the records of 29.0 and 15.6.

Commission Recommendations Accepted.—The Shore Line Electric Railway, Norwich, Conn., has written to the Public Utilities Commission of Connecticut accepting the recommendations for changes to be made in its line, as suggested by the chief engineer of the commission and reviewed briefly in the *ELECTRIC RAILWAY JOURNAL* of Sept. 22, page 553. The recommendations made by the chief engineer were the result of his examination into the causes and circumstances connected with the collision on the railway on Aug. 13.

New I. T. S. Time-Table Folder.—The Illinois Traction System, Peoria, Ill., has issued under date of Sept. 1 an exceptionally attractive folder of time-tables and other information which pictures the equipment and service the system is prepared to give. In addition to the regular local and limited trains this service includes parlor car, sleeper and observation car accommodations for patrons, the details of which are reviewed in the folder. The folder also contains pictures and descriptions of the freight service and the block signal protection, etc.

Fare Increase on Penn Yan Line.—The Penn Yan & Lake Shore Railway, Penn Yan, N. Y., has been granted permission to increase its rate of fare. A 6-cent fare will be charged between points in Penn Yan and Holmes Inn, which is now in the 5-cent fare zone. Five cents will be charged within the city limits, but nearby points just outside the city will be in the 6-cent zone. The round trip fare between Branchport and Penn Yan will be raised from 40 cents to 48 cents. There will be four fare zones on the line and an increase of 1 cent will be charged in each zone.

Higher Fares in Twin Cities.—The collection of extra fares on the municipal railways in Fort William and Port Arthur, Ont., which became effective on July 25, is proving less troublesome than anticipated. The new schedule specifies one 5-cent fare in each city, or 10 cents for an inter-city ride and other details which were enumerated on page 711 of the *ELECTRIC RAILWAY JOURNAL* for April 14. Extra conductors, stationed at the dividing line between the two cities, board the cars and assist the regular conductors to collect the second fare. As the public becomes accustomed to the

change it is intended to dispense with the extra help. Fare boxes are exchanged as before at this point so that each city will obtain the revenue collected within its limits.

All Day Express Service on New York "L."—As the result of conferences between officials of the Public Service Commission for the First District of New York and transportation experts of the Interborough Rapid Transit Company, all-day express trains will soon be run on the Third Avenue elevated line. The plan is to run southbound expresses until noon, and northbound until 7 o'clock in the evening. The express service will begin at 6.04 o'clock in the morning at the northern terminus of the road. It is expected that the service will relieve the congestion on the subway as well as on the elevated, and will greatly promote the comfort of those traveling during the rush hours. At a hearing before the commission A. G. Peacock, of counsel for the Interborough Rapid Transit Company, said that the proposed extension of the express service on the Third Avenue line would begin not later than the first week in November, although efforts would be made to start the service in October.

Hearing on Ohio Milk Case.—The hearing on the Ohio Electric Railway's new milk ruling which would bar milk from all passenger cars, was begun before the Public Utilities Commission of Ohio, on Sept. 21 and was continued through the following day. Commissioner H. G. Wilson of the Toledo Traffic Bureau conducted the examination of witnesses for the shippers. Shippers and dealers from Newark, Dayton, Springfield, Lima, Toledo, Columbus, New Bremen and Greenville were present. Replying to an inquiry, Fred J. Moore, general superintendent of the railway, said that the proposed elimination of milk from the passenger cars was desired to make more room for passengers and package freight. Asked if the company would carry milk as package freight, he said it would, but that the higher rate of freight would be charged. The shippers have construed this statement to mean that the road desires to secure a higher rate for the shipment of milk.

Court May Require Commission to Hear Fare Case.—Chief Justice Gummere has allowed a rule in the New Jersey Supreme Court, requiring the Board of Public Utility Commissioners to show cause why a writ of mandamus should not issue requiring the board to hear and dispose of the application of the Northampton, Easton & Washington Traction Company for permission to increase its rates. In the application the electric railway set forth that the board declined to hear the petition on the ground that it was without jurisdiction because the borough of Washington, Franklin Township, Hopatcong Township and Phillipsburg, in granting franchises to the company, had stipulated that 5 cents should be the maximum fare for a continuous ride between any of the points marking the zones into which the line is divided. The Northampton, Easton & Washington Traction Company operates between Phillipsburg and Port Murray, a distance of 17 miles. The fare for the entire trip is 35 cents. The company asks permission to increase it to 40 cents.

Hearing on Key Route Fares.—A preliminary hearing on the application of the San Francisco-Oakland Terminal Railways, Oakland, Cal., for permission to increase its fares was held by the Railroad Commission on Sept. 5. The company introduced in evidence detailed statistics with various analyses covering its whole operations for four years and ten months ended April 30, 1917, and demonstrating that the present fares are inadequate to meet the expenses which the carrier has incurred and must incur in order to serve the traffic. The purpose of the elaborate exhibits was to bring out the complete facts in the case and have the full force and effect of each particular fact understood. The average cost per trans-bay passenger in operating expenses, taxes and interest on bonds and fixed loans without considering any reserve for depreciation or sinking fund has been 9.37 cents. The average cost considering reserve for depreciation on various bases has ranged from 9.67 cents to 10.83 cents. The average revenue per trans-bay passenger has been 8.303 cents. The average revenue from commuters based on trips made has been 5.943 cents per trip. A detailed explanation was offered of the causes that make the expenses exceed the revenue.

Personal Mention

Charles F. Hewitt, general manager of the United Traction Company, Albany, N. Y., has resigned, effective Oct. 1.

A. E. Reynolds has been appointed acting general manager of the United Traction Company, Albany, N. Y., to succeed C. F. Hewitt.

M. D. Anton has been appointed acting stationmaster at the Springfield terminal of the Illinois Traction System, succeeding E. J. Carey.

Arthur Pontius, paymaster of the Fort Wayne division of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has resigned.

E. J. Carey, station master at Springfield for the Illinois Traction System, has been appointed acting terminal trainmaster to succeed R. R. McCoy, who entered military service.

Stephen Crute, of New York, has become president of the Danbury & Bethel Street Railway and the Bridgeport & Danbury Electric Railway, Danbury, Conn., succeeding John Sanders.

L. W. Henry has been appointed superintendent of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., to succeed Charles O. Warfel, who has been in military service since last May.

George P. Klinzing has succeeded S. W. C. Jones as secretary and treasurer of the Danbury & Bethel Street Railway and the Bridgeport & Danbury Electric Railway, Danbury, Conn., following a change in the management of the properties.

C. H. Vollmerding, assistant paymaster for the last seven years for the Fort Wayne division of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been promoted to the position of paymaster to succeed Arthur Pontius.

Walter S. Finlay, Jr., construction engineer of the Interborough Rapid Transit Company, New York, N. Y., has been appointed superintendent of motive power of that company and the New York Railways to take the place made vacant by the death of H. G. Stott some months ago.

Leon R. Mittenenthal of Waco, Tex., formerly soliciting agent for the St. Louis Southwestern Railway (Cotton Belt), and later traffic manager for the Fred A. Jones Construction Company, Dallas, has been appointed traffic manager for the Stone & Webster Management Association, Boston, Mass.

Van Dusen Rickert, assistant general manager of the Eastern Pennsylvania Railways, Pottsville, Pa., has resigned. He will remain in his position until a successor is named to L. H. Palmer, general manager, who becomes assistant to the president of the United Railways & Electric Company, Baltimore, Md.

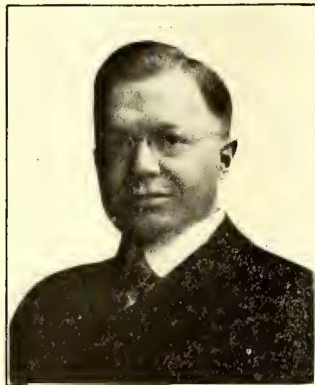
Alvin Coffman, claim agent and superintendent of transportation of the Roanoke Railway & Electric Company, Roanoke, Va., has been appointed claim adjuster for the City Railway, the People's Railway and the Oakwood Street Railway, all of Dayton, Ohio. Hitherto each company has had a separate claim department. It was thought that by combining all the departments into a single claim adjustment bureau the handling of claims could be facilitated. Before becoming connected with the Roanoke Railway & Electric Company Mr. Coffman was superintendent of the Richmond office of Pinkerton's National Detective Agency.

Daniel F. Linnehan, an investigator in the claim department of the Schenectady (N. Y.) Railway, has been appointed acting claim agent. He has been in the employ of the company for a period of twelve years, the first two of which he served in the transportation department. Mr. Linnehan entered railroad work in 1899 with the New York, New Haven & Hartford Railroad. Four years later he became a conductor for the Old Colony Street Railway, now a part of the Bay State Street Railway, Boston, Mass., and in 1905 entered the service of the Schenectady Railway in a similar

capacity. Mr. Linnehan succeeds Charles J. McAleer, who recently accepted an appointment for service in France. The claim department has since been in charge of Charles J. Witherwax, general passenger agent.

R. W. Levering, as reported in these columns, recently, has been appointed local superintendent of the Lafayette division of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.

Mr. Levering is a graduate of the electrical engineering department of Purdue University, class of 1908. He took a special two-year apprenticeship course with the Chicago, South Bend & Northern Indiana Railway immediately after graduation, and was later appointed assistant to the general superintendent of the road. He served in that capacity until April, 1911, when he went to Lafayette, Ind., to become superintendent of that division of the Fort Wayne & Northern Indiana Traction Company.



R. W. LEVERING

At the death of his father, in May, 1912, he resigned to take over his father's insurance business, and has continued in that work until the present time. Mr. Levering has been serving as a member of the Lafayette Board of Public Works and has had charge of the water works department for the last two years. In his new position he will superintend the local city electric railway system and 40 miles of interurban line, together with several local retail power systems in towns in the district.

H. C. Blackwell, vice-president and general manager of the People's Light Company, Davenport, Iowa, on Oct. 1 will become general manager of the Kansas City Light & Power Company, Kansas City, Mo. Mr. Blackwell is known in electric railway circles for his part, associated with J. G. White & Company, in building the interurban line between Alton and East St. Louis, Ill., and the electrification of the electric railway system of Centralia. He was also for a few years chief engineer of the Wabash Railroad. Mr. Blackwell was graduated from Purdue University in 1902. He went to Davenport in 1906 as engineer for the companies headed by Joseph F. Porter, now president of the Kansas City Light & Power Company. He is now a member of the board of directors of the Tri-City Railway & Light Company, the holding company of the railway and light properties of Davenport, and of which Mr. Porter was president. Mr. Blackwell is also gas engineer for the United Light & Railways Company of Grand Rapids, Mich.

Robert B. Stearns, recently appointed senior vice-president of the Bay State Street Railway, was the guest of honor at a dinner of welcome given at the Copley-Plaza Hotel, Boston, on the evening of Sept. 26. About eighty electric railway executives from New England and others interested in electric railway affairs were present. Arthur A. Ballantine, attorney Middlesex & Boston Street Railway, presided, and the speakers, besides Mr. Stearns, were Matthew C. Brush, P. F. Sullivan, L. S. Storrs, A. H. Ford, C. V. Wood and C. C. Peirce. All of these referred to the present electric railway situation in New England, and while it was felt that an increase in fares would help, the thought was expressed that that remedy alone would not entirely relieve the situation. What is needed is a broad view of the entire matter to be followed by legislation to the end that electric railway investments may again become attractive to capital. Railway managers were urged to present their views as to the proper remedies to the special committee of the Legislature now studying the questions and to stimulate an interest in the subject in the public at large. Reference was made by the speakers to the broad experience and ability of Mr. Stearns in electric railway work, and the hope was expressed that his entry in New England would help the railway companies in the solution of their problems. In the final speech of the evening, Mr. Stearns urged the railway companies to act together and referred particularly to the assistance which

the trainmen could give in explaining to the public the needs of the companies.

L. H. Palmer, general manager of the Eastern Pennsylvania Railways, Pottsville, Pa., has accepted the position of assistant to the president of the United Railways & Electric Company, Baltimore, Md., effective Oct. 1. No successor to Mr. Palmer has been named. For the present he will continue his former duties, spending part of each week in Pottsville. Mr. Palmer became connected with that company in April, 1916, as general superintendent, but he was appointed acting general manager in May, following the death of W. B. Rockwell, and was made general manager last November. Mr. Palmer's previous electric railway experience was with the Metropolitan Street Railway, New York, N. Y., now known as the New York Railways. He became connected with this company in 1906. Two years later he was appointed assistant to the general manager for the receivers of that company, and in April, 1909, he was made superintendent of transportation, but resigned in 1912 to join the organization of Harrison Williams. In June, 1915, Mr. Palmer was engaged by the United Railways & Electric Company, Baltimore, to do some special work for the president of the company. His next connection was with the Eastern Pennsylvania Railways. Mr. Palmer has always been very active in the work of the American Electric Railway Transportation & Traffic Association.

Obituary

William W. Keith, who was associated with the San Francisco-Oakland Terminal Railways for a number of years in various capacities, having been its traffic manager just before accepting the position of harbor manager for the city of Oakland, died of heart failure recently at Oakland, Cal. Mr. Keith was fifty years of age.

Albert G. Wheeler, formerly interested in the construction of underground telegraph lines in New York and other cities, died on Sept. 23 at his home in Chicago. In 1899 he went to Chicago and in the same year formed the Illinois Tunnel Company, which constructed several miles of tunnel under the business section of the city, to be used for hauling freight. He was also interested in the construction of telephone lines there.

Prentiss Cummings, for many years vice-president of the West End Street Railway, Boston, Mass., died at his summer home in Paris Hill, Me., on Sept. 17. Mr. Cummings was born at Sumner, Me., in 1840. After he received a legal education at Harvard University he was admitted to the Bar in 1870. In 1874 he was appointed United States Assistant Attorney, and later he served in the Massachusetts Legislature. From 1885 to 1887 he was president of the Cambridge (Mass.) Street Railway, later becoming vice-president of the West End Street Railway.

James C. Ernst, who for years was a prominent figure in electric railway and lighting interests in Cincinnati, Ohio, and Covington, Ky., died at Asheville, N. C., on Sept. 20. Mr. Ernst went to Asheville in 1912 because of ill health. Twice he returned home to resume his place in business, but a year ago he terminated all business connections and has since remained at Asheville. He was for many years connected with the Cincinnati, Newport & Covington Light & Traction Company, the Cincinnati, Newport & Covington Railway and the South Covington & Cincinnati Street Railway, all related corporations. All the cars of the Cincinnati, Newport & Covington Railway stopped running for one minute during the hour of the funeral. Mr. Ernst was a former president of the company.

E. S. McLean, general superintendent of the Boston & Worcester Street Railway, Framingham, Mass., died suddenly on Sept. 23. Mr. McLean had been connected with the company since its organization in 1903. He began his electric railway career as a motorman for the Milford & Uxbridge Street Railway, Milford, Mass. Upon the opening of the Boston & Worcester Street Railway he entered its employ in a similar capacity, and after about two and a half years he was made foreman of the Westborough carhouse. He later was appointed foreman of the Framingham carhouse and subsequently became chief inspector. In February, 1910, he was appointed master mechanic of the company to succeed William H. Wadsworth, and became superintendent of the company four years later.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

RECENT INCORPORATIONS

***Jacksonville, Miami & Tampa Interurban Railway, Jacksonville, Fla.**—Application for a charter will be made by the Jacksonville, Miami & Tampa Interurban Railway to construct a line from Jacksonville through Duval County to Pablo Beach, St. Augustine, Daytona, Cocoa and Melbourne to Miami; also from Daytona west to Sanford, and from Hopkins, on the east coast, to Haines City, Lakeland, Plant City and Tampa, and finally on to Tarpon Springs, about 500 miles. The motive power will be either oil, gasoline or electric. Capital stock, \$10,000,000, of which \$5,000,000 is preferred. Temporary officers: True Davis, president; Frank N. Campbell, vice-president; Joseph E. Hunt, secretary, and Ross C. Cox, treasurer.

Rochester & Syracuse Railway Company, Inc., Rochester, N. Y.—Incorporated as the successor to the Rochester, Syracuse & Eastern Railway, the property of which was sold under foreclosure on Aug. 8. Capital stock, \$4,500,000. Officers: Arthur W. Leasby, president; Talmadge C. Cherry vice-president and general manager, and Elbert A. Harvey, treasurer.

FRANCHISES

Denver, Col.—The Denver Tramway has made application to the City Council of Denver for a revocable permit to extend the line on Broadway north from Colfax Avenue to connect with the Sixteenth, Seventeenth and Eighteenth Street lines.

***Whitesburg, Ky.**—The City Council of Whitesburg will sell a franchise for a street car line to operate in Whitesburg, with interurban lines to West Whitesburg, Caudill and Sandlick. It is reported that W. A. Daniels will probably purchase the franchise.

Schenectady, N. Y.—The Public Service Commission for the Second District of New York has approved the application of the Schenectady Railway to double-track that portion of its Rugby Road division now in service as single track, and construction work will be begun at once.

Boyertown, Pa.—The Reading Transit & Light Company will ask the City Council of Boyertown for a franchise to construct a loop on Chestnut, Fourth and Washington Streets to connect the Reading and Chestnut trolley lines.

Dallas, Tex.—The Dallas Southwestern Traction Company has received a thirty-five year franchise from the Commissioners' Court granting a right-of-way along the West Dallas Pike to Cement City and thence to Eagle Ford and Irving. The franchise was presented by E. P. Turner and associates and supersedes one granted to John T. Witt, trustee. Construction will be begun at once by the company and it guarantees that 10 miles of the road will be completed and in operation within eight months. The line will eventually be extended to Grand Prairie, Mansfield, Lillian and Cleburne. The Creek Construction Company has the contract to construct the line. J. E. Bassett, secretary. [Sept. 1, '17.]

Fort Worth, Tex.—The Northern Texas Traction Company has received franchises from the City Commission to construct trackage necessary to handle the heavy traffic incident to the army activities of Camp Bowie near Fort Worth. One franchise authorizes the company to construct a loop track on Commerce Street between Seventh and Eighth Streets for the purpose of handling the Camp Bowie traffic without congestion and the other authorizes the company to build spurs and terminal facilities on a plot of ground owned by the company just off Commerce Street at Belknap. On this site all interurban cars not in use will be kept, in addition to the many extra cars being used at certain hours during the day in handling

the Camp Bowie traffic. The improvements will represent an expenditure of about \$100,000.

Norfolk, Va.—The Virginia Railway & Power Company has received a permit from the City Council of Norfolk to operate its cars over the Bay Shore viaduct and over such of the Bay Shore and Atlantic Terminal tracks as are necessary and to construct tracks on Omohundro Avenue and Twenty-fifth Street in order to facilitate traffic between Norfolk and the naval base at Pine Beach.

TRACK AND ROADWAY

Birmingham Railway, Light & Power Company, Birmingham, Ala.—Plans are being made by this company for the double-tracking of Nineteenth Street.

Clear Lake Railroad, Lakeport, Cal.—An amended application has been made by the Clear Lake Railroad to the Railroad Commission of California for permission to build its proposed line from Lakeport to Hopland. The application asks permission to issue \$500,000 in bonds and \$150,000 in stock, to cover the contract price to build the road, and asks for an additional sum to ratify a previous issue of stock, and \$25,000 stock for the purchase of a terminal site in Lakeport. The commission is also asked to approve the new survey of the route, made in July, which traverses the mountain range between Hopland and Lakeport, 22½ miles, at a maximum grade of 3.3 per cent on the Lake County side, where the heavier haul will come, and 4½ per cent on the Mendocino County side. The line partially follows the present county road. Robert B. Woodward, Lakeport, secretary.

***Savannah, Ga.**—Plans are being considered for the construction of an electric railway from Savannah to Port Wentworth. The Rotary Club, Carleton B. Gibson, president, is interested.

Pella-Leffler Short Line Railway, Pella, Idaho.—This company, which was incorporated in June, 1917, with a capital stock of \$300,000, reports that construction will probably begin in the spring of 1918 on its proposed line from Pella to a junction on the Wabash Railway, 4½ miles. The surface contact system will be used and power will be secured from the Pella City municipal plant. P. H. Van Gorp, Pella, president. [June 23, '17.]

***Hazard, Ky.**—William Pursiful, J. L. Hays and others will organize a company to construct a line in Hazard, with extensions to First Creek, Harvey, Lothair, Glowmar and Diablock suburbs.

Kentucky Traction & Terminal Company, Lexington, Ky.—Plans are being considered by this company for the relocation of its tracks on West Main Street from the side to the center of the road and the extension of the line ½ mile out the Leestown road to the limits of the city of Lexington.

Shelbyville & Frankfort Realty Company, Shelbyville, Ky.—According to statements made both at Shelbyville and at Frankfort, construction of the proposed electric railway to connect the Louisville & Interurban Railway at Shelbyville with the Kentucky Traction & Terminal Company at Frankfort is contingent only on obtaining rights-of-way without cost to the promoters of the project. Phillip & Beach, construction engineers of Philadelphia, are representing a large Eastern company, it is stated, which is ready to begin the work when the rights-of-way have been secured. Committees representing the various communities through which the line might pass are engaged in this work at present. Two routes have been surveyed, one 22 miles long and the other about 28 miles long. [Aug. 4, '17.]

***Detroit, Mich.**—The construction of an electric railway between Detroit and Adrian is under consideration. The Detroit Chamber of Commerce is interested.

***Kalispell, Mont.**—Col. A. A. White, capitalist, who is interested in the construction of an electric railway from South Missoula to Flathead Lake, reports surveys will be made this fall for the line, under the supervision of N. B. Miller, formerly chief engineer of the Great Northern Railway Company. The proposed route will leave South Missoula, crossing the Northern Pacific tracks near the sugar plant, thence to the old Indian agency near Arlee, thence through St. Mary's Pass to St. Ignatius, Ronan, and Finley Point on Flathead Lake, with a branch along the

waterfront to Polson. The electric railway will connect with the ferry boats to be operated by the Flathead Lake Hotel Company, being promoted by Col. White, and will serve tourists who will patronize the \$1,000,000 summer resort to be built at Flathead Lake.

New York Municipal Railway, Brooklyn, N. Y.—Proposals will be received by the New York Municipal Railway for the erection of third-rail and appurtenances on the Culver line, Brooklyn, bids to be opened Oct. 8. For plans and further information, apply to Chief Engineer's Office, Room 602, 85 Clinton Street, Brooklyn, N. Y.

International Railway, Buffalo, N. Y.—Work has been begun by the International Railway on the construction of a single-track line along the River Road from the upper Tonawanda and Grand Island ferry to the Wickwire Steel Company's plant in Tonawanda, about 1 mile. It is expected that the line will be ready for operation within two months.

Ithaca (N. Y.) Traction Corporation.—Engineers have begun surveying for the extension and improvements on the Cayuga Heights line which are to be made by the Ithaca Traction Corporation. While the preliminary work has been begun, it is stated that the greater part of the laying and relaying of track will be deferred until spring.

Durham (N. C.) Traction Company.—An ordinance has recently been adopted by the Board of Aldermen of Durham requiring the Durham Traction Company to begin work of reconstructing its track on West Main Street on Oct. 1, preparatory to the paving of the street by the city. The company is also required to reconstruct its track on Main Street from Milton Avenue to the Norfolk & Western Railway crossing; on Chapel Hill Street from Vickers Avenue to Rigsbee Avenue and on Mangum Street from Main Street to Cleveland Street. The ordinance specifies that the rail now in use shall be replaced with 7-in. grooved girder rail.

Northern Ohio Traction & Light Company, Akron, Ohio.—Arrangements have been made between the County Commissioners and the Northern Ohio Traction & Light Company for the company to extend its tracks over the North Hill viaduct.

Youngstown & Niles Railway, Youngstown, Ohio.—Construction is under way on this company's line from Youngstown to Niles, and it is expected that the system will be in operation by late fall. It will be a high-speed line, built entirely on private right-of-way. Cars will enter Youngstown via the Steel Street-Mahoning Avenue route. Its operation will require the purchase of additional cars by the company, which is allied with the Mahoning & Shenango Railway & Light Company. J. P. Wilson, Youngstown, president. [June 30, '17.]

Niagara, St. Catharines & Toronto Railway, St. Catharines, Ont.—Work will be begun at once by the Niagara, St. Catharines & Toronto Railway on the rehabilitation of its system in Niagara Falls, Ont.

Toronto & York Radial Railway, Toronto, Ont.—A complete survey is being made by Charles Johnston, engineer, and J. F. Deadey, superintendent, of the line of the Toronto & York Radial Railway along the lake shore, Toronto, with a view to extensive improvements. Plans are being considered for either moving the present power plant at the Humber River to New Toronto or the establishment of a plant at Port Credit.

Northern Texas Traction Company, Fort Worth, Tex.—The City Commission of Dallas, in awarding a contract for paving Seventh Street from Bishop to Tyler Street, in Oak Cliff, voted to require the Northern Texas Traction Company to spend \$11,786 in laying heavier steel with concrete foundation.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—It is reported that the Salt Lake & Utah Railroad will construct an extension from Salt Lake City to Eureka.

Seattle (Wash.) Municipal Railway.—The Board of Public Works of Seattle recently awarded two contracts for the improvement of Division A of the Seattle Municipal Railway, one for a trestle approach on Thorndyke Avenue and the other for an extension on Leary Avenue, to R. H. Travers, Seattle. The contract for the Thorndyke Avenue

approach was let for \$5,862, and the Leary Avenue extension for \$19,554. The sum of \$42,000 is available for this extension, of which \$25,000 was appropriated by the Council from the light fund, and \$17,000 from bonds voted for the construction of a steel bridge across Salmon Bay, at Fifteenth Avenue N. W.

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—Improvements are being made by the Pacific Electric Railway at its Macy Street yards, Los Angeles, including the construction of a car inspection house, 246 ft. x 85 ft.; a car repair shop, 160 ft. x 150 ft.; a two-story trainmen's building, 32 ft. x 32 ft., and a storehouse, 22 ft. x 25 ft. The total cost of the buildings will be about \$151,000.

Omaha (Neb.) Street Railway.—Plans are being made by the Omaha Street Railway for the construction of a new carhouse to cost about \$100,000.

Trenton, N. J.—The New Jersey & Pennsylvania Traction Company and the Public Service Railway will now have to build terminals in other than the center of the city of Trenton to prevent cars congesting traffic. An old ordinance gave the railway companies permission to allow cars to stand at the terminus for four minutes. The ordinance now requires that terminus must be established three-quarters of a mile from the center of the city. The cars are parked in the center of the city, only a stone's throw from a fire quarters. The companies are to have a reasonable amount of time in which to prepare to establish terminals in other sections of the city.

Cleveland & Youngstown Railroad, Cleveland, Ohio.—A contract has been awarded by the Cleveland & Youngstown Railroad to the Walsh Construction Company, Cleveland, for the construction of a freight terminal at Orange Avenue and East Twelfth Street, to cost approximately \$675,000.

POWER HOUSES AND SUBSTATIONS

Chicago, Milwaukee & St. Paul Railway, Chicago, Ill.—According to A. M. Ingersoll, assistant to the vice-president of the Chicago, Milwaukee & St. Paul Railway, as soon as the company secures title to land at Tacoma Junction, work will be begun on the proposed \$160,000 substation which the company will erect in connection with the electrification of its line between Othello, Seattle and Tacoma.

Iowa Railway & Light Company, Cedar Rapids, Iowa.—Work will soon be begun on the remodeling of the electric plant of the Iowa Railway & Light Company at Cedar Rapids, to cost about \$40,000.

Hagerstown & Frederick Railway, Frederick, Md.—Extensive improvements are contemplated by the Hagerstown & Frederick Railway, including the erection of a new power plant at dam No. 5 on the Potomac River, about 7 miles above Williamsport. The new power station will be erected on the site of the former plant on the West Virginia shore and will be equipped with three turbines having a rating of 2500 kw. The company also contemplates rebuilding dam No. 4, near Sharpsburg, where the power plant has been closed down because of the failure of the water supply.

Kansas City (Mo.) Railways.—This company plans to erect a substation 50 ft. x 75 ft. at Thirty-first and Montgall Streets, Kansas City, Kan.

Interborough Rapid Transit Company, New York, N. Y.—This company will construct a substation at 351 East 139th Street to serve the Bronx division of the Lexington Avenue subway, which will run east through 138th Street to Southern Boulevard.

Northern Ohio Traction & Light Company, Akron, Ohio.—A high-tension line from the power plant in Tuscarawas Street W. through the west park and thence to the transforming station of the Central Power Company at Waco will be built by the Northern Ohio Traction Company. It is the plan of the company to have two more stations of the same size installed at the plant in Tuscarawas Street W.

Valley Railways, Lemoyne, Pa.—It is reported that this company plans to construct a new power plant at Wormleysburg.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent
 Rolling Stock Purchases Market Quotations Business Announcements

Standardization Now Particularly Significant

Local Conditions and Pride Versus Progress and Economy—Manufacturers and Railways Should Lend Support to Hasten the Benefits of Movement

By ERNEST E. STIGALL
 Purchasing Agent Kansas City Railways

The whole subject of standardization would seem to warrant special consideration at the present time and in the coming conference of the American Electric Railway Association. Its importance just now is more pronounced because of the magnified results to be had from its accomplishment. Standardization tends rapidly to reduce the manufacturing costs and hence the selling prices to the railways. The abnormal heights of the prices at present prevailing make any program which will tend to reduce them of special significance. Standardization would reduce the costs and in addition would improve deliveries because concentration upon one or a few designs would greatly increase the gross output as compared with that when manufacturing many designs. It would also help to offset in a measure the shortage of labor.

Standardization would do away largely with the necessity for the railways to carry much of any stock of devices, for if the manufacturers knew there was going to be a good market for their products they could afford to carry a reasonably large stock where this involved only a few designs. On the other hand, the railways would know that they could get quick delivery from the manufacturers' stock on a standard article and would therefore not need to figure supplies for long periods ahead. In other words, the railways would get service from their manufacturers and eliminate a good part of the carrying charge.

Such a process as that of standardization can of course not come as a revolutionary measure, but must be one of evolution, but if everyone would lend his support to the movement it would hasten the day of standards. Too often there is a personal pride involved, so strong that it will not submit to the adoption of the standard in the place of a design prepared by local talent. But in most such instances the individual is sacrificing common sense economy for the sake of satisfying his personal vanity and egotism. Frequently, also, one hears a railway man say as the final fling when he is cornered in an argument on using a certain standard design, "Well, local conditions won't permit us to use it." I am strongly inclined to believe that "local conditions" should be much less emphasized in many phases of railway work, and more attention should be paid to the advantages of making and using standards.

As justification of this opinion, it may be cited that one very large railway system comprising over thirty different city properties of widely different characteristics, gives the uniform specifications of 9 m.p.h. schedule speed, six stops per mile of ten seconds duration, and 2000 ft. of 3 per cent continuous grade with four stops on the grade, when ordering motors for any of these properties. Another example is the adoption of a standard safety car by the Stone & Webster Management Association of identical design and equipment for use in the Central, Southern and Pacific Coast states, ignoring, seemingly, the so-called "local conditions."

Materials for track and overhead line construction and maintenance are particularly susceptible to improvement through standardization. Power house and substation equipment, and car building and maintenance and other shop work

also offer good possibilities for cost lowering through the adoption of standards.

Standardization would bring about an advantage to the manufacturer, and indirectly to the user, further than that resulting from the quantity production of one design, for the reason that a large part of the selling cost would be eliminated. Little selling effort would be necessary on standard designs of equipment. It would simply mean that the manufacturer could sell for less than present costs because, first, of the reduced production and selling costs, and second of the willingness as a general rule of the manufacturer to take a smaller margin of profit on an article manufactured in large quantities.

However complete standardization might become it need never reach the point that it would serve to stifle initiative in making improvements. It would simply mean that with standardization well established new devices and improvements on the old ones would be thoroughly studied and tried out by two or three railways and proved better or inferior to the standard. This would eliminate the continual changing around from one design to another by so many companies and would replace this practice with a thorough trial by selected companies under a plan whereby the results of the test would be published. But the important consideration—especially now in war times—is to move forward as rapidly as possible with the work of standardization as one important means of supporting the nation-wide policy of economy.

Delivery Situation on Motors

Railway Equipment Delivery from Four to Seven Months, Dependent on Size

Two years ago the electrical market began again to show signs of life, and then quickly it advanced into a boom market. One of the first lines to feel the quickened pulse of buying was motors, and ever since the late fall of 1915 deliveries on motors have been very tardy. To-day they are, on the whole, worse than they have ever been.

Inquiries into the condition of motor deliveries revealed an immense number of unfilled orders. In fact, it is now virtually certain that the manufacturers of all types of motors, including stationary types, are together no less than 150,000 motors behind in delivery. In the larger sizes conditions are worst. There is a very active demand for stationary motors of 500-hp. rating and larger, and it is well known that manufacturers are not able to keep pace with requirements.

There are indications that before the beginning of 1918 higher prices will be placed on motors. With the exception of an advance by one concern on small stationary motors a few days ago, prices have remained steady for some months. Buyers of these motors can still meet their requirements if speed and make are not specified. Every week a number of motors, first of one size and then another, come on the market, and there is, therefore, a fair stock of miscellaneous equipment available.

Second-hand houses and speculators, foreseeing this condition last year and early this year, placed orders for future delivery, and these motors are now coming on the market. They are, however, being taken up very rapidly.

On railway motors, because of the general situation in the field, deliveries are a little better than in stationary motors. There is so little buying that railway motor manufacturing facilities are not entirely taken up as in other departments. Quotations are now being made on railway motors of four to five months delivery for sizes from 25 to

60 hp. For the larger sizes from six to seven months are required. On large orders these are the delivery dates for first shipments, the remainder following at specified intervals. Of course, it may occasionally be possible to procure motors in certain sizes in shorter time, but in general the above conditions will prevail.

While under normal conditions manufacturers would be making railway motors continually and would thus be able to ship from stock or in a week or two in some instances, no stock is now being carried. No motors are being made except as ordered. Labor is scarce and it is believed to be better to keep the men at other work when the railway orders are slow.

Wire Unaffected by 23.5-Cent Copper

Establishment of a Government Price for All Finds Market Temporarily Upset, with No Sales at Announced Figures

On Sept. 21 the government price of 23.5 cents a pound for copper was announced. This price is for all, government, Allies and private purchasers. For weeks and weeks those vitally interested have awaited this announcement, only to find themselves more at sea now that it has been made than they were formerly. The copper market is in a very excited condition, but almost no business is being done. Certain it is that there have been no transactions at 23.5 cents. On Monday last there were some sales at 26 cents, but none was reported at a lower price. Those who have a supply of the red metal seem loath to part with it while the atmosphere of the market is so cloudy. Buyers, moreover, were probably for the most part bargain hunting, and it is doubtful if there will be any real inquiries for any considerable tonnage until the government clears up a great many points now in doubt.

As for copper wire, the announcement of the 23.5-cent price has made no difference. Base is still firm at 36 cents, with an occasional manufacturer quoting at 35 or 37 cents. The wire manufacturers have contracted for copper long ahead at prices in excess of the government figure, and consequently it is not reasonable to suppose that wire base will soften any, provided, of course, that the demand is maintained.

Wire for the government is, of course, a different proposition. The price is merely the conversion price, since the government furnishes the producers with the raw copper.

Wire manufacturers will make no predictions regarding the future. At present they are at sea and, as far as is possible, are refraining from buying any raw material. It seems to be pretty generally felt, however, that irrespective of the government price the law of supply and demand will prevail, unless the government makes some ruling to the contrary.

The price of 23.5 cents seems sufficient to guarantee a reasonable profit to all producers so that there is no apparent reason for curtailing production. A recent study made of producers' costs showed the highest cost to be a fraction over 20 cents a pound.

Deliveries are much better on copper, but it is well known that a large volume of buying has been deferred pending the settlement of the government price situation.

Statistics just compiled by the National Lumber Manufacturers' Association show that during the twelve months ending July 31 the mills reporting to the association cut 15,602,000,000 ft. of lumber and shipped 15,741,000,000 ft., or 0.009 per cent more than production. Shipments the first seven months of 1912 were 7.7 per cent more than last year, with no increase in cut. During July this year 732 mills in all parts of the country and operating in all kinds of timber, cut 1,389,000,000 ft. and shipped 1,566,000,000 ft., or 12.7 per cent more than production. The cut in July this year was 1.3 per cent less than July last year, with shipments 19.6 per cent greater. During the four weeks ending Aug. 31, 320 Southern and Western mills have cut 606,000,000 ft. of lumber, shipped 778,000,000 ft. and accepted orders for 613,000,000 ft.

Government Fixes Price for Steel Products

Priority Board to Control Distribution of Iron and Steel Through Licenses, Placing Private Interests Last in List

Government prices for steel products, showing decreases from 47 to 70 per cent over recent high prices, were announced in Washington on Monday, following a voluntary agreement by the steel interests and the War Industries Board. Certain of the raw materials necessary to the production of steel were also reduced in price.

The distribution of iron and steel will be placed under the absolute control of the Priority Board through licensing. Preference will be given to the War and Navy Departments and the Emergency Fleet Corporation of the United States Shipping Board. Next will come the supply for the needs of the Allies. Private interests not engaged in war work must wait until the last before obtaining supplies.

Although the new prices apply to all, it is very doubtful if they will cause any drop in prices of any railway equipment into which steel enters largely. In fact, the control of iron and steel distribution may prove a great hardship to certain manufacturers of railway equipment. It is now known that the government has restricted the supply of sheet steel to private manufacturers because the rolling mills were needed to turn out tinplate. Any further reduction in the supply of iron and steel will result therefore either in deliveries much more delayed or in the temporary withdrawal of certain articles from the market.

Conditions of supply and demand, however, have been so chaotic during the last two years that any stabilizing influence will be welcomed in many quarters. One of the leading executives in the electrical manufacturing industry, who is in a position to have the most authoritative information on conditions generally, said to a representative of the ELECTRIC RAILWAY JOURNAL regarding the effect of the prices on electrical manufacturing:

"The effect will be wholesome and encouraging to enterprise. It will offer a relief from a runaway condition into which we have drifted."

NEW YORK METAL MARKET PRICES

| | Sept. 20 | Sept. 26 |
|--|----------|----------|
| Prime Lake, cents per lb. | 26 1/4 | 23 1/2 |
| Electrolytic, cents per lb. | 26 1/4 | 23 1/2 |
| Copper wire base, cents per lb. | 36 | 36 |
| Lead, cents per lb. | 8 | 8 |
| Nickel, cents per lb. | 50 | 50 |
| Spelter, cents per lb. | 8 3/8 | 8 1/2 |
| Tin, Straits, cents per lb. | 61 3/4 | 62 |
| Aluminum, 98 to 99 per cent, cents per lb. | 42 | 41 1/2 |

OLD METAL PRICES—NEW YORK

| | Sept. 20 | Sept. 26 |
|--|----------|----------|
| Heavy copper, cents per lb. | 24 1/4 | 23 1/4 |
| Light copper, cents per lb. | 20 1/2 | 20 1/2 |
| Red brass, cents per lb. | 19 | 19 |
| Yellow brass, cents per lb. | 16 1/4 | 16 1/4 |
| Lead, heavy, cents per lb. | 8 | 7 |
| Zinc, cents per lb. | 6 | 6 |
| Steel car axles, Chicago, per net ton | \$42.00 | \$42.00 |
| Old car wheels, Chicago, per gross ton | \$33.50 | \$31.00 |
| Steel rails (scrap), Chicago, per gross ton | \$41.00 | \$35.00 |
| Steel rails (relaying), Chicago, per gross ton | \$55.00 | \$55.00 |
| Machine shop turnings, Chicago, per net ton | \$17.50 | \$17.00 |

RAILWAY MATERIALS

| | Sept. 20 | Sept. 26 |
|---|----------|----------|
| Rubber-covered wire base, New York, cents per lb. | 36 | 36 |
| No. 0000 feeder cable (bare), New York, cents per lb. | 36 1/2 | ... |
| No. 0000 feeder cable (stranded), New York, cents per lb. | 33 3/4 | ... |
| No. 6 copper wire (insulated), New York, cents per lb. | 33 1/4 | ... |
| No. 6 copper wire (bare), New York, cents per lb. | 36 | 36 |
| Rails, heavy, Bessemer, Pittsburgh | \$38.00 | \$38.00 |
| Rails, heavy, O. H. Pittsburgh, per gross ton | \$40.00 | \$40.00 |
| Wire nails, Pittsburgh, per 100 lb. | \$4.00 | \$4.00 |
| Railroad spikes, 9/16 in., Pittsburgh, per 100 lb. | \$7.00 | \$7.00 |
| Steel bars, Pittsburgh, per 100 lb. | \$4.00 | \$4.50 |
| Sheet iron, black (24 gage), Pittsburgh, per 100 lb. | \$8.85 | \$8.85 |
| Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb. | \$9.55 | \$9.55 |
| Galvanized barbed wire, Pittsburgh, cents per lb. | 4.85 | 4.85 |
| Galvanized wire, ordinary, Pittsburgh, cents per lb. | 4.65 | 4.65 |
| Cement (carload lots), New York, per bbl. | \$2.22 | \$2.22 |
| Cement (carload lots), Chicago, per bbl. | \$2.31 | \$2.31 |
| Cement (carload lots), Seattle, per bbl. | \$2.65 | \$2.65 |
| Linseed oil (raw, 5 bbl. lots), New York, per gal. | \$1.22 | \$1.20 |
| Linseed oil (boiled, 5 bbl. lots), New York, per gal. | \$1.23 | \$1.21 |
| White lead (110 lb. keg), New York, cents per gal. | 13 | 11 |
| Turpentine (bbl. lots), New York, cents per gal. | 44 | 44 |

ROLLING STOCK

Honolulu (Hawaii) Rapid Transit & Land Company has ordered ten cars from The J. G. Brill Company to be equipped with Westinghouse 546 motors and K-36 control and General Electric CP-27 compressors. It is reported that this company has purchased additional equipment for use on cars now in operation.

Springfield (Mass.) Street Railway and Worcester (Mass.) Consolidated Street Railway, noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 15 as having ordered twenty cars for Springfield and ten cars for Worcester, have specified the following details for this equipment. The cars for Springfield are to be delivered some time before Christmas and those for Worcester about Jan. 1, 1918.

| | |
|---|---|
| Builder of car body, Osgood Bradley Car Co. | Gears and pinions, Old equipment |
| Type of car, 30-ft. Convertible Prepayment | Hand brakes, Horne double-acting |
| Seating capacity .....44 | Heaters .....Gold |
| Weight (total) .....42,000 lb. | Headlights, Crouse Hinds' Melobeam |
| Bolster centers, length, 19 ft. 8 in. | Journal boxes....Old equipment |
| Length over bumpers, 43 ft. 4 in. | Lightning arresters, Westinghouse S No. 154397 |
| Length over vestibule, 42 ft. | Motors...None purchased, Outside hung |
| Width over all, 8 ft. 6 in. | Paint.....Company's standard |
| Height, rail to trolley base, 11 ft. 5 1/2 in. | Registers....International R-7 |
| Body .....Steel | Sanders .....Murphy |
| Interior trim .....Mahogany | Sash fixtures...Osgood Bradley convertible type |
| Headlining .....None | Seats, style..Osgood Bradley walkover type |
| Roof .....Arch | Seating material...Birch slats |
| Air brakes....General Elec. Co. | Step treads...Stanwood with Mason safety tread |
| Axles .....Old equipment | Trolley catchers...Q P catchers |
| Bumpers..7-in. Hedley Anti- Climbers | Trolley base, U. S. No. 13 (from other cars) |
| Car trimmings, Statuary Bronze | Trolley wheels, Wheels—Company's standard |
| Control, type, Worcester, K-35, Springfield, K-6, (tempor- arily from other cars) | Trucks, type, Worcester, Brill 27 G 1 (from other cars), Springfield, Wason 21 (from other cars) |
| Couplers..None—our standard draw bar | Ventilators ....Osgood Bradley |
| Curtain fixtures .. National "D" — Hartshorn National Plug Rollers | Wheels .....33-in. C. I. Special devices, etc., Westinghouse line switch Utility heat regulators |
| Curtain material ....Pantasote | |
| Destination signs.....Keystone | |
| Door operating mechanism, Osgood Bradley manual con- trol | |
| Fare boxes...International C-15 | |
| Fenders .....Pflugst fenders | |

TRADE NOTES

Philip K. Condit, formerly export manager of the Western Electric Company, has been appointed assistant director of the bureau of export licenses and placed in charge of the New York office at 11 Broadway.

Railway Improvement Company, New York, N. Y., received a great deal of favorable comment for its coasting recorders in the Sept. 22 issue of the *Trollier*, the weekly publication issued by the Rhode Island Company, Providence, R. I.

Degnon Aqueduct Construction Company, Queens, N. Y., has been incorporated with a capital of \$25,000, the incorporators being R. P. Gustin, 68 Hunters Point Avenue, Queens, Long Island City; C. A. Baker and H. F. Karst, 52 Broadway, New York City. Besides constructing electric and other railways the company will also carry on a general contracting business.

Automatic Controller & Manufacturing Company, Ogden, Utah, which will take over the patents of Cleveland Redfield, has been incorporated with a capitalization of \$100,000, to manufacture electrical and other machinery. The officers are: Cleveland Redfield, president; J. W. O'Brien, vice-president; William J. Stone, secretary; Thomas Q. Whitehill, treasurer.

Peerless International Corporation, 50 Pine Street, New York, N. Y., has been organized to conduct an export, import and general engineering and contracting business, with the following officers and board of directors: Alfonse Kaufman, president; Simon Weiner, vice-president; F. A. Beardsley, secretary; William M. Blain, treasurer; Walter W. Birge, president Air Production Company, and L. K. Comstock, president L. K. Comstock & Company.

Bradford-Ackermann Corporation, New York, N. Y., has been appointed the Eastern sales office for Young Brothers Company, Detroit, Mich. The sale of Young ovens, for jappanning and drying purposes, will in the future be handled by this office for the New England States, New York,

New Jersey, Maryland, Delaware and eastern Pennsylvania. An engineering department will likewise be available for manufacturers in the East who are interested in quick drying and baking processes, and special oven designs will be offered to meet various requirements.

The Automatic Straight Air Brake Company has been incorporated under the laws of Delaware with a capital stock of \$5,000,000 preferred and \$20,000,000 common to manufacture and sell a new type of air brake, the invention of Spencer G. Neal, who is the designing engineer of the company. The directors are: A. B. Boardman, A. M. McCrea, K. B. Conger, H. I. Miller, C. R. Ganter, S. C. Holaday, A. M. Trueb and G. C. Pierce. The officers will be H. I. Miller, chairman of the board and president; K. B. Conger, vice-president and treasurer; A. M. Trueb, secretary and auditor, and G. C. Pierce, chief engineer. The company will have offices at 14 Wall Street, New York. Good progress is being made in the preparation for a railroad officers' demonstration of the brake, which will take place in New York the early part of October.

NEW ADVERTISING LITERATURE

Pringle Electric Manufacturing Company, Philadelphia, Pa.: Bulletin No. 101 describes its disconnecting switches equipped with locks.

Westinghouse Lamp Company, New York, N. Y.: A bulletin for agents and purchasers, furnishing data pertaining to incandescent lamps.

Esterline Company, Indianapolis, Ind.: The largest graphic meter in the world for the largest station in the world is the subject of a recent bulletin.

B. R. Shearer, Johnson City, Tenn.: The Shearer automatic system for use in power plants and on electric drive installations is a topic treated in a leaflet that has been distributed.

Ford, Bacon & Davis, New York, N. Y.: Pamphlet dealing with recent construction work, specifically describing and illustrating a public grain elevator and appurtenances at New Orleans, La., attention being given to transportation facilities.

D & W Fuse Company, Providence, R. I.: Catalog No. 2, recently mailed to the trade, illustrates and describes oil fuse cut-outs for 2500 volts. Cut-outs for use up to 13,000 volts for the polar type, subway type and also heavy service are entered into and detailed.

W. N. Matthews & Brother, Inc., St. Louis, Mo.: A folder, with suggestions for installing Matthews fuse switch, type BF. Another folder has also been prepared by the company with directions for utilizing its hold-fast adjuster, a fixture that may be used in any position.

Link-Belt Company, Chicago, Ill.: Electric hoists are described in book No. 246, embracing the dominant features of the Link-Belt hoist, work on which these hoists can be employed, together with a table of lifting capacities, direct-current and alternating-current hoists.

Ivanhoe-Regent Works of General Electric Company, Cleveland, Ohio: Ivanhoe reflecto-cap diffusion for industrial plants is illustrated and described. The relation of better light to greater output is treated in the leaflet, and also prices and shipping data are furnished.

Electric Machinery Company, Minneapolis, Minn.: The company's synchronous motors is the subject of bulletin No. 168, in which induction motors are compared with synchronous motors. How these motors are used in driving paper-mill machinery, rock crushers, rubber mills, fans and blowers, and high-pressure pumps are given descriptive attention.

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.: Reprint No. 58 describes gears and side rods of electric locomotives on American railways. Circular No. 1570, by Nicholas Stahl, treats of synchronous motors for power-factor correction. For those not familiar with technical calculations the fundamental principles governing power factor and its control are taken up and established. For all the problems of power-factor correction likely to arise in ordinary operation a simple graphical solution is furnished.