Electric Railway Journal

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Cable Message from Mr. Dalrymple of Glasgow

Glasgow, May 18, 1917.

To the Electric Railway Journal:

The tramway men of Scotland are extremely pleased that they will soon be fighting shoulder to shoulder with the street railway men of America. During the early weeks of the war our tramway men in Scotland literally sprang to arms, and they have done nobly on every battle front. Three thousand Glasgow tramway men are with the colors. The women in the meantime are holding the fort. Nearly every car in Scotland has now a woman conductor and very soon will have a woman driver.

If the street railway men in America will throw themselves heartily into this struggle, the fight will soon be over. The tramway men of Scotland greet you as comrades in arms.

JAMES DALRYMPLE,
General Manager Glasgow Tramways

(This cablegram was received from Mr. Dalrymple in reply to a suggestion from the Electric Railway Journal that a message from him in regard to the war in which Great Britain and the United States are now allies would be appreciated by the electric railway men in this country.)

SOLICIT FREIGHT TO RELIEVE STEAM ROADS

With the onset of war conditions there is certain to be more and more serious interference with the normal progress of freight traffic on the railroads. The causes are manifold—real shortage of rolling stock, cars tied up at ocean terminals in default of proper storage facilities or of shipping, more cars held up deliberately by speculators in foodstuffs waiting to make a quick turn, hasty shipments of great quantities of material to particular and unusual termini. These and other causes make the situation a particularly complicated one, and to this will presently be added the work connected with mobilization and transportation, sending again large quantities of men and material over somewhat unusual routes. Here is an opportunity for the electric roads to develop their freight business and thus help the government as well as the public. But this opportunity to help is not going to be thrust upon the electric railways by a conservative public, no matter what difficulties may be experienced by the shippers over steam railroad routes. If any electric railway is prepared for such service it must get that fact before the public and keep it there. To this end we suggest that special publicity be given to possible routings made altogether over electric lines.

GOVERNMENT AND BUSINESS

The decision of the administration to use expert advertising assistance in setting forth the advantage of the new Liberty Loan to the public is a wise move. Many persons who would not think of arguing their own cases in court or of having anyone except a trained surgeon perform an important operation upon themselves consider any sort of an announcement will do when it comes to advertising. Nothing can be farther from the fact. Advertising is a science, and the decision of the administration to utilize the expert knowledge and existing advertising channels which have been offered to it free, both by the new cards which will be carried in the electric railway cars during the next three weeks and by other methods of advertising the bonds, shows good business sense. The example is one which Congress could well follow, as its latest proposal in regard to the second-class mail rates indicates a fundamental lack of conception of business needs. While various administrative branches of the government are asking the assistance of the business papers in furthering the government plans—an assistance which they are glad to supply and are now supplying—the House seems to be trying to make that service impossible or greatly to restrict its usefulness by an enormous increase in the postage rates.

ADD AUTOMOBILE MERITS TO RAILWAY SERVICE

When a railway finds itself faced by unrestricted or inefficiently restricted jitney competition, it is perfectly natural to point out the unfair advantages enjoyed by the newcomer. But instead of putting the matter up to the public's sense of justice and fair play alone, the railway might well ask itself the question: "What is there wrong about our operation that people should prefer the other means of transit?" This thought is prompted by what we have seen lately in a city where the jitney is still rampant. Restriction after restriction has failed, and now the city is asked by the railway to keep the jitneys off of the main streets during the hours of congestion. It is but fair to say that this company has always given excellent service on short headways, and that its men are most courteous to the public and most loyal to the management. Why, then, does a large portion of the public prefer the jitney? One reason is that it is far easier to get in and out of an automobile than to risk this company's dan-

gerously high car steps. Another is, that the low rate of acceleration plus the low rate of passenger interchange (due to high steps) makes the car speed absurdly low. It would cost a great deal of money to remove these handicaps, but it will cost more to stay behind the times. Regardless of past virtues or past sins, what the people want is good service, and they will inevitably prefer that which proves best for their own comfort and well-being quite regardless of the subtleties of taxation, paving upkeep and the like. The electric railway which wants to remain the carrier of the commonalty must not and cannot overlook the fact that the automobile has created in the public a taste for faster and more pleasing transportation than is offered by the high-step, low-acceleration, many-stop car which is already entering the land of yesterday.

TAXATION TO INCREASE PLATFORM WAGES

Developments in the San Francisco Municipal Railway situation bring out clearly the fact that in this era of rising prices a publicly-owned road is not necessarily a bonanza even when it is operated in choice territory and is well managed. San Francisco is discovering that the nickel of its own railway can no longer stand the strain. Of course, it has been pointed out many times in these columns and elsewhere that if the municipal railway had to carry the same burdens of taxation as its privately-owned neighbor the profits would be largely conjectural. With the latest action of the Board of Works, however, there is a frank declaration of an impassé.

It appears that on Monday, May 7, the Board of Works recommended that the car and shopmen of the Municipal Railway receive an increase of 50 cents a day, namely, from $3.50 to $4 a day. Thomas A. Cashin, superintendent, had previously explained that this increase would cost the city $93,000 a year. As the Municipal Railway had earned only $5,600 net profit between July 1, 1916, and Feb. 28, 1917, the Board of Supervisors (which passes on wage recommendations) is presented the pleasing task of drawing a gallon of wine from a flask holding a gill. As even San Francisco politicians can't do that, the money will have to come out of the 18 per cent of the gross earnings that has been set aside for depreciation, redemption and bonds, or out of the tax levy. In plain English, all of San Francisco's citizens are to be assessed in some form for the sake of some of San Francisco's citizens.

No matter what the outcome, the public will receive a few more important lessons in municipal electric railway economics. It will have to decide eventually whether public utilities are to be run as a business proposition to "relieve the rates," as in England, or as a public highway which may increase realty tax values, but which brings no direct returns. If the latter view should prevail, municipal operation would no longer be comparable with private operation. The barrier interposed by capable management would be broken down, and San Francisco's big-hearted supervisors would run riot with the city's tax and bonding powers.

FARE INCREASES NEED NOT WAIT ON VALUATIONS

Now that the street railway lines of New York City, following their announcement of last week, have filed formal application with the Public Service Commission for a charge of 2 cents on transfers, opposition is appearing. This, of course, was to be expected. With the experiences of the railways in asking rate increases from the Interstate Commerce Commission before the companies, no other result, however serious the situation, could be looked for.

But the character of that opposition, thanks to the frankness with which the railway officials have stated their position, differs from the past. Opponents of the charge on transfers have largely been reduced to one argument, the old argument of valuation. The invitation of President Shonts to the Chamber of Commerce and other civic bodies to examine the affairs of the New York Railways Company before making their decision whether the proposed charge was justified appealed to the public as being fair. As a result, there has been a notable inclination on the part of public-spirited citizens and newspapers to withhold judgment until the facts had been fully presented. This in itself is a distinct victory for the methods pursued by the companies.

The argument for valuation as a basis for the proper determination of fare increases is traditional. It has been met by every railroad, every street railway, every public utility when confronted with the necessity of meeting increasing costs by obtaining additional revenues. And nearly every public service corporation that is subject to commission regulation at some time or another in recent years has had such valuations made.

In New York, both in the city and up-State, the electric railway companies have contended that if disaster to many properties were to be averted, there was no time for valuation. The whole basis of their plea was immediate relief. To wait for one year or two years while tedious inventories were taken would be to summon the doctor after the patient was dead.

One peculiar feature of the situation confronting the companies this year is also overlooked by the valuation advocates. For the companies it is an argument that should have the strength of Macedonian phalanxes. And that is fares based on the value of service.

Assuming that electric car service given five years ago was worth the price charged for it—that is, the same nickel that had bought street car rides since Civil War days—if the ride was worth the nickel then, surely the same ride is worth more now. Otherwise, the buying power of the nickel is the same as five years ago. And the present high prices prevailing in every phase of life refute any such argument.

The point is that those who advance the valuation argument in opposing increased fares or charges for transfers on the electric railways are hiding behind a subterfuge. They are not willing to face the issue squarely. They are seeking to deny elemental justice in a situation where the facts are clear-cut and simple. They are forced to recognize in their own pocketbooks the increased cost of living in every commodity, in every article of food, clothing and material they use.

They see these increases offset to a degree by advances in wage and salary levels.

The electric railway companies must keep pace in all these increases. They must raise wages when other employers raise wages. They must pay more for materials and supplies. And yet, when they ask for commensurate advances in the cost of the commodity which they sell—transportation—they are met with the argument that increases must not be determined by what it costs to operate, but by how much it costs to start the business.

GET CAR MEN INTERESTED IN THE POWER PLANT

The Public Service company section of the American Electric Railway Association last week visited the latest power plant of the Public Service Electric Company. Such an inspection should be very useful to the transportation department of the railway in inaugurating the power-saving campaign which it is planning, for the reason that the inspection will give the men a better conception of what it is that they are expending when they are driving their cars.

There is nothing more intangible than electrical energy, but the coal pile is a perfectly definite, concrete thing. If the platform man, as he manipulates his controller and brake handle, could be brought to consider whether he is saving or wasting coal, as the case may be, he is far more likely to save than if he tries to think of what he is saving in terms of abstract energy. In former editorials we have endeavored to visualize the energy used by a car by stating, for example, that 125 watt-hours (the energy consumed per ton-mile under ordinary city conditions) is equivalent to 166 ft.-tons or 10 hp.-minutes, or that it will light a 20-cp. tungsten lamp for five hours, or that it will raise the temperature of a cubic foot of water about 7 deg. Fahr.

These examples are all right as far as they go, but if it is possible to familiarize the platform man with the power plant itself, especially if the route of the energy from coal pile to feeder line can be pointed out to him in simple language, his co-operation in energy saving should be more easily obtained. He can be made to realize that if he makes a car mileage of, say, 100 per day he controls the consumption of something like 1200 lb. of coal, or considerably more than a half ton per day. By saving 10 per cent of this amount, which is well within his reach, he could reduce the coal consumption by 20 tons per year. As coal is a commodity which everybody has to buy, there is no doubt that a staggering figure like this would appeal to any man intelligent enough to control the destiny of a carload of passengers. It will, therefore, pay every railway manager to interest his men in his own power plant or that from which his road purchases energy.

TIME FOR UNITED ACTION

The responses from public service commissions throughout the country to the general letter sent out by John Nickerson, Jr., asking their attitude on the question of fare increases—noted on another page—are deserving of more than passing attention by officials of all electric railway companies. They carry a message of hope, however slight it may be, for which operators of public utilities have long been waiting.

The question of increased costs, as it relates to street railway fares, at last has forced itself on the commissions. That is plainly the meaning of the responses to Mr. Nickerson's letter. No matter how much the commissions may wish to gain time and plead that they cannot commit themselves until the "question is brought before them," the dilemma of the companies is now squarely up to the regulating bodies. The applications filed by the companies in New York mean that they must make a decision.

With the question which has been worrying operating officials for years thus brought definitely to a head, the duty of all the electric railway companies in the country is clear. The problem is a common problem. It is as vital in California as it is in Maine. New York has led the way with a united stand. The companies of every other state will be forced by economic circumstances to follow with similar applications. They have the consciousness that right is on their side, and they must act. The moment for which they have hoped and prayed has come. And it is now or never!

For, after all, the cause in Illinois is the same as the cause in New York. If a higher fare is needed in Rochester, N. Y., or in Buffalo or Syracuse, or other cities in the State, it is needed in Springfield, Mass., or Erie, Pa. The reasons underlying the necessity for the increase are universal. They are not confined to the electric railway business, but are only part of the general economic conditions brought on by the war.

Electric railway companies are fighting for this increased fare, not merely as part of the right to live, but because only by such increases can the progress of the transportation industry be assured. Business cannot stand still any more than life can. It must either go forward or slip back; and the street railways have always gone forward, from the days of the horse car and through the various transformations which have followed since horses were used. An end, however, has now been reached. Wages, taxes and the cost of materials have become so high, and the lengths of ride have so increased, that there is now nothing left of the nickel. Relief is urgently needed, and Mr. Nickerson's replies may fairly be interpreted as evidence that some of the public service commissions of the country recognize this fact.

SKIP-STOP IN BALTIMORE—The leading article in next week's issue will tell how the United Railways & Electric Company has educated its public to an appreciation of the advantages of the skip-stop plan by showing that it conduces to better service.

Double Guards Reduce Cost

Guards on the Outer Rails of Curves Increase the Life of Rolling Stock and Effect a Considerable Reduction in Maintenance Cost

By WILLIAM H. STEVENSON
Engineer Philadelphia (Pa.) Holding Company

THE necessity for the double guarding of rails on curves has been emphasized whenever the writer has interviewed a specialist or an engineer who has scientifically studied the problem of curve conditions. The opinion, however, of many less competent to judge is that the outer guard on curves increases noise and adds friction without giving any benefit other than "to kick the truck around" which, in reality, is necessary as the wheel is kept in the desired position on the rail. In many cases the outer guard has been abandoned merely to cut down the initial cost.

SINGLE GUARDED CURVES PROVE HAZARDOUS

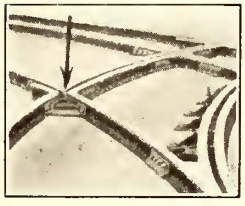
The thrusts of a wheel on a curve exert a tremendous weight against the inner guard due to a centrifugal force that tends to throw the track out of gage. There is also a tendency for the wheel to ride the inner guard, especially if the guard is dry and gritty. If the flanges are worn and somewhat sharp, the throat of the outside flanges may ride the head of the outside rail and thus make the inner guard of little or no value. Should the flange of the inner wheel be slightly chipped on the back, and this defect meet the rail at a moment when the flanges of the outer rail were grinding against a rail head, a derailment would be certain to occur. This, however, would be impossible in case of a double guard, as the wheel would be thrown sufficiently around to prevent an accident.

A single guard is of little value when opposite an unprotected frog in the outer rail, as it will not prevent a wheel from riding the point of the frog or causing a derailment. This condition is clearly shown in the accompanying illustrations, Figs. 1 and 2, which indicate how the flanges may be intercepted by the point of the frog when no approach guard has been provided. In Fig. 3 is shown a frog protected by a small V-shaped guard that is placed at the entrance to the frog and either bolted or cast to it. The cost of installing this device and double-guarding the curves on an entire system would frequently be less than the damage resulting from one derailment.

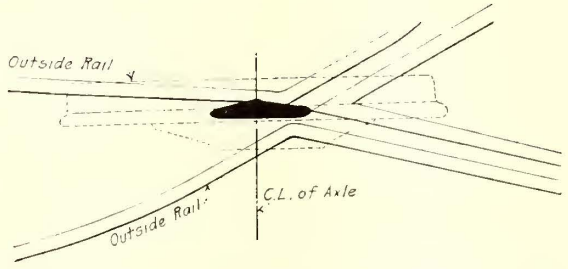
RESULTS OF THE STRAIN FROM NO OUTER GUARD

The strain on trucks due to improper guarding and gaging of rails on curves cannot be computed, but the disastrous results may be observed at the carhouses. Here are found wheel flanges worn to many sizes and shapes, trucks out of alignment, motor bearings unevenly worn, gears worn to various freak forms, and many broken parts, including corner gussets, diagonal tie rods and frequently axles.

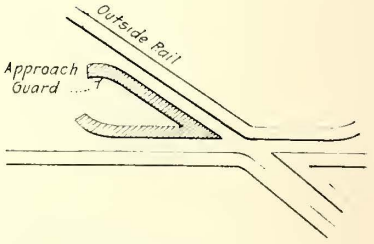
The use of the outside guard adds to the life of a wheel as it prevents the excessive wearing down of the flange. The accompanying illustrations compare the wear on wheels and flanges resulting from the use of both single and double guards. Fig. 4 shows the out-



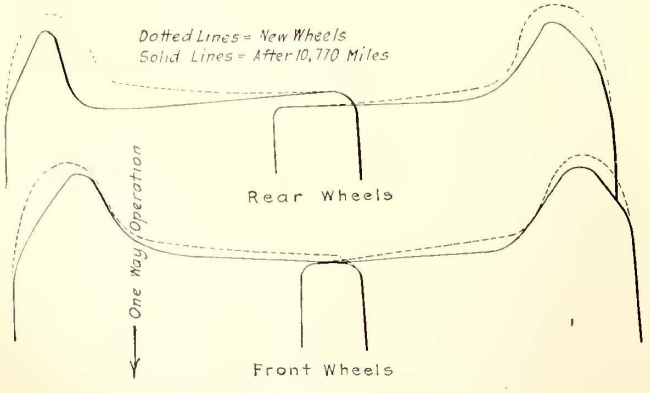
DOUBLE GUARD FOR RAILS — FIG. 1 — FROG UNPROTECTED BY APPROACH GUARD



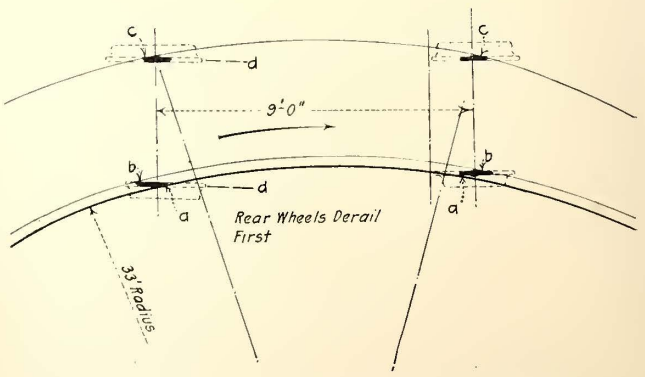
DOUBLE GUARD FOR RAILS—FIG. 2—POSITION OF WHEEL ENTERING FROG WITH NO APPROACH GUARD



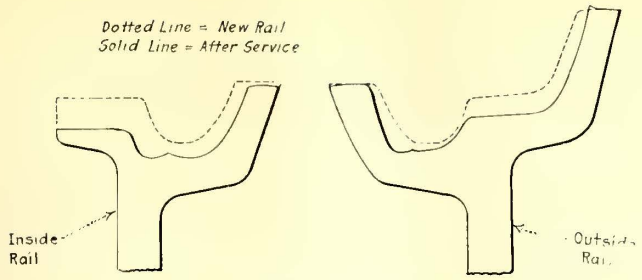
DOUBLE GUARD FOR RAILS—FIG. 3—FROG WITH APPROACH GUARD



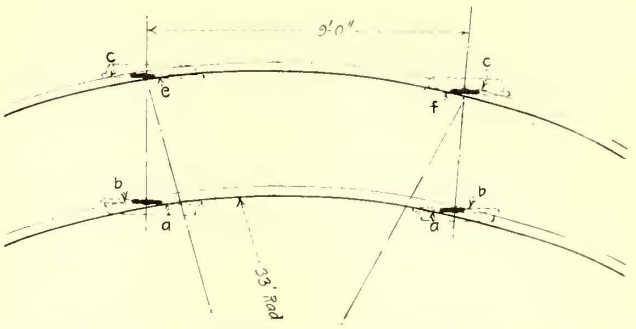
DOUBLE GUARD FOR RAILS—FIG. 4—WEAR FROM SINGLE-GUARDED CURVES



DOUBLE GUARD FOR RAILS—FIG. 5—POSITION OF SINGLE-TRUCK CAR ON SINGLE-GUARDED CURVE

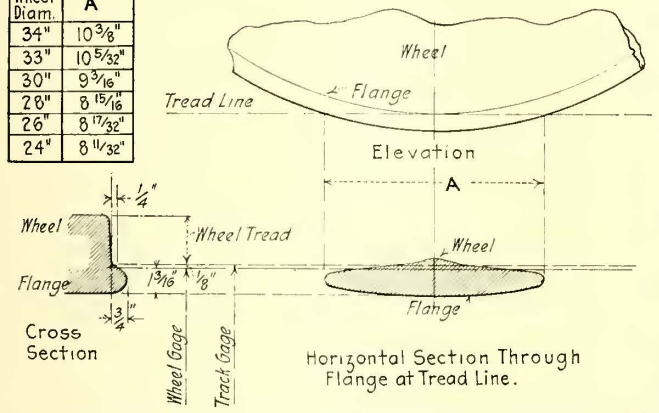


DOUBLE GUARD FOR RAILS—FIG. 6—WEAR FROM DOUBLE-GUARDED CURVES

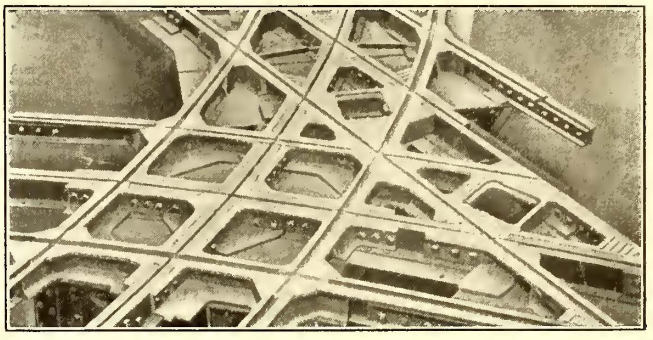


DOUBLE GUARD FOR RAILS—FIG. 7—POSITION OF SINGLE-TRUCK CAR ON DOUBLE-GUARDED CURVE

Wheel Diam.	A
34"	10 3/8"
33"	10 5/32"
30"	9 3/16"
28"	8 15/16"
26"	8 17/32"
24"	8 11/32"



DOUBLE GUARD FOR RAILS—FIG. 8—LENGTH OF FLANGE (A) IN GROOVE OF RAIL AT TREAD LINE



DOUBLE GUARD FOR RAILS—FIG. 9—CAREFUL GUARDING ASSURES ABSOLUTE ALIGNMENT OF TRUCKS

line of wheels before and after a run of 10,770 miles over single-guarded rails, or less than one-quarter of the guaranteed life. In Fig. 5, illustrating the position of a car on a single-guarded curve, is shown the wide groove between the single guard and the rail, the position of the axle as having no apparent relation to the radii of the curve, and the points of circular shear of the wheels against the rails. The points of contact of the flanges against the rail are indicated by the letters *A*, *B* and *C*. The dotted line *D* indicates the direction the wheels take when a derailment occurs.

Outer Guard Lessens Wear on Rails and Wheels

Figs. 6 and 7 illustrate the wear on rails and the position of the car axles when the double guard is used. The rails shown in Fig. 6 were removed from the Delaware Avenue and Market Street loop, Philadelphia, Pa., after three years of service when 16,000,000 wheels or 4,000,000 cars had passed around the curves. The tracks are located on a 10 per cent grade and the radius of the curve is 23 ft. ¾ in. to the inside rail. Fig. 7 shows the same wheelbase as Fig. 5, but on a double-guarded

Wheel diameter in inches	34	33	30	28	26	24
A in inches....	10 3/8	10 5/32	9 3/16	8 15/16	8 17/32	8 11/32

curve, where the guard rails engage the flanges as indicated by the letters *E* and *F*, and thereby tend to throw the wheels and axles to their natural position.

The plan and cross-sections of the flange of the A. E. R. A. standard wheel are shown in Fig. 8. The cross-section to the left is developed on the tread line of the wheel, and the one above the plan shows the position of a wheel on a rail and indicates the length of flange (*A*) extending below the tread line. The horizontal section shows the flange and wheel cut at the tread line. In the table are shown the approximate lengths of this horizontal section, or the length of the flange extending into the groove of the rail for wheels ranging from 24 in. to 34 in. in diameter and having a ¾-in. x 1 3/16-in. flange, which is the prevailing size for city service.

Fig. 9 shows a layout where an absolute alignment of trucks on long sweeps and the use of the underground contact system necessitated a careful guarding of both rails.

Rails Should Be Kept Clean and Well Greased

Careful study and tests indicate that most of the wheel slipping on curves occurs with the inside wheel, and that all slipping takes place on the inside rail when the curves are carefully laid out and double guarded. Therefore care should be exercised to keep the curves clean and in no case should sand be used on the inside rail. It should also prove economical to keep both rails clean and the guards on short curves greased wherever local conditions will permit.

Noises caused by wheel grinding around curves can only be overcome by causing the flange to follow the rail in its natural tangential course, with the center line of the axle pointing near by along the radii of the curve. It is impossible for this to occur with a rigid truck on a single or double car, but with a flexible or radial axle truck this ideal condition must exist if both of the rails are properly double guarded.

In conclusion, the double guarding of rails is desirable not only for the reasons already given, but also as a preventive of corrugation. This corrugating may be overcome on both long and short sweeps of regular, irregular or spiral curves by installing inner and outer guard rails close to the main rails and even with the main rail-tread lines, provided the rails are carefully gaged. This method, the writer feels, is a solution of the rail corrugation question as applicable to curves.

An Inexpensive Way of Cutting Construction Costs

The Author Shows How Co-operation Among Departments Tends to Eliminate Waste—He Gives a Practical Plan by the Employment of Which Such Co-operation Can Be Assured

BY FRANK B. WALKER
Assistant Engineer Maintenance of Way Department Bay State Street Railway, Boston, Mass.

THERE has been so much written and said regarding efficiency and cutting costs in connection with the carrying out of maintenance and construction work that the writer has not the courage to try to bring out anything new on this subject. What he has to offer at this time is not entirely new on some of the progressive and economically managed steam railroads, although probably not so well known on the electric railways.

The plan, briefly stated, is (1) to have full and complete details of work to be done written up in an "authority for expenditure" or "work order"; (2) to distribute enough copies of the "authority for expenditure" thoroughly to inform all concerned; (3) to have frequent checking of costs during progress of work; (4) to have frequent complete reports of status of progress; (5) to write up statements of charges of the work when completed; (6) to analyze the actual cost of every important or unusual job; (7) to compare with the estimated cost the actual cost of every job, explaining increases or decreases in cost; and (8) last but not least, to have everyone, from president to office boy, vitally interested in total, comparative and unit costs, so that everyone who has anything to do with the work of construction or maintenance will be fully posted as to all phases of the work. The whole staff should literally eat costs, drink costs, sleep costs and even go so far as to dream costs.

A Simple Form of "Work Order"

The "authority for expenditure" or "work order" (referred to hereafter by the initials "A.f.E.") should preferably be typewritten in the office of the chief engineer or engineer of maintenance of way, on very thin bond paper blanks, standard letter size, so that nine legible copies can be made. The ordinary form might read about as follows:

North & South Street Railway Company

Easton, March 11, 1917.

A. f. E. No..... City..... Div..... For $.....

The President:

Authority for expenditure is requested to reconstruct 10,000 linear feet double track on Washington Avenue from Jones Street to Myers Street in the following manner. Remove 92-lb. 9-in. girder rail and cobblestone pavement and replace with 132-lb. 9-in. girder rail on chestnut ties and broken stone ballast, granite block pavement, grouted joints, as per detailed estimate and blueprint attached.

Reason

To replace worn-out rail and to comply with Order No. 27 of Public Service Commission.

Note—On 1917 Budget.

Approved by

.....Chief Engineer .....Gen'l Mgr. .....Pres.

A complete detailed estimate and blueprints of proposed work are attached and made a part of the "A.f.E." It is desirable to separate the estimate into general headings of "material" and "labor" for each class of work, such as track, bridges, buildings, etc., and further it is found desirable to show the exact quantities of each class of material needed and the labor in considerable detail. This may seem unnecessary as the general officers do not care to know the number of spikes or track bolts, but others ought to know these details and it later saves making up a bill of material when requisitions are prepared and also helps the auditor and assistant engineer in checking the cost when the work is completed. The writer is a firm believer in the making up of complete detailed estimates as an aid to cost cutting and to avoid errors and duplication of office work. It is a fact that the reputations of many engineers have suffered from their neglect or lack of ability to prepare close and accurate estimates of cost. With reliable estimates to work from contracts may be let at more satisfactory prices and company work can be more satisfactorily arranged. The making of estimates requires science, art and prophecy—science to grasp the engineering features, art to apply constructive imagination sufficient to see the work as it will be carried out, and the vision of a prophet.

When the late James J. Hill was president of the Great Northern Railway, with which the writer spent fifteen years, the engineering department prepared its estimates so carefully that the total of the estimated costs of construction and reconstruction as compared with actual costs differed less than 2 per cent per year. On that road an effort was made to keep estimates slightly below actual costs. This served to keep everyone "on the jump" in an effort to lower costs to the minimum. The Great Northern's operating ratio was remarkably low, with correspondingly low construction costs.

The Operation of the "A.f.E." System

The blueprints, attached to each copy of the "A.f.E." should show the location and extent of the work and should give only enough details to show in outline what is to be done and the location of the work. The usual method is to show this in colors on right-of-way, property or mileage maps. This coloring can ordinarily be done by the office boy after one copy is made by a draftsman.

On the approval of an "A.f.E." one copy is retained by the president or the manager, whose office assigns the number and sends copies as follows: Three to the chief engineer, who files one, and sends one each to the roadmaster and the assistant engineer; one to the general superintendent; one to the division superintendent; one to the comptroller, and two to the auditor, who files one and sends one to the outside auditor. This accounts for the nine copies.

The chief engineer's office (or the assistant engineer's, depending on the office organization) makes requisition

for material direct from the "A.f.E.," sending copies to the storeroom, purchasing agent, assistant engineer and roadmaster, and also writes a letter of instruction, sending copies to the auditor, general superintendent and division superintendent, assistant engineer and roadmaster. This letter describes how and when the work is to be done, what equipment is assigned to the work, the importance of hurrying, if any, what work will be done by company forces and what contracted for, how the operating department will handle traffic, etc. The general superintendent and division superintendent may then learn what is expected of their departments, can make all arrangements well ahead of the time of starting, and are given an opportunity to suggest changes if the engineering department's plans do not fit in well with operating or traffic requirements. The auditor has an opportunity to size up the work and to get out a letter of instructions as to any special accounts. Sometimes the auditor requires the estimate attached to the "A.f.E." to be divided as to maintenance and additions and betterments, so that he can place on his books approximate maintenance, and additions and betterment charges and avoid making large transfers of charges in his books when the work is finished and all charges are in. The roadmaster has a similar opportunity to perfect all of his arrangements and see that they agree with all conditions imposed.

"A.F.E." Works for Efficiency

When the material is on hand and the work is organized and started, the word "cost" should be ever in the minds of the men in direct charge. The writer does not mean that the safety of the public or employees or the quality of the work is to be neglected, but rather that engineers, roadmasters and foremen should be made to realize that their reputations and the reputation of the engineering department depend just as much on keeping down the costs as on the quality of the work.

Immediately upon approval of the "A.f.E." it should be entered upon the next regular status report. The writer has found that status reports are desirable each ten days during the working season, dropping to thirty-day intervals during the winter. On the status reports the following information is suggested, varying with the kind of work, the reports to be abbreviated as much as possible: "A.f.E." number, date approved, date started, town or city, location, brief description of work, requisition numbers, note as to progress of delivery, progress of work, percentage completed, and any other data relative to the delays, causes, etc., and, finally, the date of completion.

Sample

A.f.E. 2792—10,000′ Do. Tr. Wash. Ave., Easton. Approved 5/11/16—Matl. ordered Reqns. 1016, 1092, 1217—None rec'd—Work started 6/1/16—av. 30 men—Grading 90% done—Work will be com. 20 days after mat'l is rec'd.

A.f.E. 2793—Commercial Dock—C St., Weston—App'd 5/13/16—Piling contract let to Jones Co.—Superstructure let to Smith Co.—Delayed waiting delivery of piles—All Company mat'l ordered—Reqns. 1130, 1131, 1132—None rec'd.

A.f.E. 2794—Moving partition Gen'l Office—Work com. 6/1/16.

These status reports, if made carefully by one familiar with the work, serve as a running history of each job. They should be sent to the manager, general superintendent, division superintendent, chief engineer, auditor and roadmaster. The head of each department knows that any delays or other causes of increased cost due to himself or any of his men appear in these reports, and the writer knows from his experience that they act as a wonderful tonic in causing the storekeeper and the purchasing agent to hurry delayed material, the superintendent of motive power to speed up delayed work equipment, the general superintendent and division superintendent to give the engineer or roadmaster every assistance in their power, and the engineering department to keep things moving.

Statement at Completion of Work

After the work is completed and all charges are in, the auditor should prepare and send a detailed "statement of charges" to the chief engineer. This statement should be carefully studied for errors in charging labor and material, and a close analysis should be made of a comparison with the cost as estimated in the "A.f.E." Full explanations should cover the increases and decreases in cost of all essential items. The roadmaster should be advised as to these results and complimented when excellent results are obtained, and vice versa. In fact, everyone who is responsible for results in any degree should be made to realize during the progress of the work that the cost figures would at some time be held against him. These cost analyses and comparisons are of the greatest value in the office, especially to the chief engineer, office engineer and estimate clerk, or whoever prepared the original estimate.

All this may sound long and laborious, but the writer has handled from one to a dozen of these "A.f.E.'s" a day as a part of his regular duties in charge of work, and instead of finding it a burden he always considered the scheme a wonderful help, and there is no doubt but that it was a great aid in pushing work along smoothly and cheaply.

The Misuse of Maintenance and Betterment Accounts

In order to make partial checks on the cost of the work during its progress, the roadmaster's office should prepare and forward statements, at convenient but frequent intervals, of the total labor expended to date on each job. The roadmaster's office, and especially the timekeeper or time clerk, should have concise and definite instructions on how to make charges among the various Interstate Commerce Commissions' accounting classifications. The writer has found great variation between different roads and also between time clerks of the same road as to the dividing lines between grading, road and track labor, ballast, etc., so that several I.C.C. accounts on one division were not comparable with those on another division for exactly similar work. This resulted in making cost analysis impossible and frequently in raising maintenance charges and lowering betterment charges. It also sometimes happens that maintenance charges on other parts of the line are accidentally or deliberately placed in the accounts as betterments. This is, of course, wrong, and under the I.C.C. laws is likely to cause trouble. Close analysis of costs after work is completed easily brings these to light, and quite often many other strange and startling things.

Use of Old Material Cuts Costs

In the preparing of estimates it is advisable to have a loose-leaf price list at hand. This is ordinarily furnished by the storekeeper or purchasing agent and should show prices at which all storeroom material is to be charged until the sheet is superseded by a revised one. The storekeeper or purchasing agent should give prices for rail, fastenings, switch material, bonds, ties, lumber, etc., so that the estimator may know that the same prices will be charged on the books for the material actually used. The estimator should also have a list of material on hand at all the stores—usually the storekeeper's monthly or quarterly inventory of material on

hand will do—and should know the amounts and location of second-hand material on hand. In fact, he should be kept posted as to the whole new and second-hand material situation on the entire system so as to be ready to use anything available. It frequently happens that the hauling of new material from store or from another division yard to a job could have been avoided by using second-hand material or usable scrap already on hand. Of course, this all involves the office labor of keeping such lists up to date, but with the present price of material a little office work is a cheap way of making a big saving.

THE SCOPE OF THE "A.F.E."

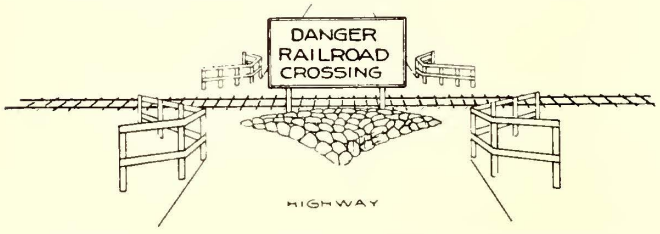
The writer believes that the more important jobs involving maintenance only can be more easily handled by "A.f.E.'s." However, the ordinary run of track, bridge or building maintenance should not be handled by "A.f.E.'s," but if a pile bridge is to be replaced in kind or a long section of track relaid and ballasted with equal rail weight and similar kind of ballast the whole account can be more easily handled all the way through by the system outlined.

The filing of all correspondence, requisitions, etc., with the "A.f.E.'s" is found to be a simple way of handling the files. Keeping of the "A.f.E." index and proper cross-references naturally becomes necessary.

Solving the Grade Crossing Problem

California Commission Considers the Reduction of Vehicle Speeds with Highway Obstructions and Other Methods

THE California Railroad Commission has been conducting an investigation with a view to decreasing grade crossing accidents in that State. Inspections of more than 2000 crossings have been made, 1600 of which inspections have been covered by reports sent to the interested parties. In these reports a total of 1100 recommendations have been made varying in importance from the removal of brush to the elimination of the crossing by closing the street or the separation of grades. The railroads and property owners have co-



SUGGESTED PLAN TO COMPEL CAUTION AT GRADE CROSSINGS

operated by removing obstructions to view in the vicinity of crossings, and in some cases this work has been done in advance of the commission's surveys.

Among crossing protective devices the automatic flagman is regarded by the commission to be the most efficient. Sixty-six of these have been recommended to replace the ordinary crossing signs and bells. The publicity given to this general subject has brought forth many suggestions as to devices more effective than those now available. It is considered best to locate such devices in the middle of the highway whenever possible. With the aid of one of the railroads an automatic flagman has been located in the center of a city street, the first installation of its kind in the United States so far as known. If automobile traffic alone were to be considered, this location would be proper without question, but the lights used on horse-drawn vehicles are not adequate to indicate the presence of these devices, so power must be available to light them.

At the general hearings held by the commission last March, a method of protecting grade crossings by compelling low speed on account of physical obstructions placed in the way of vehicles was much discussed. Several different plans of this sort were suggested, six of which somewhat revised were sent to the railroads, the larger cities and some counties with a request for criticism, and with the suggestion that an experimental installation be made when any of the plans could be followed to advantage. One of these plans suggested a change in the profile of the road; three specified parkways, either in the center of the crossing or on each side, to divert the course of the vehicles, and one embodied an offset in the center line of the road which would require a vehicle to make two turns through 90 deg. before reaching the track. The accompanying illustration shows an obstruction proposed for each side of the track with a large danger sign to be 7 ft. above the ground.

The design which was submitted by City Engineer O'Shaughnessy of San Francisco was considered to be probably the best. In this plan the profile of the road is slightly broken about 400 ft. from the crossing; 25 ft. from this break an approach warning sign is located on the right side of the road looking toward the track; about 50 ft. from the crossing a flagman device and crossing sign are placed in the center of the road, and the road is widened to provide for the guard fence which surrounds them. Immediately beyond this fence is an accentuated break in the road profile.

Grade crossing accident reports and investigations bear out the belief that most of the accidents are caused by carelessness. The only way to eliminate accidents of this class, in the opinion of the commission, is to eliminate the crossing. Any expedient but grade separation is more or less temporary.

Home-Made Traffic Sign at Worcester, Mass.

A convenient illuminated sign for controlling traffic at intersecting streets has recently been developed at Worcester, Mass., by George H. Hill, chief of police. As shown in the accompanying photograph, the sign consists of a square transparency mounted about 13 ft. above the street level and carried on a pipe stand which can be turned according to the direction in which traffic is permitted. The transparency is provided with red and green windows for the "stop" and "go" indications, and is illuminated by five 23-watt railway type tungsten incandescent lamps with frosted tips, the lamps being supplied with current from the trolley wire above. The connection is made through a porcelain fuse block mounted on a thin wooden spreader, and a snap switch within reach of the traffic officer. There is a secondary "stop" and "go" sign on the same pipe stand and about 6 ft. above the street level, where it can easily be read by pedestrians. The lettering on this sign is vertical.

HOME-MADE ILLUMINATED TRAFFIC SIGN

Commissions Know Costs Are High

Canvass by Banking House Shows That Commissions Appreciate Present Operating Conditions—Regulatory Bodies Rather Anticipate Formal Application for Relief

AS an investment banking house dealing exclusively in the securities of utility corporations, the firm of John Nickerson, Jr., New York, Boston and St. Louis, has been questioned by investors as to just what the attitude of public service commissions is going to be with reference to increases in rates to meet higher operating costs. In order to get this information at first hand, the company recently sent a letter to the presiding officer of every commission in the United States, asking whether the matter of increased rates had been brought before his regulatory body, and what its attitude had been or was likely to be.

Replies have been received from practically all the commissions. From a summary of these prepared by the bankers, it appears that while not many cases involving the question of the need of increased revenues have been presented, yet the commissions recognize the abnormal situation which exists in regard to the increased costs of material and labor. In many cases they indicate that these new conditions will receive consideration in the event of application being made for authority to increase rates.

Some Replies Are Non-Committal

In a number of instances the blunt statement is made that no cases involving the question have been before the commission. Some commissions, however, while stating that there has not been a case before them in which rate increases were sought to offset higher costs, go a step farther and point out that they do not feel that they can or should commit themselves in advance as to future action.

In some states the act creating the commission does not give it jurisdiction over rates, except upon complaint. In these states the matter of increasing the rates is rather "up to the company," and in one of the letters the commission makes the point that thus far it has issued no orders lowering company-made rates.

A few of the commissioners in their replies point out that operating costs enter into the determination of rates and are a matter of vital importance in such a consideration. One commissioner writes as follows:

"We are continually dealing with the matter of valuation of public service corporations and the fixing of rates. Necessarily operating costs, as they exist, are a vital consideration. We have had no application from public service corporations to increase rates due to alleged increased cost of operation, and I am not able to say what the attitude of the commission would be in that connection."

Number of Commissions Aware of Abnormal Conditions

A number of the commissioners, while stating that no formal application had been made for increased rates, point out that the commmissions are aware of the existence of abnormal conditions and rather strongly imply that these matters will receive serious consideration when the question is brought formally to their attention. One commissioner says:

"While I appreciate the considerations which have prompted your inquiry, I am not able at this moment to give you a categorical answer. Mindful of existing conditions, we are anticipating that the general question probably will be brought formally to our attention, but no application of the sort, thus far, has actually been presented to us otherwise than in occasional isolated cases which have not been based upon anything outside of the ordinary. Each particular case would, of course, be decided upon its individual merit. Even if it should be established that increased cost of operation is universal, it nevertheless might occur, in individual cases, that economy in operation and postponement of all such extensions and betterments as would not involve any question of safety in operation or impair measurably efficient service, properly might be relied on to offset, to some extent at least, the increased burden under consideration."

Another commissioner puts it this way:

"I think, upon reflection, you will see that you have asked a question which cannot properly be answered, save with respect to specific cases as they arise. At the same time you may be assured that the members of this board are fully alive to the present abnormal conditions and the increasing cost of oil and coal, as well as other expenses with which the managers of the public service corporations are confronted."

In another instance reference is made, without citing specific cases, to the fact that the matter has received consideration in recent cases, and the following statement is made:

"We beg to advise that the commission did not forget, when making decisions in rate cases, that there has been a very material advance in the expense of performing service. We endeavor, as best we can and with as little friction as possible, to cause the claimant or petitioner, as the case may be, asking for a reduction in the rate, to understand these conditions. We think it must be a matter of general knowledge."

One Commission Will Act Fearlessly, Squarely and Expeditiously

A letter from a member of another commission indicates that the subject has been informally discussed by the commission with a view, apparently, of formulating a policy to be pursued in connection with rate-increase applications when presented. It states:

"This matter has been talked over with my associates and the conclusion is that this commission is going to do its duty fearlessly. It is not in the habit of giving out in advance what any of its decisions are going to be, but you can rest assured that whenever matters of this nature are presented to us, they will be dealt with squarely and expeditiously."

Cases Decided Show Consideration of Utility Need

There have been a few cases before the commissions, the bankers say, and in these a strong inclination has been shown to give the question careful consideration. In some instances increases in rates have been allowed. The chairman of a very prominent Western commission writes:

"In response to your question regarding the need for increased rates, I would say that this matter is now before the commission in one or two cases. Without indicating what the commission's decision will be in those

cases, I would simply say that this commission will do whatever any fair-minded man would do on the testimony in these cases."

In a letter written by one of the commissioners of one of the oldest and probably ablest commissions in the United States, it is stated that the question of increasing rates to meet the increased costs has been before that regulating body. This commissioner says:

"Before any increase in rates is approved by this commission, the cost of the service, the physical value of the property and all other items usually used to determine what a reasonable and just rate should be, always receive careful consideration. We have approved many increases on showings made that the cost of the service had increased due to increased cost of material and labor, and while I would not care to speak for any future action of the commission, I take it that any action which does not consider the increased cost of material and labor will not be taken by this commission."

General Increase in Rates Anticipated

This same commissioner points out that it must always be determined whether the increased costs are temporary or reasonably permanent. He mentions the fact that in some instances this condition was written into the order authorizing the increase, *i.e.*, that when costs returned to normal an application for a reduction of the rate would be in order. He then sums up the whole situation in this way:

"I see no good reason why there should not be, and I anticipate that there will be, a general increase in rates for all service furnished by public utilities due to the increased cost, unless all signs fail and prices of labor and material drop to the scale obtaining several years ago."

Favorable Decision of Wisconsin Commission

The Wisconsin Railroad Commission had before it, in the application of the Village of Cambria, as a gas utility, for authority to increase rates, the question of allowing an increase due to the increased cost of gasoline. In disposing of this case on Jan. 24, 1917, the commission said:

"From the information which we have at hand, it would seem that the cost of commercial service is rather high. An upward revision in the rates will not be inequitable, however, when we consider that at the present and even at the proposed price of gas to private consumers, either a considerable part of the actual cost of the gas must be charged against the street lighting, or the deficit must be borne by the general taxpayer, which amounts to the same thing, since the village receives no other benefit from the plant. Taking all the facts into consideration, it seems to us that the utility is entitled to an increase in its rates in order to enable it to give the proper service without unduly burdening the general taxpayer."

Here was an instance where the commission recognized the fact that the burden of the increased cost of operation should not be borne entirely by a few for the benefit of all consumers.

New York Commission Realizes Costs Are High

Referring to high operating costs, an opinion of a member of the Public Service Commission for the First District of New York in a recent lighting rate case is cited as follows:

"In view of the unsettled economic conditions arising out of the state of war, the increases in the cost of production and distribution which have taken place within the last two years, and which are likely to continue, together with the wider recognition of labor and greater remuneration and improved working conditions enhancing costs to the company, the effect of a reduction in the rates upon the company's operations must be problematical. Certainly at this juncture the commission would not be justified in making a drastic order which would disturb the company's stability."

In a still more recent case, decided on April 26, 1917, this same commissioner says:

"Nor will the normal increase of business combined with the increase in consumption which usually follows a reduction in rate justify a finding that the effective rates are excessive. The operating figures for 1915 do not take into account the increases in the cost of labor and materials which have taken place during 1916 and 1917, which may be augmented as a result of the national exigencies arising out of the war with Germany. While it would be unjust to permit a utility to exact demonstrably excessive rates from consumers in order to transfer the burden of the taxation which must be borne as the material sacrifice in support of the contest by arms, yet in times of unsettled conditions the margin of safety necessary for the stability of public utilities should not be curtailed."

Conclusion Reached by Bankers

This summary of the replies, it is stated by the bankers, is indicative of the fair-minded tone which characterizes them. In the bankers' opinion, the following facts seem to stand out very prominently:

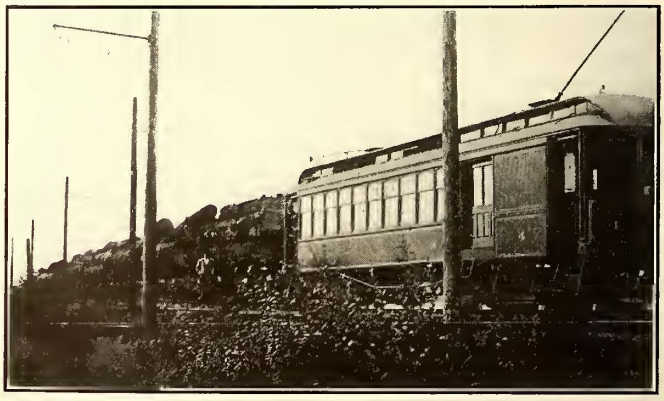
1. The question of securing increased revenues to cover higher operating expense has not been generally presented to the commissions.

2. A large number of the commissions have given the matter some informal consideration and rather anticipate that the matter will be brought very shortly to their attention in a formal way.

3. In most cases in which the question has been presented, a spirit of appreciation of the conditions confronting the public utilities has been shown, and a desire indicated to maintain the stability of margin of safety of public utility securities.

An Improvised Electric Locomotive

The Northwestern Lumber Company at Hoquiam, Wash., is completing the logging of a tract of land practically within the city limits. To facilitate getting the



ELECTRIC LOGGING TRAIN, HOQUIAM, WASH.

logs to the mill the company built an electric railway line into timber, and the logs are being hauled out by an electric car owned and operated by the Gray's Harbor Railway & Light Company. This is the standard car of the company except that the motor capacity has been increased from 160 to 240 hp. The logging company's private electric line connects with the Gray's Harbor

interurban at Electric Park, and the logging trains coming out over the private lines of the park continue over the main lines to the Hoquiam River, where a spur and log dump is built opposite the Northwestern mill. P. A. Bertrand, general manager of the railway company, states that from six to seven loads of logs per train are easily handled, and that during the last four years approximately 8311 carloads, totaling 61,197,000 ft., have been handled.

Electric Railways Must Have Greater Revenue

The Author Considers an Advance of 20 Per Cent in Fare to Be Moderate as Compared with Increased Costs in Other Lines

BY JOSEPH K. CHOATE
Vice-President J. G. White Management Corporation, New York City

THE question of operating costs has become a very serious one with everybody, and particularly with those interested in traction service. The tremendous increases that have arisen in the cost of labor and material, ranging from 40 to 125 per cent, have had to be faced with rates of fare which were originally based upon the nickel. The nickel was adopted years ago as the unit of fare on all city traction lines at a time when 5 cents bought more than can be bought for 10 cents to-day. Only the advances in the art and efficiency of administration have enabled the traction lines to exist and to continue their work, even before the present conditions brought about by the war came into existence. The increases in the cost of labor and material have been steadily met for a great many years previous to this time.

WHY ELECTRIC RAILWAYS NEED RELIEF

In addition to the greatly increased cost of labor, there has been also the competition with which our companies have been faced, particularly from the automobile. The United States census returns, made public soon after the first of January this year, showed that there were 2,500,000 automobiles in the country. With an average seating capacity of five to an automobile these have a total seating capacity of six times that of all the traction lines in the country, and two and one-half times more than all the railway lines combined, steam, electric and otherwise.

During the year 1916 the railways of the United States paid $152,000,000 in taxes. A large part of this amount has been devoted to the improvement of highways, generally along the lines of traction companies, and thus has added to the competition and to the burden that the traction lines have had to bear. In addition to this, due to old and obsolete laws, a species of graft has existed in cities and municipalities in the matter of paving. The requirement regarding paving first existed within the city limits, but has been extended to the state highways. This requirement has been met, but not only has it imposed a great burden upon the railways in the matter of costs, but it has produced a system of legal graft.

When horse cars were in use the pavements of cities were destroyed by the action of the horses traveling over the pavement always in the same place. To-day, however, a double-track electric line occupies but 10 in. of the street width, and a single-track line but 5 in., that is, merely the width of the rails. There is no wear upon the pavement whatsoever. On the other hand, the railway company, by keeping the tracks clear of snow and encumbrances of all kinds, invites traffic of every description—automobiles, trucks, etc.—to its lines. All of these things should be taken into consideration in connection with our claim for additional remuneration for the service which we render.

We are also met at this time by the possible future requirements of the traction lines in connection with their operation for the benefit of the government. While at present this may not be of any great moment it may, before this war is finished, be of the very greatest importance in the part the traction service may be called upon to perform in connection with government requirements. I am positive that the government of the United States will find no more loyal or patriotic men than those who are interested in the ownership or operation of the traction lines.

HOW SHALL WE OBTAIN THE DESIRED RELIEF?

The question which now arises is how best to appeal for an increase in the charges for our service, in the return we should receive for it. The argument has been made that the distance tariff offers the best means of doing it. Without a doubt a distance tariff, as applied in European cities, should have been applied in this country. This would have provided a much fairer way of paying for the service which we now give, but at present it would be unwise to ask the commissions to permit us to put a distance tariff into effect. Most of our traction lines, including interurban lines, have made it a prominent part of their policy and progress to extend their lines into outlying districts which offered attractive living conditions for people of moderate means, through low rentals and prices for necessities. If now a distance tariff were to be applied, the burden would be placed on the very people who have been attracted into these outlying districts by the traction lines.

The situation that will arise in presenting this matter through the efforts of the traction lines to the commissions will be met, possibly, by the desire of the commissions to go into the question of valuation. It is to be hoped that the commissions will not require at this time the making of detailed valuations, as it would require so much time to complete them that all hope of relief of the present situation would be deferred for years. However, some form of approximate valuation can be arrived at, if it is deemed essential that valuations should be made.

We start, in the first place, on the premise that for years 5 cents has been the general rate of fare throughout the United States. In a few places special laws have required 3-cent fares, which impose an additional charge for transfer privileges and other features of service which are generally given by traction lines. In these cases, therefore, the rate per capita to railways operating on the 3-cent basis has been as great as with the 5-cent rate in cities where transfers and other privileges are given gratis. The time has now arrived, in my opinion, when there should be an increase in our rates of fare commensurate with the increases that have occurred in the cost of every commodity that forms part of the necessities of life. These run anywhere from 40 per cent to 200 per cent, while we have had no increase. This, I think, is the justification for any application that we may make at this time. An increase in fare from 5 to 6 cents will mean increase in revenue of approximately 20 per cent, a moderate advance in view of the very great increases enumerated, and of the increase in prices which we have to pay for every commodity that enters into the cost of our service.

It should also be borne in mind that the increase of 20 per cent to the railway company is, in terms of the patron's income, a very small percentage. Let us take,

for example, the lowest paid wage earner, the laborer, who earns, say, $2 a day. In the 300 working days of the year he earns $600. If he travels on the cars to and from his work the increase in his expenses is 2 cents a day, or $6 a year. That is 1 per cent of his income required for the added cost of transportation. This percentage is less as the income of the individual is greater than the amount cited.

Franchise Limitations Are Not Insuperable

There is also another question which will arise in going before the commissions, namely, that of franchise conditions. In the inception of many of our lines the promoters were willing to accept franchises which limited the rate of fare to 5 cents, particularly within the city limits. Now my own opinion is that most communities recognize that one of the greatest factors in the prosperity of any city or village are prosperous, well-operated traction lines. I believe, therefore, that if this point is forcibly presented, municipalities, as a rule, will not be very strong in their opposition to an increase above the franchise rates.

There have been decisions in the State of New York, and I think in some other states as well, in which the courts indicated that utility commissions have a right, under certain conditions, to allow greater than franchise rates. I feel sure, therefore, that if the proposition is presented fairly and squarely to the commissions themselves there will be no very serious obstacle to overcome in order to get some relief.

It is my feeling that the action of all the traction lines as a unit at this time is most desirable; not that they are in any sense to be combined in restraint of trade, but because the representation of the traction lines as a unit will eliminate the possibility of one community being subjected to an increase in rates when another is not. All communities will be made to feel that they have been treated fairly and uniformly.

Railways in New York State Asking for More Revenue

The electric railways of New York State have at work a special committee on ways and means for obtaining additional revenues, of which the writer is chairman. This committee is acting as a unit and has already held conferences with the two commissions in the State, as was noted in last week's issue of the Electric Railway Journal. I believe that by having this committee appear as a unit, representing all the traction lines of the State, it will have a very decided effect upon the commissions themselves and thus relieve them from having one community arrayed in criticism against another. While acting as a unit, this committee is composed of two divisions, one for Greater New York and the other representing the railways in the rest of the State. This is necessary because the conditions and requirements in the two cases are so different. For example, the railways of Greater New York are not now petitioning directly for an increase in their rate of fare, but rather are asking permission to make a charge for transfers, for the reason that the surface lines in that city have as a competitor the subways and elevated lines, in the ownership of which the city is a partner. The "up-State" lines, on the other hand, will probably find it advisable to petition for direct increases in rate of fare.

By working according to the program outlined above we are going to overcome the objections which may be brought forward, and the necessity for the commissions to make examinations of our books to see what returns have been made upon the money invested. Certainly the traction lines of this State do not return any great amount on the investment, and if one will investigate the prices of traction lines in general he will find that no one wishes to buy them under present conditions, as the returns therefrom are not at this time sufficient to meet the demands.

Higher Fares Must Come

United action on the part of the railways in this and other states is our salvation, and I feel that if we present our cases to the commissions in a fair and straightforward way they will seek ways and means to give us a helping hand in this direction. From conversations with members of the commissions of this and other states I am convinced that at heart they have the feeling that increased revenue must be provided to avoid disastrous results. I am also convinced that the action taken by the electric railways in New York State at this time will have a far-reaching influence in all sections of the United States.

What the California Association Has Done*

BY W. V. HILL, MANAGER

THE California Electric Railway Association, consisting of twenty-four electric railways and three steam line railways operating electric units, was organized on May 1, 1916, for the purposes of conducting co-operative work for the welfare of its members, promoting good relations with the public, and the advocating of intelligent legislation, both State and municipal, affecting the interests of the electric railways in California.

While the association has been instrumental in bringing together the various officials of the electric railways, thus enabling them to exchange views on important subjects of common interest to all, these meetings should have been more frequent. There should be a better understanding and closer co-operation among the members.

The association has conducted a very satisfactory publicity campaign in newspapers and periodicals throughout the State. There has been very little adverse criticism appearing in any of the publications recently. The association as an association cannot claim full credit for this changed sentiment, as the public utterances made by several of its members and the educational work carried on by the several member companies through the medium of their magazines have been largely responsible for this satisfactory state of affairs.

Legislation

The association did what it could in connection with the Adamson eight-hour bill and the Cullop bill in explaining to the California representatives in Congress the reasons why electric railways should not be included in the provisions of those bills, and while other electric railway associations as well as companies and individuals also may have protested, the activity of the California association had its effect. The association has also presented data in Washington upon the importance of proper compensation from the government to electric railways for transporting mail.

In State, county and municipal matters, the association has been of especial help in supplying information to authorities and others in regard to jitney competition. The association also obtained from the Supreme Court a decision that the Railroad Commission has a

*Abstracted from first annual report prepared for meeting of association at San Francisco, May 7.

certain amount of jurisdiction over those jitneys which operate in interurban service on regular routes and schedules. Under this authority the association has petitioned the Railroad Commission to make an investigation of the jitney question in the State and also the franchise laws under which the electric lines operate. The commission has investigated the jitney problem but as yet has given little time to the franchise question.

Statistics showing the type and cost of paving have also been gathered and sent to all the members. Considerable thought has been given to safety measures, grade crossings, etc., and opinions on the effect of jitney competition on the value and sale of securities have been obtained from a number of Eastern bond houses which handle the securities of the electric railway utilities in the State of California.

New York City Lines Ask Two-Cent Transfers

Formal Applications for Relief Were Filed with the Public Service Commission, First District, This Week by the New York Railways, the Brooklyn Rapid Transit Company and the New York & Queens County Railway

PART of the inevitable has come to pass. On May 23 formal applications for authority to charge 2 cents for first transfers were filed with the Public Service Commission for the First District of New York by all the street railways in New York City, with the exception of the Third Avenue Railway and the Second Avenue Railroad. The latter company, as well as the companies coming under the jurisdiction of the Second District Commission, is expected to follow suit in a few days. As this issue was going to press, application for relief was made by the Third Avenue Railway.

The applications submitted for the New York Railways, the Brooklyn Rapid Transit Company and the New York & Queens County Railway all stated the imperative need of increased revenues in order to enable the companies to meet the high costs of operation and pay a fair return upon the investment. They were turned over to commission counsel, who will outline a method for further procedure by the commission.

B. R. T. Asks Modification of Transfer Order

The formal application presented by the Brooklyn Rapid Transit Company for its allied surface lines asked for a modification of the March 17, 1914, transfer order of the commission. While the company proposes to maintain the basic principle of 5 cents for a continuous ride between residence and business sections, it desires to curtail the excessive use of transfers by charging a small amount on them except in the case of certain feeder lines.

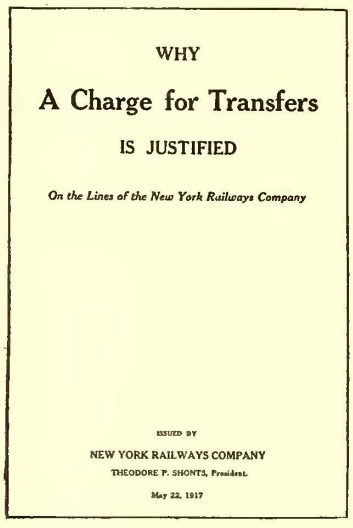
A statement accompanying the applications says:

"Under the commission's 1914 order transfer passengers are increasing 8,000,000 a year, and cash passengers are barely increasing at all. During the three fiscal years preceding July 1, 1914, the average annual increase in passenger revenue was $634,796. During the three years following, the average annual increase has been only $119,826, an average yearly decrease in growth of $514,970. The average fare received per passenger in 1913 was 3.82 cents, while in 1916 it was 3.28 cents.

"We realize that the new subway and elevated railroad facilities have diverted some traffic from the street railways, but any accountable diversion due to this cause does not explain the comparatively great loss in street railway revenue since the present transfer order went into effect. As cash passengers relatively diminish, the transfers which they use would be expected to diminish proportionately. That they have increased so enormously is proof conclusive that they have supplanted cash fares—either by more extended use of the privilege or by more fraudulent use of the transfer ticket.

Increased Costs for B. R. T.

"On the entire Brooklyn Rapid Transit system during the calendar year 1916, as compared with the preceding year (when costs were also high), transportation wages cost $659,000 more, power $243,000 more, maintenance $182,390 more and taxes $533,062 more. Of the important railway supplies the increase in prices in 1917 over 1915 has ranged from 26 per cent to 400 per cent. The price of the product—transportation—has actually been going down, measured by the unit of fare per passenger, while the cost to us of that product has been rising. Such a tendency is neither just nor wholesome.



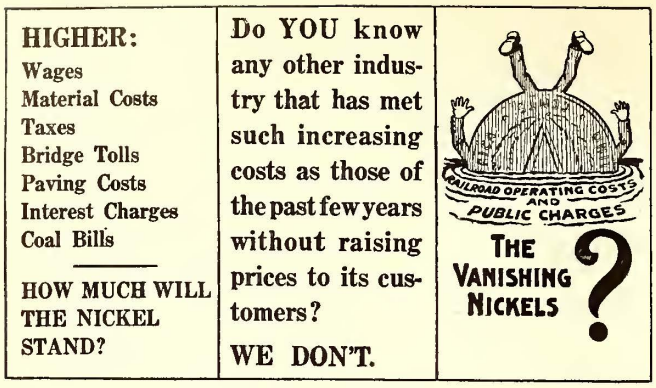
COVER OF NEW YORK RAILWAYS BOOKLET

8 Per Cent Is B. R. T. Minimum Rate of Return

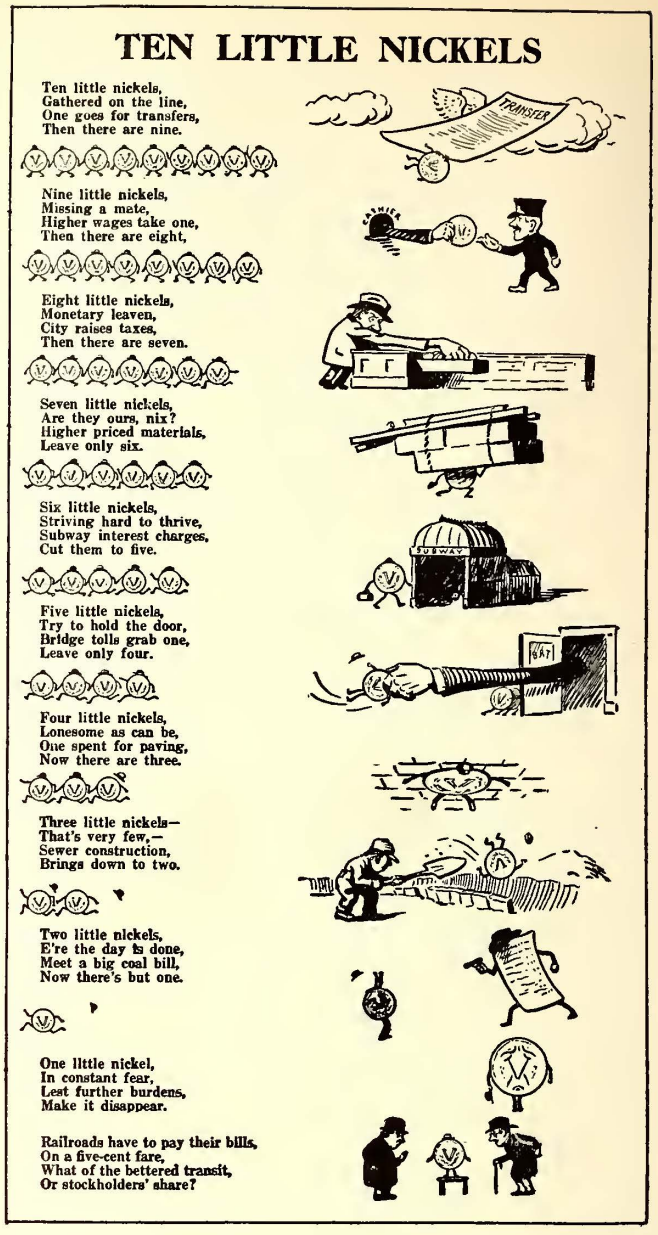
"The courts seem generally to have agreed that a rate of return of less than 6 per cent on fair property values is confiscation when forced by official regulation or by legislative act. Measured by that rule of law the present transfer would be declared invalid, if contested. But there is a wide difference between a confiscatory rate and a reasonable rate of return. The former merely protects the investor in the title to his property. The latter protects the public in its reasonable demands for facilities and encourages the investor to supply them. The statutes of New York for sixty years forbade a reduction of rates which would bring the return upon capital expended to less than 10 per cent, and this is not unreasonable. The preponderance of opinion is in favor of a return of from 8 to 10 per cent.

Actual Rate of Return of B. R. T.

"The gross income for 1916 was less than 5 per cent on the gross assets, including all kinds of property owned. For comparison with what the commission has



OUTSIDE OF CAR PAMPHLET ISSUED BY THE BROOKLYN RAPID TRANSIT COMPANY



INSIDE OF B. R. T. CAR PAMPHLET

itself approved as to the valuation of our properties, we take as a basis the appraisal of the commission's expert, Bion J. Arnold, in 1909, plus the net additions of property since that date (of which the commission has been fully advised). This result closely approximates our book value less accrued amortization, and the rate of return on the book value in 1916 was only 5.69 per cent. Mr. Arnold's figures covered only the assessed value of real estate and the then present value of tangible property, based upon the cost of reproduction less depreciation. They did not include allowance for easements, real estate values in excess of assessed valuation, interest during construction, franchise values, development expenses, working capital, or preliminary legal and organization expenses, etc.

"As the commission said in its opinion: 'All of these items would be absolutely essential disbursements in the reproduction of any existing railroad, and they would add considerably to the figures of valuation given in the foregoing estimate if proper allowance were made for them.' We have therefore added to the original estimate percentages of costs which Mr. Arnold and other experts have assumed to be fair allowances for omitted items, except franchise values, which we have not attempted to include. Upon this basis the total reproduction value as of January 1, 1909, was $76,990,105, to which have been since added properties valued at $2,718,095—making the total reproduction value as of March 31, 1917, $79,708,200. On this valuation the return for 1916 was only 5.91 per cent. The commission, therefore, has ample information as to the value of our properties, and the return is less than what the courts have held to be confiscatory.

"Out of the total passengers carried only about one-fourth will be affected by the proposed transfer charge. The estimated increase of revenue will not exceed $1,200,000 per year. That addition will still leave our net return less than what by the concurrent opinion of public utility commissions and experts is reasonable and proper."

Petition of New York Railways

The application made by the New York Railways requested either an abolition of free transfers or an authorization of a charge of 2 cents for each transfer, without extra charge for retransfers. In support of its application the company said that it had never paid a dividend on its capital, nor had its income in any calendar year been sufficient to pay the full 5 per cent interest on the adjustment income bonds. The actual return for the year ended Dec. 31, last, "or true net income from operation," was $2,431,416. This total was obtained, it was explained, by deducting from the gross earnings from all sources only operating expenses and taxes, and without deducting the rents paid for leases, interest on funded debt or other fixed charges.

For the five years ended Dec. 31, 1916, the average annual return was $3,766,814. If the return had been sufficient to permit payment of interest at the full rate of 5 per cent on the adjustment bonds, the income would have had to be $4,433,323. If it had been sufficient to pay also 6 per cent on the outstanding stock, it would have had to be $5,480,626.

The company said that for the nine months ended March 31, 1917, the net income was insufficient to pay any interest on its adjustment income bonds, and was also insufficient to pay the interest due and to become due upon the outstanding first real estate and refunding 4 per cent mortgage bonds. During the nine months this deficiency amounted to $464,271.

The total number of passengers carried by the system for the year ended Dec. 31, 1916, was 335,752,271. Of this number 15,184,304 were "revenue" transfer passengers, or those for whose transportation the company received some measure of compensation because of joint rate arrangements with other carriers, and 92,466,233 were full transfer passengers. During the four years ended Dec. 31 the average annual total number of pas-

sengers carried was 371,266,155. Of these 13,906,081 were revenue transfer passengers and 106,315,339 were free transfer passengers. The average fare received in the last calendar year was 3.53 cents, while for the last four-year period the average was 3.49 cents.

The application stated that the value of the property of the New York Railways devoted to public service is $109,206,000, and that on the basis of the commission's own determination in the Metropolitan Street Railway reorganization, with later additions and betterments, the value is at least $89,000,000. On the latter figure the average annual net income for the five years ended Dec. 31, 1916, is equivalent to a return of 4.23 per cent. The company said it should receive at least 7 per cent and an addition of 1 per cent for surplus and contingencies, and that on the commission's valuation the return should not be less than $7,120,000, or 8 per cent.

Other Points of the Week's Activities

The application of the New York & Queens County Railway asked for relief, but did not specify a charge for transfers. It was said that the net investment in road and equipment was $8,427,115. The total operating expenses for the year ended June 30, 1916, were $1,435,764, and there was a deficit for the year of $294,570. During the fiscal year 28,373,608 passengers were carried, and the total number of transfers collected was 8,964,862, making the average fare per passenger 3.80 cents, which is less than the cost of carrying such passenger. Since the opening of the new Astoria and Corona rapid transit lines the loss to the company has increased, the loss up to May 15 being $70,301. The company simply petitions the commission to act in such a manner as to permit it to operate without loss.

During the week the Brooklyn Rapid Transit Company issued a car pamphlet designed to show the public the various burdens upon the nickel fare. This pamphlet is reproduced on page. The New York Railways issued a nineteen-page booklet, as shown in the illustration on page 957, to show why a charge for transfers is justified. Placards were also placed in the cars, asking whether it was not more fair to charge 92,000,000 persons for transfers than 257,000,000 persons a higher unit fare.

A resolution protesting against favorable action by the Public Service Commission on any request for increased fares has been adopted by the Board of Aldermen at the proposal of President Dowling, who urged that "before any authority is given these street railway lines to increase fares or charge for transfers a thorough investigation of the bond and stock issues of not only the holding companies but of the various lines making up these several systems be made by the commission."

N. S. C. Slogan Pamphlet

The National Safety Council has recently issued a pamphlet containing safety slogans. Among those suggested for electric railways are as follows: Stop when you see an officer signaling. Better lose the car than be thrown under it. A trolley car can't guard you to keep out of its way. Take your life current from the trolley of safety. Wait till the car stops and face front when alighting. Main thoroughfares are not intended for playgrounds. Don't lose your head in traffic or you may lose a limb. Unless your head is solid bone, do not put it out of a car window. Wait until the car stops before you step on or off; the car can wait. Before leaving the car look both ways—for wagons, autos and motorcycles. When passing behind a car always look to see what is coming from the opposite direction.

Floating the Liberty Loan

Plans for Selling War Bonds Occupy Attention of Electric Railways—Street Railway Advertising Operators Prepare National Campaign

DURING the past week the most prominent feature of war-time activities of the electric railways appears in their plans for aiding subscribers to the new government bond issue that constitutes the "Liberty Loan." In addition, the electric railway industry is playing an important part in the popular movement for giving wide publicity to the sale of war bonds.

Beginning early next week the merits of the new Liberty bonds will be advertised in some 50,000 electric cars, operating in all sections of the country. Free advertising space in the cars was recently offered to Secretary of the Treasury McAdoo by Barron G. Collier on behalf of the country's street car advertising operators. The cards to be used in this campaign, six in number, are being supplied by the Collier Company and were designed in its art department, in co-operation with Mr. Woolley, director of publicity for the Treasury Department at Washington. Three of the designs are illustrated herewith. As will be seen, they emphasize the patriotic as well as the investment feature of the loan, and liberal use has been made in the design of the button to be issued to purchasers of bonds.

The management of the San Francisco-Oakland Terminal Railways has taken a great interest in this movement, and placards are being displayed in all of the cars and ferry boats operated by this company to call

ELECTRIC RAILWAYS IN WAR TIME—CARDS DISPLAYED BY ASSOCIATION OF STREET CAR ADVERTISING COMPANIES

the attention of the public to the bonds. In the last issue of *Key System News* which is published by this company, it is urged upon all employees their duty is to subscribe to these bonds up to the amount of their ability to do so. Subscription blanks have been placed at all available places for employees and for the public generally, and the management is supervising the entry and delivery in proper form of subscriptions received in this manner.

A number of companies have arranged for sales of the bonds to their employees on installment plans. Among those which have done so is the Bay State Street Railway Company. The leaflet issued by the company descriptive of these bonds says that they will be cared for by the company if the subscriber desires, and the coupons will be collected when they are due, the amount of the coupons being paid to the employees owning the bonds. Attention is called also to the fact that the Amalgamated Association of Street & Electric Railway Employees of America urges its members if possible to subscribe, and there is reproduced a telegram from W. D. Mahon, president of the association, to this effect. The leaflet concludes: "It is an easy thing to cheer the flag, an easy thing to spout patriotic oratory. But the call for this vast amount of money brings to Americans of every class, as individuals, a demand for something that Americans find much harder—personal self-denial. It brings the first concrete opportunity to show whether your patriotic sympathy with the cause of the Allies and the declared purposes of the conflict with the Prussian aristocracy has been only conversation; whether, when the President summoned the American people to the sacrifices and suffering inseparable from war, he really represented you."

As a part of the movement toward the exploitation of the loan in New York State, where it is expected that nearly a billion dollars will be raised, the Interborough Rapid Transit Company has announced arrangements for the purchase of the bonds by its employees on weekly payments of $1, and that free advertising space in all of the company's cars has been offered to the government.

War Notes

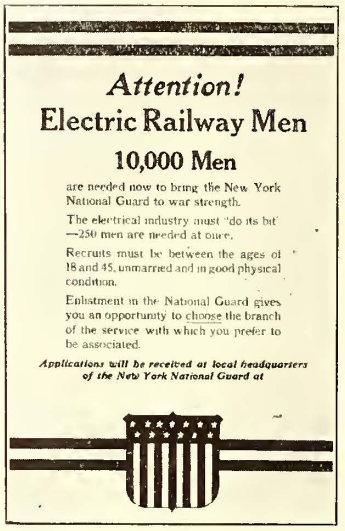
Women Now on the Front Platform in Glasgow—N. Y. E. R. A. Assisting in National Guard Recruiting—Editors Confer with Government Department Heads

At the present time nearly 300 women, formerly employed as conductors, are engaged in operating surface cars on the Glasgow Corporation Tramways—the first railway system in Great Britain to replace large numbers of motormen with women operators, and James Dalrymple, general manager of the system, has appealed to every suitable woman conductor to undergo a course of training in order to release motormen for government service. In the training of women for duty on the front platform, exactly the same course is followed as with men, the arrangement being in the hands of the traffic superintendent, while the instruction is given by an experienced engineer at the company's school for motormen.

The course of instruction extends over a period of twelve days, during which full wages are paid, and it is open to all conductors after a period of satisfactory service as conductor ranging from six to twelve months. The first four days of the course are taken up in oral instruction in connection with a skeleton car in the company's school. For the next four days the beginner is sent out on the road under the care of an experienced motorman who has been specially authorized to instruct students. On the eighth day the beginner goes back to school for a preliminary examination in knowledge of car details and platform duties, and following this the next three days are again spent on the road in regular service under an experienced motorman. The afternoon of the twelfth day is taken up with a final examination that is conducted by the chief instructor at the motormen's school, satisfactory candidates being passed after having certificates forwarded to the head office.

Enlistment Poster in New York

A strong effort is being made by the Citizens' Preparedness Association of New York State to encourage enlistment in the National Guard in accordance with the request of the War Department that the existing organization be recruited to war strength before it is taken into the federal service. The different trades and industries have been listed, and arbitrarily quotas have been assigned to each. That for the electrical industry has been set tentatively at 250. To aid in this movement the New York Electric Railway Association is distributing among the electric railways of the State red, white and blue placards like that shown in the accompanying illustration, these being intended for posting in carhouses and other prominent positions.



ELECTRIC RAILWAYS IN WAR TIMES—ENLISTMENT POSTER IN NEW YORK

Editorial Conference at Washington

A meeting of the editors of the technical and business papers to determine how these periodicals can best assist in the war was scheduled to take place in Washington, D. C., on May 25. Arrangements were made for short addresses during the morning from the following: George Creel, chairman committee on public information; Francis S. Peabody, chairman fuel board, Council of National Defense; David F. Houston, secretary of agriculture; Franklin K. Lane, secretary of interior; Newton D. Baker, secretary of war; Josephus Daniels, secretary of navy; William C. Redfield, secretary of commerce; Frank A. Vanderlip, president National City Bank, New York City; and William B. Wilson, secretary of labor.

The program for the afternoon included addresses from Van H. Manning, director United States Bureau of Mines; Herbert C. Hoover, food administrator; Walter Gifford, director Council of National Defense; Frank Scott, chairman munitions board, Council of National Defense; Dr. Martin, in charge of Red Cross work, Council of National Defense; Fairfax Harrison, chairman, or some other member of the railroad executive committee, Council of National Defense; George Otis Smith, director United States Geological Survey, and R. W. Woolley, director of publicity, Liberty Loan of 1917.

During the year 1916 there were 108 persons killed and 416 injured in grade-crossing accidents in the State of California. There are 10,000 grade-crossings in that State.

American Association News

Chairman of Committee on Company Sections Addresses Open Letter to Railway Managers—Bulletin o Committee on National Defense Is Reprinted in Full—Reports of Section Meetings Show Great Diversity of Topics Treated

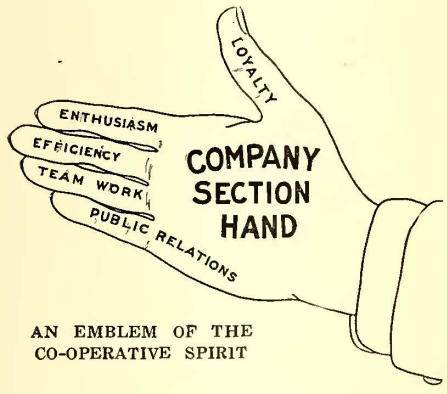
Why Not Extend the Company Section Hand to Your Organization?

An Open Letter to the Managers of Electric Railways in the United States

BY MARTIN SCHREIBER
Chief Engineer Public Service Railway, Newark, N. J.

At present there are eleven company sections in the American Electric Railway Association. The fact that these sections started with 1000 members and now have 1900 stands out as indisputable evidence of the success of the company section movement. There has never been a time when the association has had a better opportunity to help the electric railway company than right now, and one way in which it can do this is by the organization of company sections.

To-day the electric railway industry is facing a fixed fare, regardless of the great advance in cost of labor and material. The price of labor and material is governed by the open market, and you cannot escape taxes, insurance or carrying charges. Until increased rates are allowed about the only opportunity for saving is to increase the yielding power of the organization. We invent machines to do more work; we devise new methods to increase efficiency; but have we spent sufficient effort to bring out the full possibilities dormant in our individual employees?



AN EMBLEM OF THE CO-OPERATIVE SPIRIT

Did you ever stop to think that it is not uncommon for men employed at piece work to produce one and one-quarter times the work of men hired by the day? Suppose each man could do one-tenth more work on a railway system than he is doing. On a system with $1,000,000 gross income the operating expenses would be $650,000, approximately speaking, of which $325,000 would be for labor. Ten per cent would represent a saving of $32,500. For a property with $10,000,000 gross the saving would be $325,000 a year. However, you should keep in mind that the greater yielding power of an organization may also be developed in ways other than by saving of actual hours, because you must take efficiency into consideration, such for example as is produced by power saving. It has been consistently shown that careful operation of cars often saves ten per cent on the power bill.

Again, you can make money by ways other than saving it; you can spend money advisedly so as to get new business, and increase your revenues by advertising. The best advertisement is good and attractive service, performed by willing, courteous and intelligent representatives.

To be brief, is not the real answer to the efficiency question found in training your employees, and isn't the company section an ideal training camp?

First, you want loyal men. Men are loyal when the company shows an interest in them. It's sort of a "fifty-fifty" proposition. Forming a company section shows the employees that the company is trying to help them.

Second, the company section promotes personal ambition. Personal ambition is a promoter of enthusiasm. Enthusiasm is absolutely necessary for every progressive and successful business.

Third, where you have kindled honest enthusiasm, you unconsciously inspire a thirst for knowledge. Here is where a company section can do wonderful work; the possible activities hardly need comment.

Fourth, as soon as employees of the electric railways begin to obtain knowledge of the electric railway business, just then is when they begin to become more efficient and realize the tremendous power of team work, which is now looming up so formidably in military operations.

Fifth, with the cultivation of loyalty, enthusiasm, efficiency and team work among the employees, it goes without saying that you will develop great improvement in public relations.

These are a few reasons why the writer believes that the electric railway companies should extend the company section hand to their organizations.

Co-operation for National Defense

Some weeks ago the American Association Committee on National Defense sent to member companies, over the signature of Gen. George H. Harries, chairman, a bulletin containing specific suggestions as to what can be done to prepare electric railway properties for active co-operation with the government. By way of supplementing the committee's mail campaign and to remind the electric railways again of the importance of prompt action on their part the bulletin is reprinted below in full.

To Member Companies:

After having studied with some care such interesting information as has been received from nations in Europe now at war, the Association's committee on national defense presents for your consideration the following suggestions with respect to matters that are now or may soon be of material interest to you.

One of the immediately essential things is the protection of the property of each company. In view of property destruction which has already taken place in this country and because there undoubtedly are many conspiring enemies within our borders, we suggest that attention be promptly given to:

(a) The protection of strategic points of railroad line, such as bridges, tunnels, junctions, dispatching stations, and of coal supply and transmission lines.

(b) The inclosing of power-house yards with heavy fence and ample lighting of such yards and of areas around the storehouses, shops and carhouses.

(c) The furnishing of all power-house and shop employees with badges and permits so as to pass the watchman in charge who should, so far as possible, be acquainted with each individual.

(d) The selection of men in each plant for "special

officer" duty so that they may be used as police when occasion arises.

(e) The careful scrutiny of personnel of employees.

The continued operation of all transportation agencies is a vital necessity to the national defense and it is therefore desirable that all officers essential to the transportation service continue in their present positions in so far as possible, rather than enlist for active service under the government; however, as a large body of electric railway employees in various branches of service will undoubtedly be required for army duty, we suggest:

(a) That each company should make a list of the men who would probably thus leave the company's service—so that the company could reasonably estimate upon the vacancies which would have to be filled under such circumstances.

(b) In connection with the foregoing it would undoubtedly be desirable to have lists of applicants previously rejected by the company because of some physical disability; so that those of them who could be used in emergency might be readily accessible.

(c) That consideration be given to the possible use of women as conductors and for other positions in the company's service. This should be carefully studied.

(d) That it would be well to have a complete census of all employees so as to have on record their varieties of usefulness and their special ability along certain lines of service which might or might not be military.

(e) That consideration be given to the laying in of supplies difficult to obtain in time of war.

(f) That thought be given to the possible adoption of portion of shop equipment and space for the manufacture of supplies or repairs essential to army transport.

(g) That arrangements be made for duplicate power supply to provide for possible break-down or to meet unusual demands.

Because of the call for military service it is desirable that companies be in a position to assist in the selection of individuals by government officers, and we would therefore suggest that:

(a) A list be made of available men who might be used as non-commissioned officers in the engineering corps of the army.

(b) The free use of available carhouses and offices for recruiting and medical examination of employees and others be offered.

(c) There may be outdoor recruiting assistance by advertising cars carrying brass bands, speakers, etc.

(d) There be plans for collection in cars or at carhouses of money contributions for comforts to be forwarded to soldiers and sailors.

Many transportation corporations have adopted the following policy in the treatment of such of their employees as may enlist at the present time:

Positions will be available for such employees upon their discharge from National service, but no compensation will be made to such employees during the terms of such service. This does not refer to men who have previously enlisted in the National Guard.

The question of tariffs which must be filed with the War Department in order that the movement of men and supplies by electric lines may be authorized has been taken up with the War Department by the committee, and as soon as definite information is received it will be communicated to member companies.

Attention is called to the desirability of co-operation in the matter of keeping down the cost of living. It may be said in this connection that several member companies have already offered, rent free, plots of vacant land in their possession, to such persons as are willing to cultivate them for the purpose of raising garden truck and other crops.

It is possible that many lines will be called on for abnormal increases in service due to the carrying of men, munitions and general supplies to coast defense works, mobilization points, munitions and other factories. The conditions thus likely to be created might well be studied in advance so that high efficiency may be possible as soon as the pressure begins to be applied. Prospective sidings, extensions, increases in equipment and related matters may well be considered at this time by companies in very many communities.

The committee is prepared to do all in its power to secure for member companies any specific information which may be asked of it and will devote itself to the duty of assisting in an orderly solution of a national problem, in which problem each company is an element.

Recent Committee Meetings

At a meeting of the T. & T. Association committee on construction of schedules and time-tables held in New York on April 24, the discussion centered on the subject of traffic in congested districts. The meeting was attended by Alexander Jackson and H. C. Donecker, Newark, N. J.; H. F. Fritch, Boston, Mass.; J. A. Stoll, Baltimore, Md., and F. L. Hubbard, Toronto, Ont. It was decided that the following members should visit the cities designated for the purpose of studying the topic in hand: Messrs Stoll and Jackson, Newark, Baltimore and Cincinnati; Messrs. Hubbard and Fritch, Cleveland; Messrs. Dana and Fritch, Springfield, Mass., and Mr. Dana, New Orleans. These visits will be made at early dates.

A joint meeting of the two association committees on electrolysis (American and Engineering) was held in New York on May 4. The matter under discussion was the proposed form of the final report of the national joint committee on electrolysis, on which committee the associations are represented by Calvert Townley, New York City; A. S. Richey, Worcester, Mass., and R. P. Stevens, Youngstown, Ohio. In attendance at the meeting were Messrs. Townley and Richey, and E. J. Blair, Chicago, Ill.; E. B. Katté, New York City, and I. W. Gross, New York City.

Signal Oil Discussed in Chicago

At the regular monthly meeting of the Elevated Railroads company section held on May 15, the principal speaker was John W. Bunn of the Galena Signal Oil Company, who presented a paper on "Signal Oil." The report of a local committee appointed to consider the "Definitions of Electric Railway Transportation Terms" submitted by the T. & T. Association for study by the company sections was presented and ordered forwarded to the secretary of the American Association. The formal part of the program was relieved by instrumental and vocal music and athletic events.

Public Service Section Visits Power Plant

A party of 165 members of the Public Service Railway Company section spent the evening of May 17 at the Essex power plant of the Public Service Electric Company, which is located on the Passaic River, 2½ miles east of Newark. The party assembled in Newark and was taken to the plant in special cars. Representatives of the electric company familiar with the details of the plant escorted the men through the station and explained the working of the equipment.

This plant, of which details will be given in a later issue of the ELECTRIC RAILWAY JOURNAL, is the latest one constructed by the electric company. At present two 25,000-kw. turbine units are in operation, and one of 35,000-kw. capacity is being installed. The boiler plant is also being extended and an order for a 50,000-kw. turbine unit has been placed for delivery in 1919. It will be some years before the plant reaches its ultimate capacity, which will be more than 200,000 kw.

Patriotism Displayed by Milwaukee Section

The regular meeting of Section No. 1, held on May 10, with an attendance of seventy-five, was largely of a patriotic character. Sergeant-Major Albert Wood gave a talk on life in the trenches, based on personal experience in campaigns in which he had been several times wounded. He was loudly cheered by the audience. R. B. Stearns followed with an outline of the duty of the American citizen, after which the color squad from a local United States recruiting station marched in. An

officer read a telegram calling for volunteers for the telephone and telegraph divisions of the army.

In addition to the patriotic number there was an illustrated address by R. C. Gosrow on "A Trip Through California," with particular reference to the steel industry.

Educational Work of Toledo Section Is Successful

At the meeting of company section No. 11, held on April 27, a report of the group work committee was presented, showing encouraging interest in the educational work. The total weekly attendance on the sessions of classes in arithmetic, algebra, electricity, drafting, bookkeeping, gas work, steam boilers and painting ranged between 203 and 235, with an average attendance of 93 per cent of the registration. During the first month ninety-seven class sessions were held. At this meeting an address on "Modern Tendencies in Illumination" was given by H. H. Magdsick, illuminating engineer General Electric Company, Cleveland, Ohio. The attendance at the meeting was 150, slightly less than one-half the total membership.

"Co-operation" the Topic at Meralco Section April Meeting

At the meeting of the Manila Electric Railroad & Light Company section, held on April 3, N. Tranfaglia, track foreman, read a paper on "Co-operation," which was discussed by a number of members. Sixty-eight members responded to rollcall and twenty-two new members were added to the railway division of the section. Of these thirteen were from the transportation department, six from the commercial department and three from the power-plant department. In addition to the formal proceedings there was a fencing contest between two members of the transportation department, a song in Tagalog by a transportation department inspector and music by the orchestra composed of members of the transportation department.

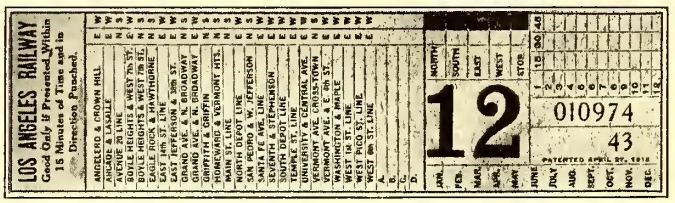
Mr. Tranfaglia began his paper with the homely adage, "Una mano non si lava sola, una lava l'altra e le due lavano il viso." This, translated into English, means, "One hand does not wash itself alone, one hand washes the other and the two wash the face." This adage, he thought, contains the germ of co-operation. Applied to electric railway work this means that an employee not only has to earn his daily bread and better his financial condition, but he must co-operate with his fellow employees and be on the watch to better his employer's interest. This involves a workable system to minimize expenditure of time and money, otherwise great wastes will result especially if a large number of men are involved. Co-operation is necessary not only to secure good results in work, but to promote goodfellowship and mutual understanding in order that one's store of knowledge may be increased. Through co-operation, men can do things that otherwise would be impossible.

In the discussion, R. E. Brooks, assistant superintendent of shops and carhouses, showed how co-operation would help his department. Frequently other departments ask for work on rush orders when by the exercise of foresight this could have been put through the regular channels without inconvenience and extra cost. This, of course, does not apply to emergencies. B. H. Blaisdell, chief engineer of power plant, referred humorously to the department which borrows from the power plant a couple of cubic meters of sand or a few tons of coal in an emergency, expecting subsequently to furnish the proper order but sometimes neglecting to do so. In his opinion the greatest enemy to co-operation is selfishness, although the desire for co-operation is inherent in most men. This quality, however, needs cultivating.

New Transfer Developed at Los Angeles

The Los Angeles Railway Corporation has in experimental service a new type of transfer, the special feature of which is that it may be used on all the lines of the company. This reduces the number of transfers required to be kept on hand and consequently the amount of waste in old transfers. The line punched is that of the issuing line, and in the column of lines there are four blanks marked A, B, C and D, which can be used for new lines. As some lines do not transfer to other lines, to prevent looping back the company will issue a book of instructions to conductors showing the points at which transfers are not issued.

Five punches are required, namely, the direction in which the car is moving, the direction in which the passenger is entitled to go, the month, the a. m. or p. m., and the time limit. The issuing line punch and the month punch can, of course, be made before the conductor starts from the carhouse and the a. m. or p. m. punch before starting on each trip. The punch showing the direction in which the passenger wishes to go may also be eliminated, because the receiving conductor should know, when a transfer is handed to him, the line by which it was issued, so that the hour is really the only punch required during the trip. The trial of these transfers is being conducted by Charles Barrington, Jr., purchasing agent Los Angeles Railway Corporation.



TRANSFER BEING TRIED IN LOS ANGELES

Arkansas Association Meets

The tenth annual convention of the Arkansas Association of Public Utility Operators was held at Pine Bluff, Ark., May 16-18. At the business session the following were elected officers for the ensuing years: President, S. E. Dillon, general manager Citizens Electric Company, Hot Springs; first vice-president, E. T. Reynolds, manager Arkansas Light & Power Company, Paragould; second vice-president, P. T. Phillips, engineer Little Rock Railway & Electric Company; secretary-treasurer, R. B. Fowles, auditor Pine Bluff Company.

W. N. Gladson, dean of the electrical department of the University of Arkansas, was elected to honorary membership in the association.

The convention voted to meet in Hot Springs, Ark., in 1918. The executive committee of the association will be appointed by the new president, and this committee will select the date for the 1918 convention. The attendance far surpassed all past conventions, from the viewpoint of the number of companies represented, there being representatives from thirty-five public utility companies of the State. C. G. Griffin, general manager Little Rock Railway & Electric Company, presided at the annual banquet.

COMMUNICATIONS

"Killing" the Trolley Wire Near Open Drawbridges

NEW YORK CITY, May, 21, 1917.

To the Editors:

In the issue of the ELECTRIC RAILWAY JOURNAL for May 27, 1916, under the heading "Prevention of Drawbridge Accidents" the following statement is made by one of your contributors: "Trolley cars are subject to accidents at drawbridges used over rivers, due to the opening of the bridge just as the car reaches it, unless some means of 'killing' the trolley wire before the bridge is opened is provided."

The suggestion which this writer makes has been advanced innumerable times in various journals, at hearings, etc., by men apparently entirely unfamiliar with the actual operation of cars over drawbridges. They overlook the fact that to be successful or satisfactory a method of stopping cars before entering a draw must be foolproof. The average car approaches a draw with the power off anyway, so that the cutting off of the power on the trolley wire has little or no effect upon the problem.

A car can as readily coast into an open draw as it can go into it with power on. Moreover, the "killing" of the trolley wire a short distance back from the draw might result in a catastrophe which could otherwise have been prevented. For instance, if upon approaching a draw a motorman should shut off his power and apply his brake, and should find that, due to a broken brake rod, lack of air, or for any other cause the brake mechanism was inoperative, he should immediately, in accordance with instructions, apply his reverse. While he could, with a double-truck car, for a short distance get an electric brake effect without any power, he could not with a single-truck car get any such result. Thus the only means of stopping his car, his brake mechanism having failed, would have been taken away from him by the unique device of having "killed" the trolley wire in the vicinity of the bridge.

"RAILWAY MANAGER."

Speeding Service by Educating Public

BURLINGAME ELECTRIC RAILWAY
BURLINGAME, CAL., May 19, 1917.

To the Editors:

I have read with great interest the articles which have appeared in the ELECTRIC RAILWAY JOURNAL on attempts to educate the traveling public on safety and kindred subjects. But I have seen no suggestion from any railway that passengers waiting to board a car should be instructed to stand still as the car approaches. The average person seems to think it necessary to anticipate the stop to be made by the car by walking forward or backward, and the consequence is that on heavy lines the time lost for waiting for these persons to board the car is very considerable in the course of a day.

In the interest of saving time the average trainman will make his stop with the car entrance as near intending passengers as he can. But when the patrons walk ahead or back, accurate calculations in this respect are almost impossible.

It seems to me that if the public could be educated in safety measures, skip stops, and other ways of speeding up service, this subject should also receive attention, to the advantage of both the public and railways.

F. P. WILL, Superintendent.

Equalizer Bars Not Necessary for Either Easy Riding or Safety

NEW YORK, WESTCHESTER & BOSTON RAILWAY
NEW YORK, May 22, 1917.

To the Editors:

I have been very much interested in S. A. Bullock's article published in your issue of April 21 regarding the need for equalizer bars for electric trucks, as well as in the discussion that has followed the original article. A second reading leaves one strongly with the impression that the case in favor of the equalizer bar has been made mainly out of arguments over points of fact.

In the article in question the equalizer bar is advocated for high-speed service on two grounds. One of these is that the equalizer bar, alone, gives proper distribution of the load over the four wheels of the truck. But this load-distribution, as pointed out in W. F. Kiesel's clearly thought-out communication in the issue of May 5, affects particularly the ability of the truck to stay on the track, and a truck in which the load is improperly distributed over the wheels must, of necessity, be frequently derailed if run at high speed. Therefore when Mr. Bullock says that the use of springs over the journal boxes (instead of equalizer bars) gives improper load-distribution, he says in effect that trucks built according to all such designs must be subject to derailment.

Yet would anyone want to claim that the Pennsylvania Railroad's standard four-wheeled passenger trucks, which do not have equalizer bars, are frequently derailed? On the New York, Westchester & Boston Railway the car trucks have springs over the journal boxes and no equalizer bars, but five years' experience without a single derailment of these cars in high-speed service has demonstrated that the equipment is the safest in the country. Hence, in Mr. Bullock's statement that equalizer bars are necessary for high-speed trucks he submits, as his argument, a personal opinion to oppose the established fact that cars which do not have equalizer bars have been operated for years in perfect safety.

The second reason put forward in the article in support of the equalizer bar is that, without it, springs must be installed over the journal boxes and that these occupy an unduly large space. Undoubtedly, the idea intended here is that the available space over the journal box is too small for springs of proper amplitude, and that in consequence cars without equalizer bars must ride badly. Here again is a personal opinion opposed to an established fact. The Westchester car trucks have enough space over the journal boxes even for springs much longer than those actually used. At the same time the Westchester cars ride easier than any of the cars with equalizer-bar trucks that are in similar service in the same district, and the difference in riding qualities is so marked that it is apparent at once to anyone who rides on these cars.

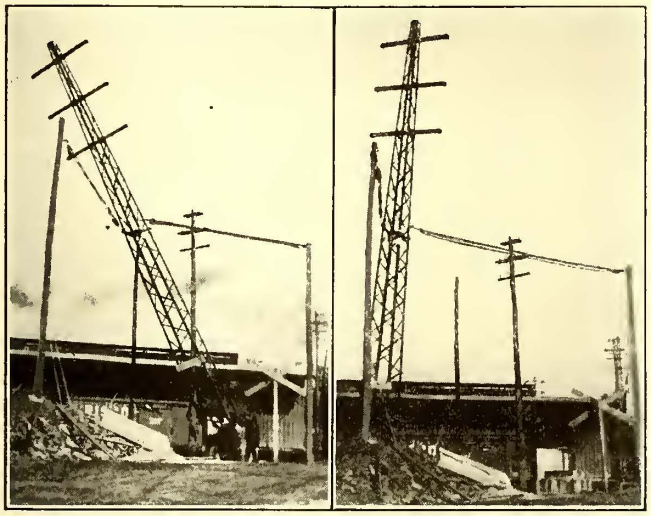
It may be that reasons, other than the two mentioned, exist for the use of equalizer bars in high-speed service, but if they have to be supported by arguments based on the non-existence of established facts they are not likely to prove the use of equalizer bars to be necessary. Indeed, since modern cars that are both easy riding and safe against derailment can be, and have been, built without adopting the equalizer-bar construction, it seems proper to say that equalizer bars are not even permissible, because of the undesirable increase in weight and complication which their use involves.

R. R. POTTER,
Superintendent of Equipment.

Practical and Economical Solutions of Problems in

EQUIPMENT AND ITS MAINTENANCE

Every live shop, track, line and power plant man is doing something that others would like to know about. Such men have a splendid opportunity to assist the industry by notifying the editors of this paper of new things that have been done. Information may be sent in the form of rough notes or short articles, and special rates will be paid for all accepted material.



MOVING STEEL TOWER WITH GIN POLES

Steel Tower Moved in Thirty Minutes

Two Gin Poles Used to Transport a Transmission-Line Tower 30 Ft.

BY E. B. HOOK, JR.
Superintendent of Construction, Georgia Railway & Power Company

On account of changing the direction of a street in Rome, Ga., the 75-ft., 4-ton steel tower shown in the accompanying illustration had to be moved 30 ft. to bring it to one side of the roadway. This operation was performed by means of two 40-ft. gin poles, thirty minutes being required to move the tower and bolt it to the new concrete foundation. Snow and sleet were falling during transportation. The insulators were removed from the tower and the 66,000-volt lines temporarily supported on wood poles. Blocks and tackle were fastened to the tower and the gin poles, which were erected and guyed at each end of the line along which the tower had to be moved. After the tower had been tilted in the direction it was to be moved the tackle on the pole toward which it leaned was hauled in, thus dragging the base of the tower into its new position. The other gin pole and tackle prevented the tower toppiing over entirely.

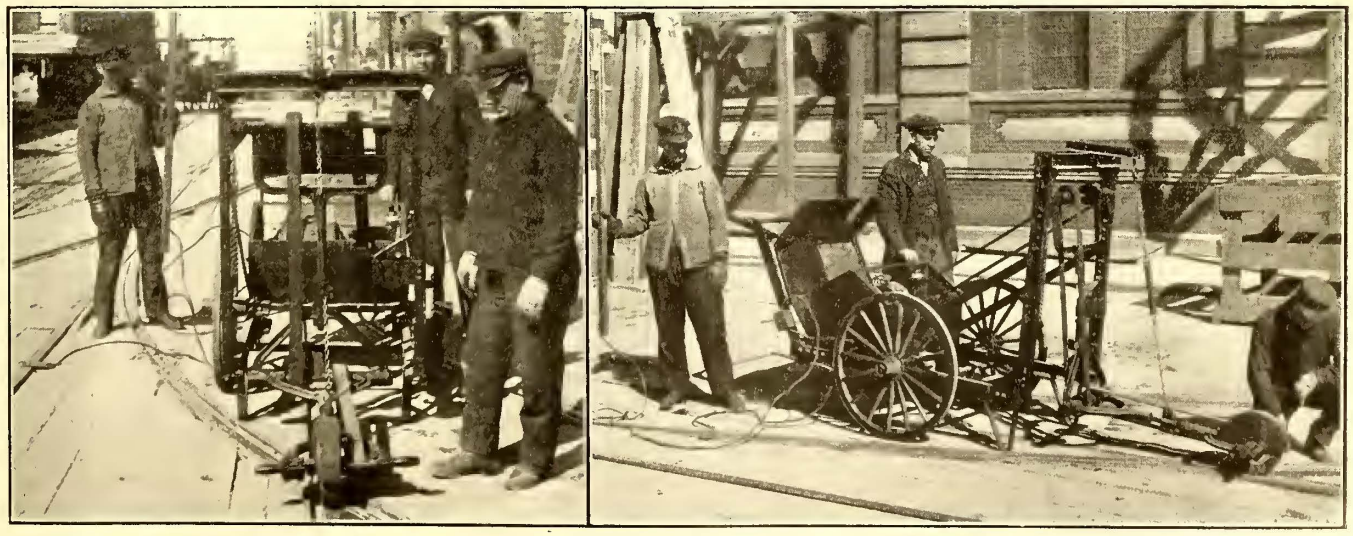
The "Swing-Frame" Grinder

A New and Effective Machine for Grinding Rail Grooves, Switch Tongues, Frog Points, Etc.

BY R. C. CRAM
Assistant Engineer Way and Structure Department
Brooklyn Rapid Transit System

The machine which is described in this article was developed for the purpose of accomplishing the same results as are produced with the several makes of flexible shaft grinder but with a form of drive which would be less expensive for maintenance. A rather cumbersome machine was first put together and, after trial results had indicated that the principles were applicable to this work, the refinement of the machine was carried out with the co-operation of the mechanical department of the company.

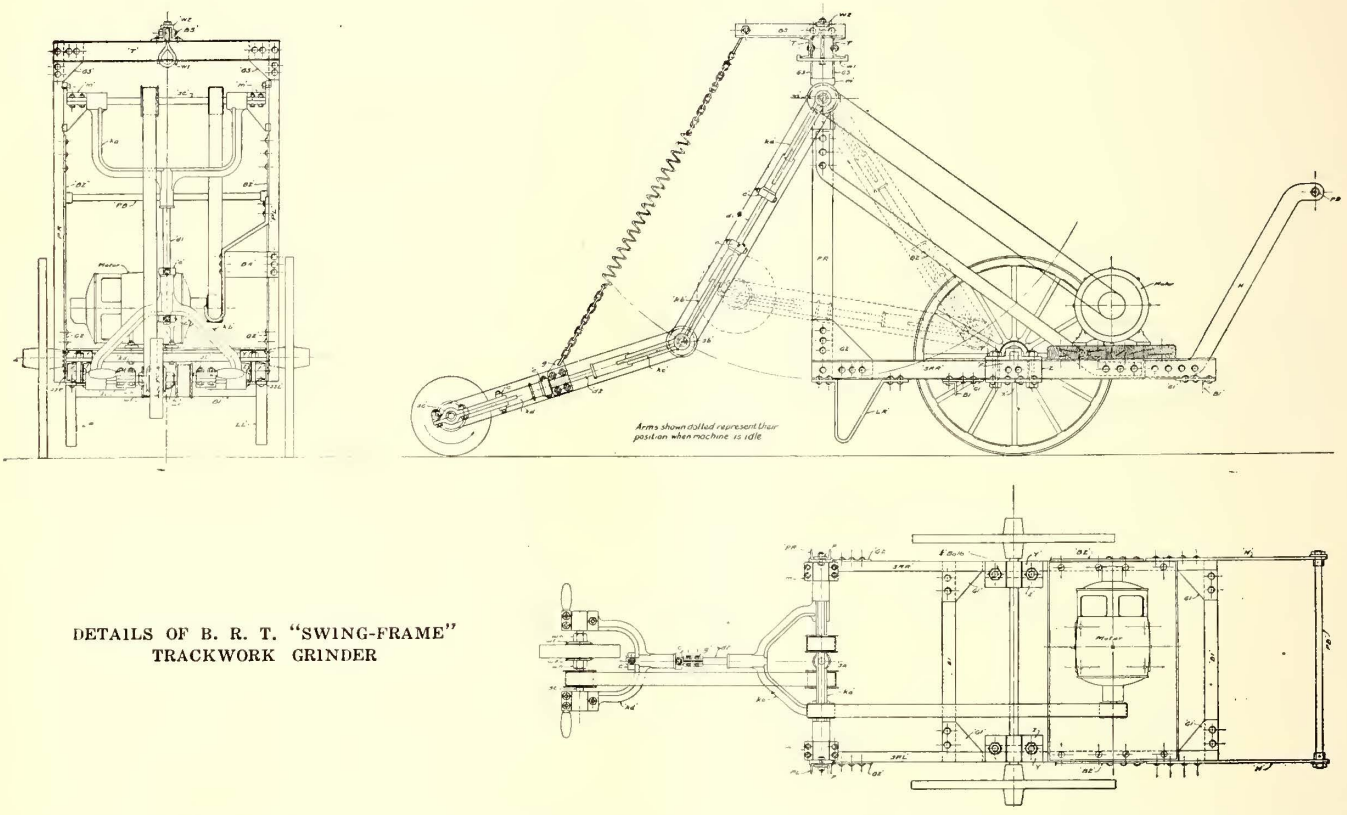
The resulting machine is shown in the illustrations presented herewith. For want of a better name it has been called a "swing-frame" grinder. The drive is by belts from an electric motor to two countershafts, each mounted in yoke-shaped castings. The upper casting is mounted upon channel-iron posts, and this casting supports a vertical arm which in turn supports a yoke carrying a horizontal arm, at the outer end of which is another yoke to which the grinding wheel is attached.



"SWING-FRAME" GRINDER DEVELOPED BY BROOKLYN RAPID TRANSIT COMPANY FOR SPECIAL JOBS IN TRACK WORK

Each arm is arranged to swivel, thus providing for horizontal lateral movement and angular movement as required in grinding grooves. The combination is such as to provide a universal movement for any desired position of wheel and any direction of movement. It will be noted that the pulleys are kept in fixed positions which, in turn, secures constant tension on the belts at all times.

The horizontal arm which carries the grinding wheel is supported from a short outrigger arm by a spring of sufficient strength in tension to hold the grinding wheel above the ground except when force is exerted by the operator when he is ready to grind. This spring also takes up initial shocks in the wheel when first attack is made, and greatly relieves the strain on the operator when controlling the wheel. When not in use the swing frame holds back toward the platform and the horizontal arm is held in place by a hook.



DETAILS OF B. R. T. "SWING-FRAME" TRACKWORK GRINDER

The machine can be handled by one man in an emergency but it is customary to have two men besides the operator. One of these attends to the overhead power contact device and the starting of the motor, while the other acts as flagman to protect the operator and apparatus. It is our custom to have three men with all grinding outfits.

The machine is operated by a 3-hp. Diehl continuous-duty, 550-volt, d.c. motor, having a speed of 1500 r.p.m. The motor is protected by a light steel asbestos-lined housing which appears in the halftones but is not shown in the drawing. The complete outfit, without grinding wheels, costs about $350, when prices of motors and materials are normal. The development of the machine has been directed by C. L. Crabbs, engineer of way and structure of the B. R. T. System.

A city system in the Far West is not buying new axles but works over old Pullman axles as follows: Axles of 5½ in. to 6 in. diameter are heated to a cherry red heat to break out crystallization and then turned down to 5 in. diameter. Old 5-in. axles are hammered down to 4¼ in. and turned down to 4 in.

Change in Lubricating Methods Effects a Big Economy

Cost of Lubricants per 1000 Car-Miles Reduced from 84 Cents to 22 Cents by Using Proper Lubricants and Oiling Scientifically

BY F. H. HILL

General Manager Elmira Water, Light & Railroad Company, Elmira, N. Y.

Master Mechanic H. C. Kaercher has reported that a considerable saving in the cost of lubrication has been accomplished in our shops by changing both the method of doing the oiling and the kind of lubricants used. Our cars are equipped with many different types of motors, most of which are old style and of General Electric Company make. The old method was to oil the armature and axle bearings and the gears of every car every night. The oiler had eighteen or twenty cars to handle during the night, and as he had to hurry his work he did not do it well and a great deal of the lubricant was wasted.

The method which has effected economy both in the quantity of lubricants used and in the labor consists in inspecting the cars after every 1000 miles of service, and the cars are oiled only at the time of inspection. No work is now done at night. The oiler is on the day shift and as he has only four or five cars a day to handle he can do the work thoroughly. The journal boxes are kept clean, covers are repaired and kept on and the brasses are kept in good shape. After completing this work the oiler has time for other duties in the shop.

With this method of doing the oiling it was necessary to select lubricants which would stand 1000 car-miles of service without being replenished. For the gears U. S. Graphite No. 2 grease was found to be of the right consistency. This collects at the bottom of the gear case and will not leak out or creep out along the shaft. For the armature and axle bearings No. 2-H. Tulc, a grade of solidified oil made by the Universal Lubricating Company, Cleveland, Ohio, was used with No. 2-J. P. Tulc

waste. This combination proved to have the right consistency so that the lubricant would not run away.

The following figures show how the cost of lubricants alone was reduced as this method was put in operation and gradually improved upon. The cost of all lubrication is given. It includes oil and waste for the car motors, journals, air compressors, gears and pinions, side and center bearings, brake rigging, etc.

COST OF LUBRICANTS

January to April, inclusive, 1915	$360.42
Average cost per month	90.10
Average cost per 1000 car-miles	.84
May to August inclusive, 1915	187.01
Average cost per month	46.75
Average cost per 1000 car-miles	.37
September to December, inclusive, 1915	115.28
Average cost per month	28.82
Average cost per 1000 car-miles	.25

The average cost of lubricants for 1915 was 49 cents for 1000 car-miles. During 1916 by still further perfecting the method described, the cost has been reduced to 22 cents per 1000 car-miles, although the price of lubricants has gone up about 25 per cent. To these figures must be added the labor saved and the benefit derived from better lubrication to obtain the economy of a new lubricating system.

Flexible-Base Jacks in Pole Handling

On one of the large city railway properties the customary method of raising a track blockade caused by a derailment or the breaking down of a wagon or truck has been expedited by the use of flexible-base jacks. Now, instead of sending out a heavy slow-moving emergency wagon equipped with jacks, and block and tackle, a light motor truck which can make 40 m.p.h. if necessary is sent out when the emergency call arrives. The equipment of the light truck on this particular property includes a Templeton, Kenly & Company, Ltd., No. 310 Simplex emergency jack designed with a flexible base so that it will not only lift but can also shove at an angle to the pavement. By the use of this jack it is possible in many instances to slue a broken-down truck out of the way of the street cars or to rerail a car long before the heavy emergency wagon would arrive.

Many railway and lighting companies have taken up the use of heavier flexible-base jacks for handling poles, particularly for use where the poles must be pulled or moved in the ground. For such use the pole jack includes 8 ft. of chain for getting a bite on the pole, a long steel lever bar, and an I-beam base to furnish bearing on the pavement or in soft soil. By means of the flexible-base jack, poles are easily pulled out without digging up the pavement, or if it is necessary to move a pole or to straighten it, a flexible-base jack and its base and chain provide simple equipment for quickly doing the work with fewer men than were required before.

Notes on Small Tool Practices in International Railway Shops

Tools for Making Trolley Wheels, Brake Hangers, Turning Wheel Tires, and Boring and Turning Bearings

In the Cold Spring Shops of the International Railway, Buffalo, N. Y., there are many special tools and jigs which have been developed to assist in keeping down maintenance cost. G. W. Dunlap, superintendent of power and shops, has furnished information on which the following notes are based.

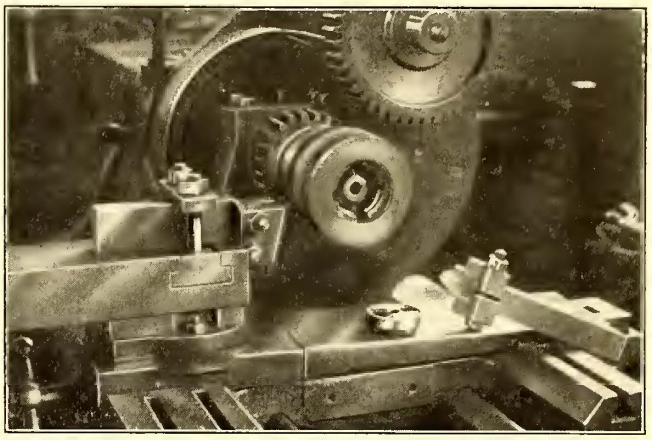


FIG. 1—TROLLEY WHEEL CHUCK AND FORMING TOOL FOR OUTSIDE SURFACE

This company makes its own trolley wheels in 6-in. and 4-in. sizes. For the 6-in. wheel a plan is used by which it is possible to rough-bore, face, ream, and turn one end of the hub in one operation consuming ten minutes. For this purpose the rough casting is mounted in a chuck like that shown in Fig. 1. This chuck consists of three pieces, the first of which is screwed onto the lathe spindle. On this is screwed the second piece which forms the backing for the trolley wheel, which is securely clamped against it by means of a nut.

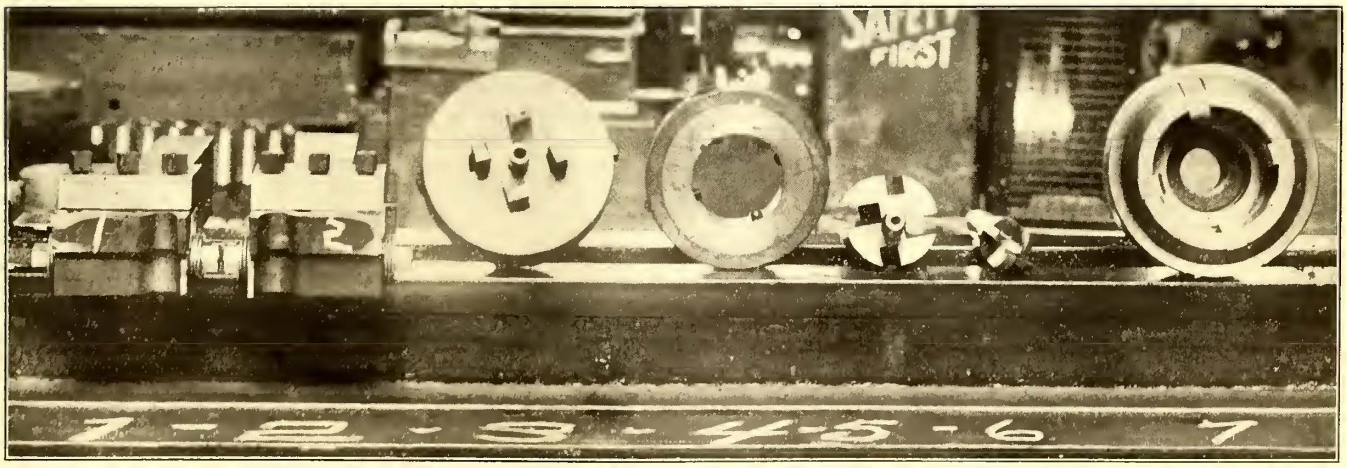


FIG. 2— TOOLS MADE AND USED IN COLD SPRING SHOPS, INTERNATIONAL RAILWAY—1, 2, PAIR OF FLANGING TOOLS FOR TIRE LATHE; 3, 4, 5, TOOL FOR SURFACING END OF BALL HANGER; 6, TOOL FOR FORMING SPHERICAL SEAT FOR BALL HANGER; 7, SELF-CENTERING CHUCK FOR TROLLEY WHEEL

The groove is surfaced by means of a special cutter of high-speed steel, held by means of a dove-tail tenon in a holder. This cutter is 4-in. long and has a wear life of one year. The cutter and its holder are shown resting on the tool post carriage in the figure. A drill guide, also seen resting on this carriage, is used to center the drill, which is carried by the tailstock. After drilling, the hole is reamed and the bushing is pressed in. For the outside cut a speed of 50 r.p.m. is used, and for the boring and reaming 200 r.p.m.

For the smaller wheels a special centering chuck is used which is shown at the extreme right, No. 7, in Fig. 2. This consists of four jaws, hinged at the back, and forced radially inward by a taper on the inside of the threaded ring which surrounds the chuck. This ring has four square threads to the inch. For the outside work on small wheels, the same kind of a cutter is used as with the large ones.

For the purpose of forming the ball on the head of the iron brake hangers, and the spherical seats in the sockets in which the heads of the hangers play, tools of the form shown in the center of the group in Fig. 2, Nos. 3, 4, 5 and 6, are used. These cutters are used in a drill press.

Details of the tool used in forming the heads are shown as Nos. 3, 4 and 5 in this figure, the complete tool being No. 3. It contains four cutters, two for roughing and two for finishing. The manner in which these cutters are held is shown in Nos. 4 and 5, where the central portions and cutters have been removed. No. 4 is the clamping ring and body of the tool, into the center of which fits snugly the slotted core. The cutters are held securely in the slots by means of the set-screws visible in the picture. No. 6 is the four-blade cutter used for making the spherical seats.

At the left in Fig. 2, Nos. 1 and 2, are front views of a pair of tire-turning tools designed to permit the reduction in the waste of cutter metal to a minimum. The original feature is a forged steel holder for the cutter, provided with three set-screws above, and

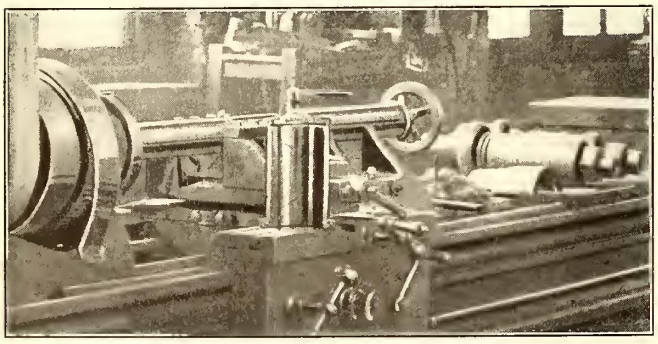


FIG. 3—BORING BAR AND MANDRELS FOR USE IN FINISHING BEARINGS

clamp screws and washers to prevent sidewise motion. The lower part of the holder projects to give all possible support to the cutter and it is shaped to the contour of the cutter for the same purpose.

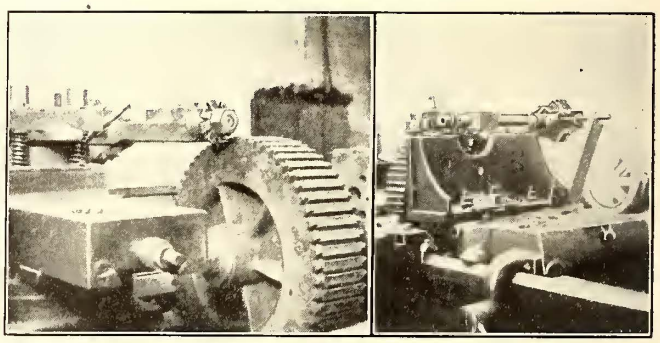
Fig. 3 shows a boring bar used in boring bearings and also the mandrels upon which the bearings are mounted for outside turning. On these mandrels they are clamped by means of the collars and nuts. The joint surfaces of the bearings are faced in a milling machine with the multiple cutter described in the issue of the Electric Railway Journal for April 7, 1917, page 654. In common with other companies, the International Railway uses old axles for various purposes, for example, large nuts are made out of this stock. As the journals of car axles wear down the bearings used with them are reduced in size. When no longer useful as such the car axles are turned down into motor axles. Old-style motor cases are rebored for use with larger bearing shells. Other practices used in this shop have been described from time to time in short articles in this department.

Fiber Gear Cut by Device Rigged Up on Lathe

BY G. B. SISSON
Mechanical Department Georgia Railway & Power Company, Atlanta, Ga.

Our shop is not equipped with a milling machine, and when it became necessary to cut teeth in a large fiber gear a machine lathe with a 36-in. bed and an air drill were set up to do the work, as shown in the accompanying illustration.

The milling wheel for cutting the gear was attached to a 1½-in. shaft supported at one end from the tool holder of the lathe by a heavy steel arm 5-in. wide and at the



LATHE AND AIR DRILL USED TO CUT TEETH IN FIBER GEAR

other end by an air drill which was attached to drive it. To fasten the gear blank in the lathe the tailstock was removed and in its place a heavy angle plate was fastened. The gear blank was clamped to a mandrel, which in turn was bolted to the heavy angle plate. In order to feed the milling wheel through the gear the lathe was started up and the feed on the carriage used.

After cutting several teeth it was noticed that the milling wheel became hot. To overcome this a hose was connected to the exhaust opening of the air drill so that the exhaust air was directed onto the cutter. In this way the milling wheel was kept cool. The gear when finished looked like a regular factory job.

Use of Welder and Old Joint Plates Effects Big Saving at Fort Worth

The Northern Texas Traction Company, Fort Worth, has recently completed at a cost of $750 some track rehabilitation which will put off a heavy track expenditure for at least five years. The method used was similar to that described in the Electric Railway Journal of May 5, 1917, on page 832.

On Front Street the company has about a half mile of double track on which almost every joint was broken. Most of the joints were of the Continuous type with a few of the old, butt-welded Thermit type. To make the new joints, the bottom web of the continuous plates was sheared off. The plates were then reversed, welded to the rails by means of an Indianapolis arc welder and ground down with a reciprocating rail grinder. The average cost per joint, including cutting in 6-ft. to 10-ft. lengths, was $4.50. Of the total cost of the job, $750, $500 was for labor, while the remainder covered welding metal, sand, cement and brick paving.

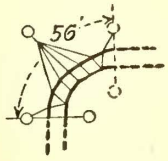
Cost of Erecting Overhead Work—IX

(From the records of a large Eastern company)

The following is the ninth group of a series of diagrams with figures to show the actual costs of erecting the various types of overhead construction described under conditions of light, ordinary and congested traffic. The preceding groups of this series were published in the issues for Jan. 20, page 127; Jan. 27, page 173; Feb. 10, page 260; Feb. 24, page 355; March 10, page 447; March 31, page 606; April 14, page 702, and May 12, page 880. The remaining groups will appear later.

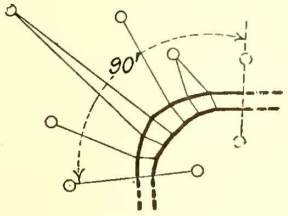
LABOR REQUIRED FOR CONSTRUCTING VARIOUS TYPES OF OVERHEAD TROLLEY SPECIAL WORK UNDER VARIOUS TRAFFIC CONDITIONS

Double track plain curve, angle 90 deg.



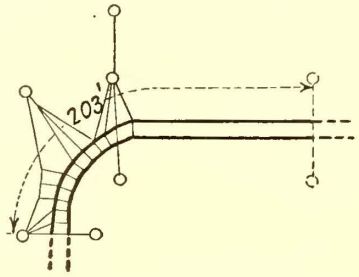
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
62	$12.76	$5.28	$15.95	$6.60	$19.14	$7.92

Double track plain curve, angle 90 deg.



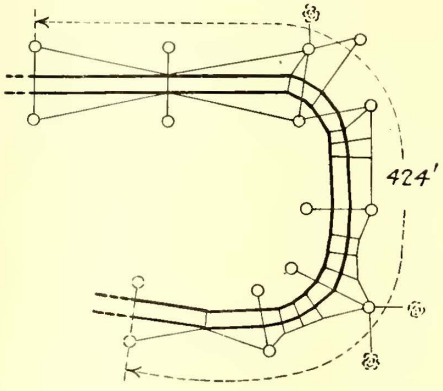
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
63	$12.76	$5.28	$15.95	$6.60	$19.14	$7.92

Double track plain curve, angle 90 deg.



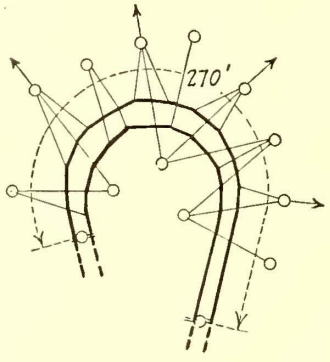
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
64*	$18.15	$13.20	$23.60	$17.16	$29.04	$21.12

Double track loop



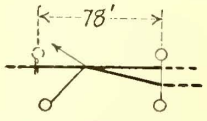
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
65*	$27.23	$19.80	$32.67	$23.76	$45.38	$33.00

Double track loop



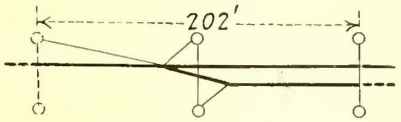
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
66*	$27.23	$19.80	$36.30	$26.40	$54.45	$39.60

Right hand turnout



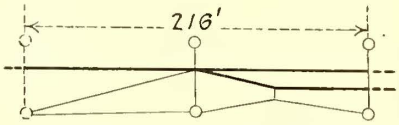
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
67	$7.98	$3.30	$11.17	$4.62	$14.36	$5.94

Right hand turnout



	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
68	$9.57	$3.96	$12.76	$5.28	$15.95	$6.60

Right hand turnout



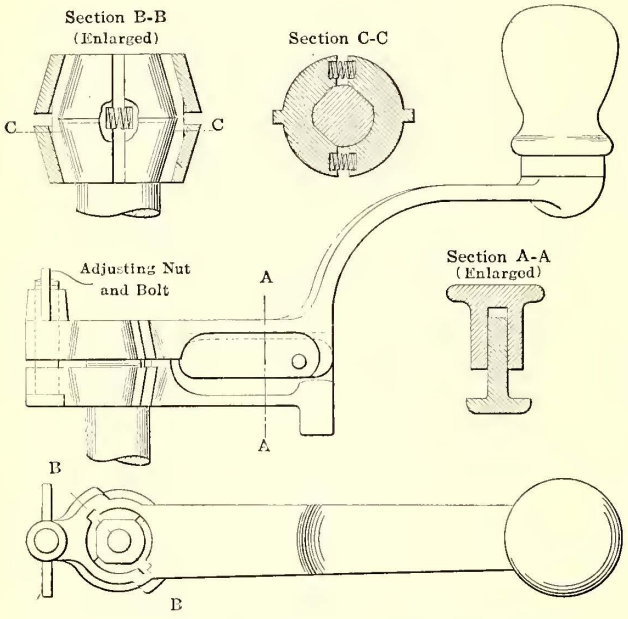
	Light		Ordinary		Congested	
No.	Labor	Trucking	Labor	Trucking	Labor	Trucking
69	$11.17	$4.62	$14.36	$5.94	$17.55	$7.26

*Trucking includes cost of extra reel truck. None of the figures on this page includes cost of superintendence and engineering.

Spring Chuck for Taking Up Wear in Controller Handles

For taking up lost motion in controller handles the United Railroads of San Francisco, Cal., is using a spring chuck recently patented by one of its employees, Frederick Brostrom.

The controller handle is made in two sections. The opening in each section which receives the controller post diverges toward the center to form a double taper. These tapered openings house the chuck jaws which

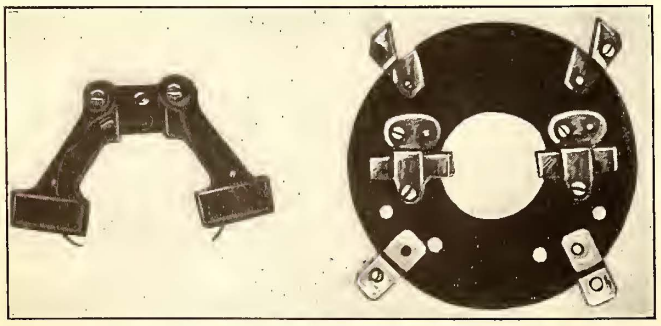


DEVICE FOR ELIMINATING PLAY IN BRAKE AND CONTROLLER HANDLES

grip the controller post, the outside of these jaws being tapered to correspond with the tapered opening in the two sections of the controller handle. When the controller handle is not on the post these jaws are held apart by coil springs. This makes it possible to slip the handle over the post, and by tightening the nut shown on the left in the drawing the two sections of the handle are drawn together, causing the chuck jaws to grip the post firmly.

Heater Motor Maintenance Cost Reduced

Some difficulty has been experienced by the Des Moines City Railway in maintaining the older types of heater motors, both as to bearings and brush-holders. The lubricating rings in the bearings would sometimes get stuck and the bearing would not receive the proper lubrication and would burn out. This was overcome by taking the ring out and filling the oil well with felt and thoroughly soaking this with oil. With this arrangement the motors have run all winter without attention.

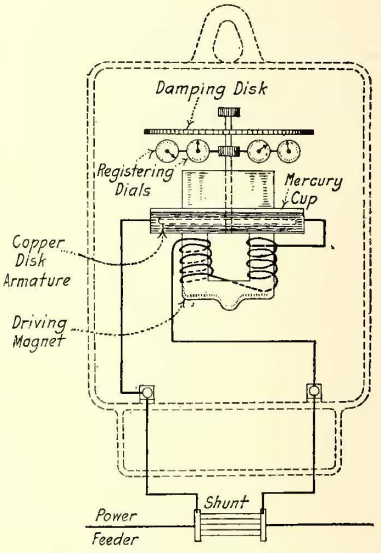


OLD AND NEW BRUSH-HOLDER MOUNTING FOR HEATER MOTORS

Trouble was also experienced with the older-type brush-holders because of the breaking of the small steel springs which keep the brushes in contact with the commutator. The clearance between the ends of these holders was small and oil and dirt accumulation would sometimes short-circuit the brushes so that the motor would not run at full speed. This trouble was eliminated by installing a round fiber plate ⅛ in. thick in the end of the field frame. The fiber was fastened to the frame by four clips. The brushes were then mounted on this fiber ring as shown, and small coil springs in the brush-holders behind the carbons were used to keep the latter in contact with the commutator. The holders were held in place on the fiber plate by simple clips screwed to the fiber. This arrangement also served another important purpose, as it inclosed the armature and prevented trainmen from sticking a screwdriver into the armature to push it around, a practice which frequently damaged the winding.

Meter for Measuring Line Loss

On power feeder lines where voltage regulation must be maintained at extremely close value, it frequently becomes a question as to whether the I^2R loss in the line, measured in dollars and cents power value, will not pay for increasing the size of the feeders. A meter which registers total ampere-squared-hours has been developed by the Sangamo Electric Company, Springfield, Ill. By multiplying the meter readings by the resistance of the feeder the kilowatt-hours of energy lost in transmission are obtained. It is then an easy matter to balance the cost of this energy against the cost of additional feeder copper.



SIMPLIFIED DIAGRAM OF METER FOR MEASURING LINE LOSS IN AMPERE-SQUARED-HOURS

This instrument, known as the I^2R meter, is similar to a standard mercury type watt-hour meter except that a series winding replaces the usual shunt-coil winding of the driving magnet. The accompanying illustration shows a simplified diagram of this meter with the internal and line connections. It is connected to the line in the same manner as an ammeter. The armature of the meter consists simply in a thin copper disk floated in mercury, and the current to be measured passes diametrically across this disk. The strength of the magnetic field of the driving magnet varies proportionately to the current in the line, and since the driving torque on the armature is proportional to the product of the current in the armature and the magnetic field strength, it is, therefore, proportional to the square of the current. The damping magnets perform their usual function in providing retardation proportional to the speed, and result is that the meter records ampere-squared-hours.

The meter has already been used with considerable success by several of the railway companies.

News of Electric Railways

Traffic and Transportation

Financial and Corporate | Personal Mention | Construction News

Hearing on Philadelphia Bills

Pleas Made Before Legislative Committee at Harrisburg—Mr. Stotesbury States Case as Affecting Himself and Associates

Pleas were made at Harrisburg on May 22 for the enactment at this session of the Legislature of all bills affecting the Philadelphia transit situation. The hearing was before a joint meeting of the judiciary general committee of the Senate and House. Among those who attended were Mayor Smith, Transit Director Twining, Finance Committee Chairman Joseph Gaffney, and two hundred members of the United Business Men's Association.

The Philadelphia Rapid Transit Company requested another hearing at which its representatives could present their side of the case. No date has been set for this hearing. As the hearing progressed it became apparent that the legislators were opposed to further enlarging the powers of the Public Service Commission.

Three Bills Under Consideration

There were three bills under consideration at the hearing. They were the Hecht bill, which would give the city the power to take over the lines of the Philadelphia Rapid Transit Company by exercising its right of eminent domain, compensation to be fixed by the Public Service Commission; a constitutional amendment increasing the city's borrowing capacity so as to provide this compensation, and the Salus bill, which would provide through-routing of the city's lines on the Philadelphia Rapid Transit Company's lines and also empower the commission to fix the question of fares and transfers.

While the Senate was still in session during the morning, a letter from Ellis Ames Ballard, chief counsel for the Philadelphia Rapid Transit Company, requesting another hearing, was placed on the desk of Senator Daix, who presided at the hearing. The Senator was absent at the time, but when he returned and read the letter he was surprised, inasmuch as it had been understood that the company's representatives would be present on May 22 and voice their opposition. With the Legislature talking about adjourning on June 14 next, the supporters of the various measures lost virtually all hopes for the passage of the legislation at this session.

Dr. William Draper Lewis, appearing as legal adviser to the city administration, spoke for more than two hours in favor of all the bills. He was frequently interrupted, and at one time clashed with Senator Deidleman, of Dauphin County, regarding the practicability of passing legislation now that would impair the obligations of the city of Philadelphia and the Rapid Transit Company as embodied in the 1907 contract. Senator McNichol and Representative Beyer also interrupted him with questions as to how the proposed measure would affect the Public Service Commission and give it greater authority. The Senator said that the bills also delegated to the commission the authority to say what the people of Philadelphia could do and could not do in their own city. He contended that they practically usurped the authority placed in City Councils, the Mayor and other city officials. The Senator said further that if the bills were passed it was more than likely that there would be a long court proceeding.

Senator McNichol asked the Mayor whether in his judgment it was impossible to reach an operating agreement without passage of the bills.

"If you had asked me that before Mr. Stotesbury's statement of last Friday," replied the Mayor, "I would have said 'No.' In reply to that question now, I would say 'Yes.'"

Several representatives of the United Business Men's Association urged the importance of passage of the pending measures before adjournment is taken next month.

First Public Hearing in Philadelphia

The statement by Mr. Stotesbury to which the Mayor referred at Harrisburg was made at the first of the public hearings in Philadelphia on the transit lease matter on May 18. At that hearing the company announced it would be willing to forego an arbitrary right to increase fares, should the city equip the high-speed lines. The company would assume the payment of fixed charges on equipment bonds, and refer fare increases to the Public Service Commission. The first speaker was A. Merritt Taylor, former director of city transit of Philadelphia. He read a long statement in which he defended the lease in every disputed point. He was before the committee more than two hours. Ellis Ames Ballard, counsel for the company, requested to be permitted to clear up some points made by Mr. Taylor about which he thought there might still be doubt. Mr. Stotesbury read his statement. He said that the company had made a most liberal proposition to the city. He could not see how it would aid in the solution of the present question to pass legislation which would put into the hands of any body of men, however wise and public spirited, power to destroy the company. The very existence of such legislation would tend to make it impossible for the company to perform its part of the joint service. Mr. Stotesbury informed the joint councilmanic committee that if the proposed contract could not be accepted by the city, and it was felt that another contract should be negotiated with the company that may take away from the company the 5 per cent guaranteed dividend, he and his associates would resign from the management. This would leave the new directors free to negotiate a contract on terms which the city could accept.

Apparent Deadlock in Providence

The many conferences held between officials of the Rhode Island Company, Providence, R. I., and the delegates from the carmen's union have so far been apparently without definite result. The present agreement expires on May 31, and the matter is believed to be in a deadlock. Two years ago a strike was called. It lasted only one day, however, as both sides to the controversy agreed to arbitration.

Because of the peculiar condition in which the Rhode Island Company now finds itself, it is generally believed that the company will refuse to grant any material increase in wages. It has already appealed to the State for financial relief, and at its request the Legislature has provided for an investigation committee, with power to increase fares if it deems such action warranted and just. In view of this situation, the officials of the company are believed to be averse to making any agreement raising wages, although they have frequently admitted that the men should have more pay. The General Assembly is not in session and under ordinary circumstances cannot meet until January without special call from the Governor.

It is understood that the men are not anxious to have the matter go to arbitration again. The proceedings two years ago were very expensive to both sides. In addition to the expense, the arbitration proceedings were extended over a period of four or five months. There is no State arbitration board or official empowered to act in the emergency in working toward a settlement of the conditions. At the conferences President A. E. Potter, Superintendent R. R. Anderson and Attorney Whipple have represented the company.

Washington Strike Inquiry

Men Present Their Side—Company Now Engaged in Presenting Its Case

The Washington Railway & Electric Company, Washington, D. C., began on May 21 the presentation of its side of the case before the Senate committee which is inquiring into the recent strike of the employees of the company. The company called as the first witness George A. Wilburt, president of the Washington branch of the Amalgamated Association. Counsel established, through Mr. Wilburt's testimony, that District Commissioner Newman had been advised that the railway employees would not insist upon their demands for the closed shop and recognition of the union, provided other demands satisfactory to the men were allowed. Counsel also brought out that Mr. Wilburt had not availed himself of the opportunity for a final conference with President King of the company, because that conference was to have dealt only with the individual contracts proposed by the company. Counsel of the company then sought to show that the by-laws of the parent association were not lived up to in the letter of the law in the preliminaries to calling the strike.

Union President's Testimony

It was developed by the testimony that President King of the Washington Railway & Electric Company would not deal with any committee of the Amalgamated, but would treat only with a committee of the men not representing that organization. Counsel questioned the witness to try to bring out that Mr. King would have been glad to receive the grievance committee of the men, but the witness clung to the statement that Mr. King wanted to talk about the individual contract, which, in the opinion of the witness, was of a character that made discussion of it useless, from the viewpoint of the union men. Later Mr. Wilburt admitted that he had said publicly that the conferences were over because Mr. King had refused to recognize the union. Subsequently he said that while the men wanted the union recognized, and favored the closed shop, still they would not cause a strike on refusal of these demands alone, provided other concessions were made, but that Mr. King would not discuss these matters. Mr. Wilburt's authority for this statement was questioned by counsel for the company. He did not understand that the Amalgamated was committed irrevocably to the principle of the closed shop. Senator Johnson pointed out that the contract of the Amalgamated with the Capital Traction Company demonstrated that fact. Mr. Wilburt also reviewed his career with the company since the date of his employment in 1908.

The committee resumed its session on the night of May 22. It will not sit while the Senate is in session.

The Men's Side

In presenting their side of the case the men sought to show that the company had since the strike re-employed forty-eight men discharged previously from its service. The men also introduced what purported to be a statement of the terms under which new men were engaged at the outset of the strike to replace the men who went out.

Commissioner Oliver P. Newman, of the District, testifying before the committee on May 10, said that before the employees went on strike last March the commissioners were authorized by them to waive, in the proposed negotiations or mediation between the company and the men, the recognition of the union. Mr. Newman also told the committee that the commissioners did not state this fact to the officials of the company. Explaining the reasons of the commissioners for not making the direct statement that the men were ready to waive the demand for recognition of the union in the negotiations, Mr. Newman said: "The men wanted recognition, and asked us not to tip their hand to the company."

Mr. Wilburt, on the other hand, insisted that President King would not have agreed to mediation even if Commissioner Newman had told him the men were ready to waive recognition in the negotiations. As stated previously, his authority for this statement was questioned by counsel for the company.

St. Paul to Rush Electrification

The Chicago, Milwaukee & St. Paul Railway plans to complete the electrification of its line from Cle Elum, Wash., west, one year earlier than expected. The Puget Sound Traction, Light & Power Company has been advised by the St. Paul that it will be expected to furnish electric current from its hydroelectric and steam plants by Sept. 1, 1918. Survey crews and materials have been moved from Othello to South Cle Elum, and preliminary work will be started immediately, thus postponing work on the Columbia division. The reason for the change in plans, according to C. A. Goodnow, who is supervising the work, is the constantly increasing price of oil. The company must use oil in the locomotives passing through the forest reserves in the mountain on the Columbia division, while coal-burners can be employed between South Cle Elum and Othello without danger. The survey along the proposed line of the Columbia division has been almost completed, and setting of pole lines and building of substations is to start soon.

The contract of the Chicago, Milwaukee & St. Paul Railway with the Puget Sound Traction, Light & Power Company calls for a minimum of 13,000 hp., or the equivalent of one unit at the White River plant. The company has been working on plans for an increase in the capacity of the White River station, where two new units will be ready next spring, giving 23,000 hp. additional, and it is probable that an extra order for development at White River will be placed in time to permit the work to be completed before the St. Paul's western division is electrified. The present contract with the railroad calls for the delivery of current by the traction company at the Snoqualmie Falls plant.

Capacity Use of Steam Plants Contemplated

While the four steam plants of the Puget Sound Traction, Light & Power Company were used comparatively little during the past winter, orders have been placed to get all four ready for capacity use next winter, indicating the company's estimate of the immediate development of business within its territory. Its steam plants are located at Everett, Tacoma, and at Georgetown and Post Streets, Seattle. The present capacity of the company's water-power plants is as follows: White River, 33,000 hp.; Electron, 25.000 hp., and Snoqualmie, 25,000 hp.

The Chicago, Milwaukee & St. Paul Railway will expend $6,000,000 in making the change from coal to electricity between Othello and the coast. It will have 640 miles of track electrically operated.

The company has recently awarded to the Brick & Tile Delivery Company, Seattle, a contract for 3,000,000 bricks to be used in connection with the construction of substations every 30 miles along the line.

Hydroelectric Power Helpful

That hydroelectric energy is proving a substantial help in the solution of the fuel problem in street railway power plants was stated by C. V. Wood, president of the Springfield Street Railway, at a hearing on May 3 before the Massachusetts Waterways Board. The commission was considering a petition of the Turners Falls Power & Electric Company for authority to build an additional 66,000-volt line across the Connecticut River at Springfield for the supply of electricity to the Springfield Street Railway according to the terms of a contract recently closed between the two concerns. Mr. Wood said that delays in fuel supply last winter had several times brought the road within twelve hours of a shut-down. It is hoped that by 1919 all the energy required by the road will be supplied from the Turners Falls system, which will shortly be increased in capacity by the construction of a $2,000,000 auxiliary steam turbine plant at Chicopee Junction, Mass. The Springfield Street Railway would be obliged to expend $1,500,000 if it enlarged its power plant facilities itself. Bentley W. Warren, counsel for the Massachusetts Street Railway Association, also spoke on behalf of the purchase of power by street railways. He then emphasized the present difficulties in obtaining capital for electric railway power plant extensions.

Bridge Negotiations Continue

City of Seattle and Puget Sound Company Still Conferring Over Bridge Contract

Negotiations between the city of Seattle, Wash., and the Puget Sound Traction, Light & Power Company, relating to the use of the Fremont bridge by the company, came to a deadlock when Councilman Erickson, chairman of the Council committee of three in charge of the negotiations, announced that no proposition would be considered for the use of the bridge by the company that did not carry with it the right of the city to operate its cars over the Third Avenue tracks of the company. A. W. Leonard, president of the company, declared that the company had a franchise right to operate over the Fremont Avenue bridge, whereas the city was asking something for which it had no legal right. He insisted that the two questions were distinct, and should be considered separately.

City Suggests Yearly Rental

A. H. Dimock, city engineer, and A. L. Valentine, superintendent of utilities for the city, submitted a report suggesting that a yearly rental of $7,568 plus one-third the cost of operation and maintenance be charged the company for the use of the bridge. The company's engineer refused to concur in this finding. Mr. Leonard said that the company stood ready to pay a fair cash rental, but Councilman Erickson insisted that a cash rental would not be considered unless the company would fix a rate for the operation of city-owned cars over the tracks of the company. Mr. Leonard intimated that the company would not agree to the use of its tracks for city cars, but would be willing to take over both Division A and the Lake Burien branch of the municipal railway, and operate them in connection with the company's system.

Mayor Gill said that he was disposed to favor an arrangement whereby the company would take over the Nickerson Street line from the city, provided the company extended it to Ballard. He said that the matter should not involve the exchange of transfers or any other issue. The important thing was to provide service for the 50,000 patrons living north of the bridge.

The City Council later passed a resolution requesting the Mayor and the Board of Public Works to prohibit the company from operating over the Fremont bridge.

Bridge to Open July 1

The bridge will probably not be opened for traffic until July 1. In the meantime, conferences between officials of the company and the city committee will continue, looking toward an adjustment of the several matters in hand. The importance of the bridge as a link between the north and south ends of Seattle as divided by the Lake Washington canal, is shown by reports of A. L. Valentine, superintendent of utilities, indicating that 1275 cars will operate over that structure every twenty-four hours, when the Stone Avenue bridge is removed, making a total of 465,375 cars a year.

Atlanta Fire Damage

Loss of More Than $75,000 Sustained by the Georgia Railway & Power Company—Lighting and Railway Service Restored Quickly

Seven electric railway lines of the Georgia Railway & Power Company, Atlanta, Ga., serving the entire northeastern quarter of the city, were put temporarily out of commission by the great fire that swept Atlanta on May 21. The damage sustained by the company is estimated at more than $75,000. This figure represents $25,000 injury done to the railway department and $50,000 to the lighting and commercial and the arc circuits. Throughout the burned area, which comprised more than seventy city blocks, poles and wires and transformers and insulators were reduced to charcoal and junk. In addition to these positive losses, the radical and sudden reduction of receipts from the residence sections that the flames reduced to a stark wilderness was considered a further item of injury to be charged to the fire. Notwithstanding these losses, the Georgia Railway & Power Company headed the list of subscribers to the city's relief fund with a gift of $2,500.

Immediately after it became apparent that the fire was beyond the control of the local firemen, plans for localizing its effects were applied by the company, with the result that trolley and other electric services continued normal and without interruption in all other parts of the city. Just as soon, however, as the local fire department and the assisting fire fighters rushed to Atlanta by special trains mastered the flames, the company began its work of restoring service into and beyond the desolated area. Within less than twenty-four hours after the fire reached its height, lighting circuits and arc circuits were alive once more and the first of the interrupted trolley lines had resumed service much further toward its terminus.

Service Cut Off Temporarily from Burned Area

In consequence of the fact that several railway lines crossed the burned area or lay largely within it a very much larger section of the city than was burned was deprived temporarily of all street railway service. Restoration of car service entailed practically the complete rebuilding of everything except the tracks. Ten cars were trapped by the flames, but were rushed out of the danger zone and parked at points of comparative safety beyond the fire to await the time when they could proceed with their own motors again.

The operation of each of the railway lines in the fire area was continued until in sequence one after the other was stopped by the flames. Numerous instances were reported of residents throwing their valuables into or upon outgoing cars in order to save them from the rapid advance of the fire.

For a time two large carhouses of the Georgia Railway & Power Company were threatened. They were on the western edge of the fire's wide path. The company suffered a $2,000 loss in the burning of a shed occupied by roadway men and work cars. The company's car-building and repairing plant on Tenth Street was just beyond the northeastern extremity of the fire's reach and for several hours was in danger from sparks. It was expected on May 22 that all damage sustained by the company would be repaired by May 26.

Seattle Settlement Terms Filed

All Litigation with Seattle & Rainier Valley Railway Settled Except One Suit

Nine acceptances on the part of the Seattle & Rainier Valley Railway, Seattle, Wash., necessary to complete the settlement of all differences between the company and the city of Seattle, were filed recently. They were signed by Marshall E. Sampsell, president, and Walter M. Brown, secretary and manager of the company. By the provision of the various ordinances and the acceptances by the company of their terms, all litigation between the company and city is dismissed with the exception of the suit brought by the city to recover 2 per cent of the gross earnings of the property during the period that the line was operated without a franchise. Some of the provisions of the ordinances are as follows: Exchange of transfers between the Rainier and city lines, common-user rights to the city on Fourth Avenue, between Stewart and Jefferson Streets; company to extend its lines on Genesee Street, abandon its line on Stewart Street between Fourth and Fifth Avenues, and build a turning track on Fourth Avenue north of Stewart Street; service on Dearborn Street, abandoned when regrade was taken up several years ago, to be resumed; cars to be operated from Seattle Boulevard to Dearborn and on Fourth Avenue from Washington Street to Seattle Boulevard on the tracks of the Puget Sound Traction, Light & Power Company, and tracks on Washington Street between Fourth and Thirteenth Avenue South to be abandoned.

A judgment of $41,700, awarded by the United States Court in favor of the company and against the city for private right-of-way taken and changing of grades of Rainier Avenue, will be satisfied by the city as part of the general settlement agreement.

Senate Passes Bill to Increase I. C. C.—The Senate has passed the bill increasing the membership of the Interstate Commerce Commission from seven to nine.

Meetings in Springfield Carhouse.—The Springfield, (Mass.) Street Railway on Monday, May 21, entertained the Board of Trade of that city at a noon-day luncheon at its new carhouse. On Tuesday the Mayor and the members of the City Council paid a visit of inspection to the building. The Rotary Club of Springfield was invited to hold a meeting in the carhouse on Friday, May 25.

Strike at Alliance Reported Settled.—The indications on the afternoon of May 22 were that the strike of motormen and conductors on the Stark Electric Railroad and the Cleveland, Alliance & Mahoning Valley Railroad would be settled. It is stated unofficially that the company has agreed to recognize the union, increase wages 5 cents an hour and reinstate four or five men who had been discharged.

Bonus to Meet High Cost of Living.—The Omaha & Council Bluffs Street Railway, Omaha, Neb., has announced it will pay to 1200 employees earning $100 a month or less a "high cost of living bonus" of 6 per cent of wages earned from Jan. 1 to July 1, 1917. The bonus will be paid on July 15 to employees in the service of the company the entire six months, with the exception of men in the power department, whose wages recently were readjusted. The company estimates that the bonus will amount to $25,000.

Wage Increase in Guelph.—On May 15 the employees of the Guelph (Ont.) Municipal Street Railway were informed that their wages would be increased to 25 cents an hour for a sixty-eight-hour week. The men had asked for 30 cents an hour to correspond with other civic employees. The municipality pointed out that the other employees did not receive full time. This is the fourth increase which has been made in the wages of the men during the last twelve months. A year ago the men were receiving 21 cents an hour.

Village Wants to Negotiate After Road Is Built Around It.—The Village Council at Berea, Ohio, has instructed City Solicitor S. W. Green to negotiate with the Cleveland, Southwestern & Columbus Railway in an effort to settle the question of operation of cars through the town, and has agreed to ratify any arrangement he may make, provided it is subject to a referendum vote. The company has recently completed tracks around the town. The trouble between the village and the company arose over the fare between Berea and Cleveland.

Dallas Ordinances to Be Contested.—Dallas traction interests will contest in the courts the recent municipal election at which three ordinances initiated by the Socialists were adopted, according to Edward T. Moore, vice-president and general manager of the Dallas Consolidated Electric Street Railway. These three ordinances are the jitney ordinance, initiated by the Jitney Drivers' Association; the ordinance requiring an eight-hour day for corporation employees, including employees of street railways, and the ordinance requiring safety appliances on street cars.

Differences settled in Albany.—The differences between the trainmen and the officials of the United Traction Company, Albany, N. Y., over the interpretation of certain sections of the working agreement pertaining to the operation of extra cars have been satisfactorily adjusted, as a result of several conferences between the officials of the company and representatives of the men. A settlement was finally reached by both sides adopting a set of station rules and regulations embodying the rights of the company in the use of its extra men.

McAlester Adjustment for Two Years.—The agreement entered into between the Pittsburg County Railway, McAlester, Okla., and its employees, to which reference was made in the ELECTRIC RAILWAY JOURNAL of May 19, will govern the hours of duty and the scale of wages for a period of two years, dating from May 1. As stated previously the matter was adjusted on the basis of the payment of an average increase of 3 cents an hour to all classes of employees represented. The men demanded 4 cents an hour advance, while the company announced its willingness some time ago to grant an increase of 2 cents.

Park Amusements Destroyed.—Thirteen amusement places at Woodside Park, Philadelphia, Pa., were destroyed by fire on May 20. The amusement attractions were owned by the concessionaries and the loss to them is estimated unofficially at $160,000, covered largely by insurance. The park itself is owned and controlled by the Fairmount Park Transportation Company. The park is on the edge of famous Fairmount Park and is one of the city's most popular resorts. It was opened for the summer on May 5. The amusements which were not damaged will be continued in operation and the ones that were destroyed will be rebuilt or replaced.

Conferences Proposed on East Cleveland Franchise.—Officers of the Cleveland (Ohio) Railway have announced that conferences will be held shortly with city officials of East Cleveland in an endeavor to settle several small differences which have arisen since the tentative agreement was reached some time ago. The Council has not yet acted upon the franchise and there may be some hesitancy, since the city of Cleveland, which has control of the service on the Cleveland Railway, has refused to improve the service between Lakewood and the city, although the fare is 5 cents. Officials of the latter suburb asked that the cars running to it be marked "Lakewood—Fare 5 Cents," in order that the Lakewood cars may not be overcrowded with passengers who do not ride to the suburb. Half of the cars run on the Lakewood route are turned back at the city limits.

Shortage of Labor in Buffalo.—Unable to get sufficient men to operate its cars, the International Railway, Buffalo, N. Y., has been forced to withdraw a number of runs. Every effort is being made to secure platform men. Large display advertisements are being used not only in Buffalo but in Niagara Falls, Lockport and other western New York cities. Many employees have resigned to accept positions at higher pay in steel mills and other industries, while others have joined the military forces. Owing to the labor situation, the company has been forced to secure women to clean cars in several of the carhouses. The women receive the same pay as the men. A very large percentage of the company's employees is subject to the selective draft. The company has made no announcement as to whether it will try women as fare collectors.

Service of I. U. T. Normal Again.—Officials of the Union Traction Company of Indiana report that there is now no interruption to the normal service on all the interurban and city lines of the company due to the walkout of about thirty-six interurban trainmen when a strike was called by the Brotherhood of Locomotive Engineers and Order of Conductors on May 13. Vernon Hinkle, deputy president of the Order of Railway Conductors, made public a statement on May 19 setting forth the claims of the brotherhoods and the arrangements made in Muncie, Anderson, Marion, Tipton and other cities for parades and demonstrations for the purpose of bringing their case before the other employees of the Union Traction Company. He asserts that the service of the company is crippled and that "the fight on the property will continue until all of the men working are taken out on strike."

Settlement of M. C. B. Exhibit Arrangements.—Owing to the abandonment of this year's convention of the American Master Mechanics' Association and Master Car Builders' Association, the Railway Supply Manufacturers' Association had to terminate its contracts made at Atlantic City in anticipation of the convention. It did this by having these contracts carried over to 1918 on the same terms and prices, thus reducing the direct loss for the exhibition account to less than $700, instead of a possible $10,000 or $12,000. As some payments had to be made to the contractors on account of these suspended contracts, the executive committee will withhold 50 per cent of the amount paid for exhibit space in the 1917 convention and refund 50 per cent. The Atlantic City Hotel Men's Association, C. M. Koury & Company, furniture, and J. J. Habermehl's Sons, decorations, have also accepted the cancellation of each individual member's order. As under the constitution of the Railway Supply Manufacturers' Association all officers continue until their successors are elected and qualify, the officers and executive committee members of this year will carry over until next year.

Wage Increase Under Consideration in Chicago.—The demands of the employees of the Chicago (Ill.) Surface Lines and the Chicago Elevated Railways for increased wages, as outlined in the ELECTRIC RAILWAY JOURNAL for May 12,

were formally presented to the surface lines on May 16 and to the elevated lines a few days in advance of this. The companies were expected to make answer about May 24. An ordinance was introduced in the City Council by J. C. Kennedy, a Socialist Alderman, on May 21, for the appointment by the Mayor of a board of examiners of three members, and that no one shall be permitted to act as a motorman or conductor without first obtaining a license from this board. A penalty clause is attached providing for a fine of from $10 to $200 for failure to obtain such a license, and this fine may be assessed against the company as well as the employees. The ordinance was referred to the judiciary committee of the Council.

Mediation Board to Try to Settle South Bend Strike.—Governor Goodrich of Indiana announced on May 19 that he will appoint a special mediation and conciliation board to attempt to settle the difference between the Chicago, South Bend & Northern Indiana Railway and those of its employees on the South Bend city lines who went out on strike on April 29. The new board will be appointed under the State voluntary arbitration law, and will be known as a "mediation and conciliation board," the company having recently refused to accept the appointment of an arbitration board. It rejected the idea of an arbitration board on the ground that it was operating all its lines; that the differences with its employees in other cities and on other divisions had been amicably settled, and that the trainmen who are out on strike had received an opportunity to return to work under the conditions accepted by their fellow employees, and had failed to take advantage of this offer. The Governor's action was taken after receipt of a letter from Mayor Keller of South Bend stating that he believed the differences could be settled by such a board.

Recess Inquiry Into Street Railway Problems in Massachusetts.—The committee on rules of the Massachusetts Legislature has reported a resolve in favor of an investigation of the economic condition of street railways in the State by a recess commission during the coming summer. In commenting editorially upon this, under the caption "Investigations Worth Making," the Boston *Transcript* said in part: "The suggestion is deserving of adoption. The State cannot rightly avoid taking a hand to attempt the solution of the street railway problem. Facing a steady reduction in revenue, as the costs of construction and operation steadily rise, the electric lines must find relief. Their only alternatives are curtailment of service, permission to increase their rates, reduction of taxes and the grant of similar special concessions, or outright State ownership, which would have the probably unhappy result of throwing the burdens on the taxpayers. The public must prepare itself to determine which of these alternatives it will allow. We are in for a campaign of education concerning these matters of transportation, and the sooner we complete it the better."

Programs of Association Meetings

Central Electric Railway Association

In conformity with its pledge of full service to the government the Central Electric Railway Association has annulled its summer boat trip meeting scheduled for June 22 to 25 so that the members may devote their endeavors to the maintenance of high operating standards on their own properties.

Public Relations "Round Table"

J. C. Davidson of the Denver (Col.) Tramway is urging all publicity managers, public relations men, general managers and others directly connected with public relations work to attend the "Round Table" of their profession at the convention of the Associated Advertising Clubs of America at St. Louis, Mo., on June 3 to 7. The purpose of the "Round Table" is to exchange publicity and public relations methods and ideas with the object of increasing the efficiency of such work. No set program of papers has been arranged. The Hotel Jefferson will be the headquarters of the clubs. Delegates are requested to have facts, figures and examples of work with them. Additional information may be obtained by addressing Mr. Davidson at 807 Tramway Building, Denver, Col.

Financial and Corporate

Annual Reports

United Railways & Electric Company

The statement of income, profit and loss of the United Railways & Electric Company, Baltimore, Md., for the year ended Dec. 31, 1916, follows:

Operating revenues	$9,914,051
Operating expenses and taxes (including depreciation)	6,058,492
Operating income	$3,855,559
Non-operating income	92,000
Gross income	$3,947,559
Deductions from gross income:	
Rents	$410,088
Interest on funded debt	1,822,393
Interest on income bonds	559,080
Amortization of discount on funded debt	19,789
Miscellaneous	28,085
Total deductions	$2,839,435
Net income	$1,108,124
Profit and loss credits	105,967
Gross profit and loss surplus for year	$1,214,091
Profit and loss debits:	
Dividends on common stock	$818,448
Dividends on preferred stock	920
Miscellaneous appropriations of surplus	178,710
Miscellaneous debits	112,578
Total debits	$1,110,656
Undistributed profit for year	$103,435
Profit and loss surplus at Dec. 31, 1915	1,008,058
Total profit and loss surplus	$1,111,493

Effective Jan. 1, 1916, the company adopted the revised classification of accounts prescribed by the Public Service Commission of Maryland, and the figures displayed above are in accordance therewith. Under this classification depreciation is charged as an operating expense. Following are the results for 1916 compared with those for 1915, the figures for the latter year having been revised:

	1915	1916	Increase	Per Cent Increase
Operating revenues	$8,980,710	$9,914,051	$933,341	10.39
Operating expenses	4,102,766	4,567,949	465,183	11.34
Depreciation	410,548	495,702	85,154	20.74
	$4,513,314	$5,063,652	$550,338	12.19
Taxes, licenses, etc.	904,675	994,840	90,165	9.97
	$5,417,989	$6,058,492	$640,503	11.82
Ratio of operating expenses to operating revenues:				
	Per Cent	Per Cent		
Operating expenses	45.68	46.08	.....	0.40
Depreciation	4.58	5.00	.....	0.42
	50.26	51.08	.....	0.82

After paying all expenses and charges of every character, and after crediting the usual amount to regular reserve accounts, the company in 1916 earned $288,755 more than the amount required for the 4 per cent dividends on common stock. Of this sum $157,500, representing the company's total investment on account of the "jitney" companies, was set aside as a reserve. There remained, after further adjustments, the sum of $103,435, which was entered to "undistributed profit."

The increases in gross and net over 1915 were considerably above normal. The year 1915 was a relatively poor one for the company. There were two main causes—depressed industrial conditions existing during the greater part of that year which affected Baltimore as well as other cities, and the unregulated jitney competition prevailing during a greater part of the year. The situation after that time materially changed. Beginning with the fall of 1915 there was a revival of activity and the city entered upon a period of rapid and substantial industrial development. Within the last year and a half it is estimated that there was expended or provision was made for the expenditure of sums aggregating more than $125,000,000 around the port

of Baltimore for the establishment of new industries or for the expansion of existing industries.

To solve the jitney problem the railway invested in the stock of two separate companies, one operating jitneys and the other a bus line on one of the principal thoroughfares not provided with direct car service. The experience of the railway with this means of transportation was identical with that of others in the same field, and it has been demonstrated conclusively that, under existing conditions, these lines cannot be operated with profit at a 5-cent fare. The jitney company, therefore, has practically ceased operation, but the bus line has been continued for the convenience of the public.

The railway's total investment in the stocks of these companies and its contingent liability as indorser of the notes of the two companies amounts to $157,500. This whole sum, as before stated, was set up as a reserve against earnings for 1916. The total cost of this venture, therefore, can be charged off against income for 1916. At the present time there are but few jitneys in operation in Baltimore.

For maintenance of way, structures and equipment, there was charged to operating expenses during 1916 $834,116, which with the $495,703 credited to depreciation reserve and included in operating expenses, makes a total of $1,329,819, an increase of $199,992. The total taxes and public charges in 1916 paid by the company were $1,158,590. This represents the total net earnings (after paying costs of operation only) of one car in every four. It also represents 11.69 per cent of the gross revenues.

Petaluma & Santa Rosa Railway

The gross earnings of the Petaluma & Santa Rosa Railway, Petaluma, Cal., for the calendar year 1916 amounted to $273,534, as compared to $283,047 the year before, while the operating expenses dropped from $201,151 in 1915 to $185,950 in 1916, so that the net earnings rose from $81,897 to $87,583. Moreover, the fixed charges showed a slight decrease from $62,363 in 1915 to $61,602 in 1916, with the result that the surplus gained from $19,534 in 1915 to $25,981 in 1916.

The passenger earnings decreased $8,692 during 1916, as compared to more than $10,000 in 1915. Up to 1915 the passenger earnings had shown a consistent increase. The principal cause of the decrease thereafter was the increase in the use of automobiles. Business conditions in 1916 were better in the company's territory, and the prices prevailing were high enough to offset a shortage in production, but the decrease in the production of many commodities made a corresponding decrease in tonnage for the railway. Moreover, both steamers of the company were tied up between June 1 and July 20, at the busiest time of the year, on account of a general strike of steamboat firemen and deck hands. While the entire decrease of $9,513 in gross earnings was probably attributable to the strike, the company suffered practically no net loss on account of it. Considerable business, however, was lost through the closing of the Panama Canal, inasmuch as the traffic moved via routes which eliminated the company from enjoying any part of the haul.

Considerable was accomplished during the year in reducing the cost of operation through a close attention to details and the development of greater efficiency. The net reduction in operating expenses amounted to $15,200, even after the inclusion of $10,934 on account of depreciation and compensation insurance, for which no charge was made prior to the last year. About $8,500 of the reduction was caused by the elimination of the expense of operating the steamers during the strike. Moreover, by a consolidation of the duties of president and attorney, and general manager and traffic manager, the salaries of general officers were reduced $2,300. More can perhaps be done along the line of economical efficiency, it is said, but a substantial increase in revenue is needed. The company will apply, as soon as it is possible to secure the necessary co-operation, for increases in rates which, it is believed, can be made without injuriously affecting its business and which will increase the revenue $20,000 or $30,000 a year.

Electric Railway Statistics

Expenses Shown to Be Increasing Faster Than Revenues, in Comparison of Returns for February, 1917, with Those for 1916

A comparison of electric railway statistics for February, 1917, with figures for the corresponding month of 1916, made by the information bureau of the American Electric Railway Association, indicates that the expenses of electric railways in the United States are increasing faster than the revenues. This condition is particularly noticeable in the East and has had a depressing effect upon the returns for the country as a whole. Data for February, representing 9123 miles of line of companies scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 3.18 per cent, in operating expenses of 8.95 per cent and a decrease in net earnings of 6.99 per cent. Data representing 7324 miles of line indicate an increase in the amount of taxes paid of 8.40 per cent and a decrease in operating income of 15.83 per cent. The returns from the city and interurban electric railways, as shown in detail in the appended table, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Of the three groups shown in the accompanying table, re-

REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR FEBRUARY, 1917

Account	United States				Eastern District				Southern District				Western District			
	Amount, February, 1917	Per Mile of Line			Amount, February, 1917	Per Mile of Line			Amount, February, 1917	Per Mile of Line			Amount, February, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$17,478,709	$1,916	$1,857	3.18	$13,231,774	$2,096	$2,025	3.51	$1,237,286	$1,155	$1,130	2.21	$3,009,649	$1,732	$1,700	1.88
Operating expenses	11,767,872	1,290	1,184	8.95	9,027,325	1,430	1,288	11.02	725,178	677	660	2.57	2,015,369	1,159	1,130	2.56
Net earnings	5,710,837	626	673	†6.99	4,204,449	666	737	†9.64	512,108	478	470	1.70	994,280	573	570	0.52
Operating ratio, per cent	1917, 67.32; 1916, 63.76				1917, 68.22; 1916, 63.60				1917, 58.61; 1916, 58.40				1917, 66.91; 1916, 66.47			
Average number of miles of line represented	1917, 9,123; 1916, 9,018				1917, 6,314; 1916, 6,236				1917, 1,071; 1916, 1,067				1917, 1,738; 1916, 1,715			

COMPANIES REPORTING TAXES

Operating revenues	$13,177,857	$1,799	$1,776	1.29	$9,557,406	$1,878	$1,858	1.07	$719,237	$1,163	$1,136	2.37	$2,901,214	$1,793	$1,767	1.47
Operating expenses	9,192,46	$1,255	1,164	7.81	6,851,589	1,346	1,22;	9.69	405,425	656	636	3.14	1,935,454	1,196	1,170	2.22
Net earnings	3,985,389	544	612	†11.12	2,705,817	532	631	†15.69	313,812	507	500	1.40	965,760	597	597	0.00
Taxes	944,088	129	119	8.40	696,170	137	123	11.38	60,929	99	95	4.21	186,989	115	118	†2.55
Operating income	3,041,301	415	493	†15.83	2,009,647	395	508	†22.25	252,883	408	405	0.74	778,771	482	479	0.62
Operating ratio, per cent	1917, 69.76; 1916, 65.54				1917, 71.67; 1916, 66.04				1917, 56.40; 1916, 55.98				1917, 66.70; 1916, 66.21			
Average number of miles of line represented	1917, 7,324; 1916, 7,222				1917, 5,088; 1916, 5,009				1917, 618; 1916, 617				1917, 1,618; 1916, 1,596			

†Decrease. There were twenty-nine days in February, 1916, and only twenty-eight days in February, 1917.

turns for the Eastern representing 6314 miles of line are somewhat affected by the unsatisfactory conditions which have had to be faced by the electric railways operating within the limits of Greater New York. These railways have not only suffered a slight decrease in revenues but have had to meet a considerable increase in their operating expenses and taxes. Consequently, though conditions in other parts of the district were slightly better, the returns for the district as a whole indicate an increase in operating revenues of 3.51 per cent, in operating expenses of 11.02 per cent and a decrease in net earnings of 9.64 per cent. Returns representing approximately 80 per cent of the above mileage show an increase in the amount of taxes paid of 11.38 per cent and a decrease in operating income of 22.25 per cent. Returns for the Southern group representing 1071 miles of line and for the Western group representing 1738 miles of line, though showing a greater percentage increase in operating expenses than in operating revenues, still indicate a slight increase in net earnings. Companies in the Southern group represented by 618 miles of line indicate an increase in the amount of taxes paid of 4.21 per cent and in operating income one of 0.74 per cent. In the Western group the operating income increased 0.62 per cent.

The operating ratio for the country as a whole has increased from 63.76 in February, 1916, to 67.32 in 1917. The increase is due largely to the increase in the operating ratio of the Eastern district. Slight increases in the operating ratio of the Southern and Western districts have also occurred.

R., S. & E. Reorganization Plan

Committee Representing Bondholders of the Rochester, Syracuse & Eastern Railroad Announces Plan and Agreement of Reorganization

The bondholders' protective committee, of which Arthur W. Loasby is chairman, representing the Rochester, Syracuse & Eastern Railroad bondholders, has submitted to the holders of the first mortgage 5 per cent gold bonds of that company who have deposited their bonds a plan for the purchase of the property at foreclosure and for its reorganization. The plan and agreement for the reorganization are dated May 18. It is expected that a sale of the property under the judgment of the Supreme Court will be held in the near future in the action commenced at the request of the committee.

The committee says that the property as a whole is in good condition to be taken over and operated by the bondholders without the rehabilitation expenditures which frequently form a part of reorganization plans. As to what the bondholders may expect in net earnings, if the plan is carried out, the committee says that the property has had the benefit of a full year's operation under the management of C. Loomis Allen, the receiver, and that if the bondholders approve the plan submitted by the committee, Mr. Allen will be continued in the management of the property by the new corporation. The statement of the financial operations of the company for the year ended Dec. 31, 1916, shows gross earnings of $753,343 and the amount applicable to the payment of bond interest and dividends $218,604.

The committee has concluded that the property should be acquired and operated by the bondholders through a new company, and that the capitalization authorized for the purpose of acquiring the property should not exceed its actual value, $7,000,000, as follows: $3,000,000 of 6 per cent cumulative preferred stock, $1,000,000 of common stock and $3,000,000 of first mortgage 5 per cent bonds. The bondholders who participate in the plan will receive for each $1,000 par value of the old bonds securities of the new company as follows: $500 of first mortgage 5 per cent bonds, $500 of 6 per cent cumulative preferred stock, $200 of common stock and $100 additional of 6 per cent cumulative preferred stock representing unpaid interest.

The amount of the old bonds outstanding was $4,896,000. If the holders of all of these bonds participate in the new plan the total amount of securities of the new company outstanding will be $2,448,000 of bonds, $2,937,600 of preferred stock and $979,200 of common stock, or a total of $6,346,800. The plan further provides that such of the authorized securities of the new company not required for delivery to participating bondholders shall be delivered to the committee to be used by it to raise the necessary cash to pay the non-participating holders. The amount of the bonds which will be issued by the new company will be not less than $2,448,000 and not more than $3,000,000.

It is pointed out that the net earnings of the company during the first year of its operation will probably exceed the amount required for interest upon the bonds by from $70,000 to $100,000, which will be applicable to dividends upon the preferred stock. The committee says that it is expected that there will ultimately be available to the participating certificate holders approximately $500,000 in possession of the Columbia Trust Company, the trustee of the mortgage, and of Mr. Allen and Mr. Holden, the receivers of the company. The committee reserves its decision as to how it shall apply this money, but points out that the fewer the dissents from the plan of reorganization the more likely it becomes that this money or some part of it may be devoted to paying the interest in default or some part of such interest. No assessment of cash is to be made upon the bondholders for the organization of the new company or the operation of the property.

Cumberland County Power & Light Company, Portland, Maine.—The Cumberland County Power & Light Company has applied to the Maine Public Service Commission for authority to issue $440,000 of bonds of which $207,700 are to be used for improvements during 1917. The commission has authorized the Portland Railroad, controlled by the Cumberland County Power & Light Company to issue $297,000 of first lien and consolidated mortgage bonds, making $2,147,000 outstanding.

Havana Electric Railway, Light & Power Company, Havana, Cuba.—The stockholders of the Havana Electric Railway, Light & Power Company have approved the plan to increase the preferred capitalization from $15,000,000 to $21,000,000. The holders of common and preferred stock of record of March 28 have the privilege to subscribe to the new stock, on the basis of 20 per cent of their holdings, at par and an amount equivalent to the accruing dividend thereon to June 15, making a total of $101.25 per share for the new preferred. Payments for the stock must be made on or before June 15.

International Railway, Buffalo, N. Y.—The New York Public Service Commission for the Second District has authorized the issue by the International Railway of $1,500,000 of the company's refunding and improvement 5 per cent bonds. The proceeds will be used to finance the extensions and improvements to the company's lines and additions to its rolling stock during the year 1917 and to refund $25,000 of car trust certificates due this year. Most of the projects provided for in the company's schedules have already been made public. They include the purchase of fifty-five new cars, improvement to the equipment of present cars, track reconstructions and extensions and additions to the power house and substation equipment.

Lehigh Valley Transit Company, Allentown, Pa.—The agreement seeking the deposit of the stock of the Lehigh Valley Transit Company in connection with the deal involving consolidation with the Lehigh Navigation Electric Company has been extended for ninety days from May 7. On May 12, $3,385,250 of preferred stock and $2,288,000 of common stock deposit receipts had been listed on the Philadelphia Stock Exchange.

Los Angeles (Cal.) Railway.—The operating revenues of the Los Angeles Railway for the year ended June 30, 1916, totaled $6,101,792, and the operating expenses $4,136,660. The revenue per car-mile for this year was 20.71 cents, and the operating expenses per car-mile 14.01 cents. The revenue per mile of track totaled $16,671.

New York (N. Y.) Railways.—The holders of bonds aggregating $2,000,000 of the former Twenty-eighth & Twenty-ninth Streets Crosstown Railway cannot sue the New York Railways in the New York federal courts, ac-

cording to a decision handed down in the Supreme Court of the United States. The bonds were guaranteed by the Metropolitan Street Railway. After the Metropolitan Street Railway became insolvent, suit was brought in the United States District Court at New York for the recovery of the principal of the bonds, the complainants contending that the New York Railways was liable therefor. The District Court refused so to hold, questioning its jurisdiction in the matter. The case was carried to the United States Supreme Court, and the decision of the lower court affirmed. The Third Avenue Railway is now operating the Twenty-eighth & Twenty-ninth Streets Railway, which has been reorganized as the Mid-Crosstown Railway. B. F. Wollman, president Bleecker Street & Fulton Ferry Railroad, has announced that the sale of the stock of that company to the New York Railways has been consummated and that more than 85 per cent of the stock has been delivered. The purchase of the stock of the New York Railways was made with the approval of the Public Service Commission for the First District at $28.50 a share.

Oakland, Antioch & Eastern Railway, Oakland, Cal.—The Oakland, Antioch & Eastern Railway has filed with the California Railroad Commission an application for authority to renew promissory notes for a total of $400,000. Of these notes, $240,000 are to the Union Trust Company, San Francisco, Cal., and draw interest at 6 per cent; $19,053 are to the J. G. White Engineering Corporation, and bear interest at 6 per cent; $47,800 are to the United States Steel Products Company, and are 6 per cent notes; and $93,000 are to the Anglo-London-Paris National Bank, and bear the interest rate of 7 per cent.

Syracuse & Northern Electric Railway, Syracuse, N. Y.—The New York Public Service Commission for the Second District has approved of the reorganization of the Syracuse & South Bay Electric Railroad and the Syracuse, Watertown & St. Lawrence River Railroad as the Syracuse & Northern Electric Railway, in accordance with an agreement reached with a committee of the bondholders composed of F. W. Roebling, Jr., W. L. Smith and William Nottingham. The new company has been authorized to issue $40,000 of first lien notes, $153,750 of second mortgage bonds, $480,000 of first preferred 6 per cent non-cumulative stock, $420,000 of second preferred 6 per cent non-cumulative stock and $150,000 of common stock. This makes the total capital liabilities $1,243,750, as against $1,790,000 of securities of the two old companies. The committee on reorganization says in its petition that the new arrangement will reduce the fixed charges on the property to a point where its undoubted value in construction, equipment and territory will enable the new company to live.

Tidewater Power Company, Wilmington, N. C.—Hugh MacRae, president of the Tidewater Power Company, has written to the ELECTRIC RAILWAY JOURNAL relative to the proposed sale of the property of the company to Brooks & Company, Scranton, Pa., to the effect that for reasons mutually satisfactory the transaction was not consummated.

Trans-St. Mary's Traction Company, Sault Ste. Marie, Mich.—A receiver has been appointed for the Trans-St. Mary's Traction Company. The company defaulted in the payment of the interest due on Jan. 1 on its fifteen-year 5 per cent bonds as noted in the ELECTRIC RAILWAY JOURNAL of April 7, page 664.

Washington Railway & Electric Company, Washington, D. C.—In accordance with the approval received from the District of Columbia Public Utilities Commission for the issue of $1,127,000 of general improvement 6 per cent debenture bonds, the Potomac Electric Power Company offers for sale $750,000 of the bonds, and will receive subscriptions until noon May 31. The proceeds will be used for extensions, additions, betterments and improvements and to reimburse the company for previous expenditures. The bonds are guaranteed by the Washington Railway & Electric Company, which controls the Potomac Company.

West Virginia Traction & Electric Company, Wheeling, W. Va.—William P. Bonbright & Company, Inc., New York, N. Y., reported on May 17 that they had already sold more than $1,000,000 of the $1,800,000 of 6 per cent secured notes of the West Virginia Traction & Electric Company, underwritten by them, since making their private offering of these notes on May 1.

Dividends Declared

Baton Rouge (La.) Electric Company, 3 per cent, preferred; 4 per cent, common.

Cities Service Company, New York, N. Y., monthly, one-half of 1 per cent, common and preferred; one-half of 1 per cent common, payable in common stock.

Citizens Traction Company, Pittsburgh, Pa., $1.50.

Northern Texas Electric Company, Fort Worth, Tex., quarterly, 1 per cent, common.

Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis., quarterly, 1¾ per cent, preferred.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period			Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Mar.,		'17	$71,203	*$40,566	$30,637	$18,646	$11,991
1 "	"	'16	63,794	*35,896	27,898	17,653	10 245
12 "	"	'17	852,167	*480,147	372,020	218,071	153.949
12 "	"	'16	792,384	*416.006	376,378	212,798	163,580

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS

1m., Mar.,		'17	$8,412	*$9,857	†$1,445	$1,167	†$2,612
1 "	"	'16	7,096	*8,465	†1,369	1,101	†2,470
12 "	"	'17	125,302	*114,195	11,107	13,446	†2,339
12 "	"	'16	116,967	*98,618	18,349	13,384	4,965

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., Mar.,		'17	$106,691	*$74,631	$32,060	$29,?o3	$2,307
1 "	"	'16	100,095	*60,568	39,527	29,793	9,734
12 "	"	'17	1,248,917	*858,529	390,388	358,238	32,150
12 "	"	'16	1,142,425	*737,509	404,916	357,353	47,563

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

1m., Mar.,		17	$332,389	*$237,777	$94,612	$45,109	$49,503
1 "	"	'16	288,094	*169,962	118,132	44,375	73,757
12 "	"	'17	3,657,467	*2,287,687	1,369,780	520,841	$48,939
12 "	"	'16	3,201,382	*1,891,333	1,310,049	489,482	820,567

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

1m., Mar.,		'17	$236,387	*$166,137	$70,250	$66,629	$3,621
1 "	"	'16	209,374	*139,620	69,754	66,371	3,383
12 "	"	'17	2,938,421	*1,869,863	1,068,558	810,460	258,098
12 "	"	'16	2,692,080	*1,568,691	1,123,389	802,370	321,019

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

1m., Mar.,		'17	$287,052	*$183,819	$103,233	$64,662	$38,571
1 "	"	'16	231,887	*141,868	90,019	63.645	26,374
12 "	"	'17	3,186,789	*1,955,131	1,231,658	760,429	471,229
12 "	"	'16	2,563,131	*1,532,202	1,030,929	753,772	277,157

EL PASO (TEX.) ELECTRIC COMPANY

1m., Mar.,		'17	$108,183	*$67,849	$40.334	$5,114	$35,220
1 "	"	'16	86,491	*47,941	38.551	4,810	33,740
12 "	"	'17	1,163,578	*713,531	450,047	60,593	389,454
12 "	"	'16	1,014,837	*531,703	483,134	51,960	431,174

JACKSONVILLE (FLA.) TRACTION COMPANY

1m., Mar.,		'17	$61,510	*$38,338	$23.172	$15.777	$7,395
1 "	"	'16	54,731	*36,762	17,969	15,440	2,529
12 "	"	'17	643,882	*431,016	212,866	185,832	27,034
12 "	"	'16	612,704	*426,044	186,660	180,181	6,479

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

1m., Mar.,		'17	$67,227	*$53,586	$13,641	$15,679	†$2,038
1 "	"	'16	55,204	*45,072	10,132	16,155	†6,023
12 "	"	'17	828,722	*587,706	241,016	186,001	55,015
12 "	"	'16	747,892	*490,819	257,073	191,224	65,849

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m., Mar.,		'17	$201,328	*$137,091	$64,237	$40,906	$23,331
1 "	"	'16	194,038	*121,775	72,263	42,807	29,456
12 "	"	'17	2,415,890	*1,494,407	921,483	503.298	418,185
12 "	"	'16	2,189,901	*1,349,511	840,390	513,680	326,710

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

1m., Mar.,		'17	$25,394	*$20,529	$4,865	$7,278	†$2,413
1 "	"	'16	25,725	*15,955	9,770	7.188	2,582
12 "	"	'17	311,898	*226,956	84,942	86,404	1,462
12 "	"	'16	294,586	*178,666	115,920	90,057	25,863

PENSACOLA (FLA.) ELECTRIC COMPANY

1m., Mar.,		'17	$25,220	*$15,999	$9,221	$7,818	$1,403
1 "	"	'16	24,056	*13,315	10,741	7,516	3,225
12 "	"	'17	289,452	*165,299	124,153	92,764	31,389
12 "	"	'16	268,463	*149,405	119,058	87,139	31,919

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m., Mar.,		'17	$474,478	*$262,377	$212,101	$184,024	$28,077
1 "	"	'16	450,803	*254,205	196,598	182,064	14,534
12 "	"	'17	5,592.604	*3,038,892	2,553,712	2,180,643	373,069
12 "	"	'16	5,453,357	*3,063,650	2,389,707	2,204,581	185,126

*Includes taxes. †Deficit.

Traffic and Transportation

Seattle Limits Use of One-Man Cars

City Council Moves to Prevent Their More General Operation as Recently Authorized by the Washington Commission

The City Council of Seattle has adopted a resolution denying the right of the Puget Sound Traction, Light & Power Company to operate one-man cars, except as now authorized by the Council, and has served notice on the company that such cars will not be allowed to operate. It declares that the Public Service Commission, in authorizing the company to employ one-man cars on its lines in Seattle, reversed its opinion in the recent case of the Tacoma Railway, Light & Power Company. The resolution states that the action of the commission was unwarranted, because the case was an *ex parte* affair in which the city was interested, but had not been advised.

The Public Service Commission issued its order on April 26, so that the company could place orders for the cars and for material for conversion of single-truck cars into cars of the one-man type before the prices for material advanced, which was announced for May 1. The resolution, which was originally intended to be a mere protest against the action of the commission, was unanimously passed by the Council with a provision directing the corporation counsel to prevent the operation of one-man cars, and the Mayor said he would arrest the car men provided it was the proper method to pursue.

A paragraph in the resolution, which was adopted unanimously by the eight members present, provided that a copy of the resolution be forwarded to the company, notifying it not to purchase any cars, or to take any steps whatever to install one-man cars upon its system "until it shall have first obtained the consent of the city legislative act." The company was further notified that the city would resist by legal proceedings the violation of its franchise obligations "except as it has been relieved therefrom by or with the consent of the city of Seattle."

How the Situation Developed

Nearly two months ago the traction company asked for the privilege of operating twenty-five one-man cars to furnish additional service on congested lines. The matter was referred to the franchise committee, before which officers of the company appeared and urged immediate action, so that an order might be placed before a proposed 25 per cent increase in prices materialized. The franchise committee, including Councilmen Oliver T. Erickson and W. D. Lane, and numbering five of the nine members of the Council, agreed to pass a bill granting the desired privilege at a meeting to be held on a Monday following, provided no patrons actually protested in the meantime. There were no protests, but instead of passing the bill, Councilman Erickson introduced a resolution denying the use of the small cars until such time as the company would allow the operation of city cars over its Third Avenue tracks and around the Jackson Street loop. The company then appealed to the commission.

The present resolution opposing the commission's order adds difficulties to a complicated situation. In accordance with a city ordinance, Corporation Counsel Caldwell brought suit some time ago to compel the company to pave between its tracks. This action was tried before Judge Kenneth Mackintosh on March 26 and the court has since held the case under advisement. The corporation counsel will immediately renew the motion of the city for dismissal of the company's application before the Public Service Commission to be released of certain franchise obligations. The commission will be asked to make an order similar to that which was issued in the Tacoma case, wherein it disclaimed jurisdiction to unburden a public utility of such obligations.

Free-Ride Order Opposed

Public Service Commission of Indiana Orders Free Transportation for Policemen and Firemen— Suit Brought in Federal Court

An application was filed on May 16 in the Federal Court at Indianapolis by the Indianapolis Traction & Terminal Company for an injunction to prevent the Public Service Commission of Indiana from enforcing a recent order which provides for the free transportation of firemen and policemen on the street railway systems of the State. Hearings were held by the commission early in May, following which an order was issued to the traction companies requiring them to carry city firemen and policemen on their cars without payment of fare in accordance with an act passed during the 1917 session of the Indiana Legislature, which amended a section of the utilities commission act. The traction companies contended at the hearing that the amendatory act is unconstitutional. The Indianapolis Traction & Terminal Company has asked a statement of the United States Court declaring the Public Service Commission's order void, that the commission be enjoined from enforcing the order and also from instituting any action, civil or criminal, for penalties for violating it, and finally, that all firemen and policemen, having notice of the suit, be denied free car rides when on duty.

The company claims that the commission, unless enjoined, "will subject the company to a multiplicity of actions, demands and penalties, which might amount to thousands of dollars." It is also charged that the commission's order is indefinite and incapable of enforcement and is, therefore, invalid, for "there is no means to ascertain when a policeman or fireman is on duty." Errors in determining the status of the firemen or policemen might also cause large penalties. It is further contended that these penalties and the intention of the commission to enforce the free-ride order will intimidate the company's employees in the discharge of their duties, encourage firemen and policemen to resist the payment of fare, cause disturbance on the cars which would discourage the public patronage.

Robert I. Todd, president and general manager of the company, stated in his affidavit that E. I. Lewis, chairman of the Public Service Commission, had advised him that the commission would give the company until Monday, May 14, to comply with the order, which was passed on May 8.

Transfer Areas Suggested

A Day's Transfers Wheeled Into Directors' Meeting to Impress the Board

At a hearing on May 18 before the ways and means committee of the Massachusetts Legislature, on the bill to relieve the financial necessities of the Boston Elevated Railway, President M. C. Brush urged that the provision which authorized the company to acquire property for inclosed transfer areas be restored to the bill. Mr. Brush reviewed the abuses of the transfer privilege in Boston, pointing out that at Central Square, Cambridge, the company is now losing $60,000 a year through the lack of an inclosed transfer area. He said that 80 per cent of the paper transfers now in use at Boston could be eliminated by the establishment of inclosed transfer areas, and that in order to impress the directors of the company with the volume of transfers issued he had recently wheeled one day's transfers in a barrow into the meeting of the board. Speaking of the abuses possible at Boston, Mr. Brush said that he recently gave a conductor a nickel and asked him to ride as far as possible on the system without paying a second fare, with the result that the employee covered more than 50 miles. Local merchants object to the establishment of transfer areas on account of its effect on their patronage.

F. E. Snow, counsel for the company, said that the purchase of the Cambridge subway by the State, and other relief measures suggested in the bill, would provide the company with capital temporarily, but that it would not yield the necessary revenue. He said that a 6-cent fare is the only ultimate solution of the company's problem.

Bonding Company for Washington Jitneys

State Insurance Commissioner H. O. Fishback, Olympia, Wash., upon receipt of an opinion from Attorney General Tanner, has announced that the Mutual Union Insurance Company, organized by jitney drivers of the State to write bonds for jitney operators, may write such bonds, provided it complies with all of the laws covering the writing of this class of business. Commissioner Fishback has announced also that the company will be required to have assets to the amount of $300,000 before bonds can be written. This decision has resulted in the issuance of a restraining order by Superior Judge Smith which forbids Prosecuting Attorney Lundin from interfering with the operation of jitney buses under the bonds written by the Mutual Union Insurance Company until a hearing is held on petitions now pending for a permanent injunction. It is probable that the jitney drivers will apply for a writ of mandamus to compel the Secretary of State and the Insurance Commission to issue a license to the company, and in the meantime will ask an injunction to prevent prosecution because they are without bonds.

W. R. Crawford, president of the mutual company, urges that the mutual insurance company statutory provision, which provides for the acceptance of contingent assets of members, be applied in rating the jitney surety company, but this Commissioner Fishback declines to do. Mr. Crawford holds that the contingent liability provision, by which each member is liable for the sum of six times his premium, is mandatory upon the commissioner in the jitney application. Under this provision, the 321 members, each paying $200 premium annually, acquire a total asset which the mutual company's representative argues is complete compliance with the law. Commissioner Fishback says he will not take this view of the case unless ordered to do so by the court.

The jitney men's case is further complicated by the fact that the receiver of the defunct Casualty Company of America, the New York firm which has heretofore written all jitney bonds in the State of Washington, has notified Secretary of State I. M. Howell that all bonds became void on May 4. Commissioner Fishback is now seeking a ruling from Attorney General Tanner as to whether the company can void the jitney bonds without refunding the unearned portion of the paid premiums.

I. C. C. Dismisses Transfer Case

The complaint filed with the Interstate Commerce Commission by C. Elton James and other residents of communities in Virginia served by the Washington & Old Dominion Railway, Washington, D. C., charging that the withdrawal of the transfer arrangement existing between that company and the Capital Traction Company subjected them to unjust and discriminatory fares was dismissed on May 5. The complaint was filed with the commission on Aug. 12, 1916.

There is no connection between the two lines, but their terminals at Thirty-sixth and M Streets in Washington are within a few feet of each other. Prior to Aug. 9, 1916, transfers from the Capital Traction Company were good on the Great Falls division of the Washington & Old Dominion Railway to Cherrydale, and on the Bluemont division to Thrifton. After that date through commutation fares to Washington were published by the Washington & Old Dominion Railway from points on both its Bluemont and Great Falls divisions. This change resulted in an increase in the total charges paid by commuters whose business brings them into the city.

The commission held that the Capital Traction Company is not subject to its jurisdiction and, therefore, it has no power to require the restoration of the transfer arrangement previously existing between the two companies. The case was ordered held open for fifteen days to give the complainants opportunity to file a request for a further hearing on the question of rates on the Washington & Old Dominion line. The rates in the present case on this line were not questioned.

Pacific Electric Men Send Out Letter

Supplementing the work of the Pacific Electric Railway employees of Los Angeles, Cal., in securing signatures on a petition for an initiative ordinance intended to bring the jitneys under more rigid control, an open letter of appeal has been sent out to the people of the city. This movement was begun by the Los Angeles Railway men some time ago in the hope of helping the company to restore its revenues and enable it to increase wages. It has been reviewed previously in the Electric Railway Journal. The letter read in part as follows:

"Our future and the future of our families are at stake. There are now more than 400 jitneys operating in Los Angeles County. We should be placed on a fair competitive basis with them. The jitney bus should be forced to bear the same burdens that railway service bears; forced to accept responsibility for accidents; forced to pay the same proportion of street paving; maintain service whether it pays or not; give and take transfers; operate in poorly paying territory as well as on the paying streets; give up nickel-sniping from our cars and go into the service of the public on a business basis."

Inter-Company Service Authorized

Through service over the Bay State Street Railway, Boston, Mass., and the Boston Elevated Railway between Winchester and Harvard Square, Cambridge, will soon be established as the result of an order of May 18 by the Public Service Commission. By an act of 1916 the commission was authorized to grant track locations for the establishment of through service by two or more companies in cases where the municipality has refused such location rights. In the present case the board overruled the town of Arlington and ordered a single-track connection between the two systems where the lines are to be joined. The board held that the establishment of through service would not add sufficiently to the traffic congestion on the Boston Elevated lines feeding the Cambridge subway to warrant a refusal of the Winchester petition.

Street Semaphores for Seattle.—Upon the recommendation of Superintendent of Utilities A. L. Valentine, Seattle, the City Council recently authorized the installation of semaphores at several congested street intersections. Semaphores of two different types have been installed.

Trolley Wreck Near Cleveland.—A car of the Cleveland & Eastern Traction Company, which was filled with passengers and stalled at a switch, was sideswiped on May 20 by a car going in the opposite direction. The concussion was such that the standing car tipped over on its side, injuring ten persons, one of them seriously.

More Skip Stops Before Detroit Council.—Agitation for a trial of skip-stop service on the Hamilton and Grand River lines of the Detroit (Mich.) United Railway has resulted in the introduction of resolutions in the Common Council which place the question before the Aldermen for consideration. This form of service has proved very popular on the Woodward and Jefferson lines, and the company is ready to extend its application as soon as it receives permission from the city.

City Fails to Reduce Fares.—The lack of proper procedure in advertising an ordinance seeking to reduce street car fares in Newport, Ky., to 3 cents has invalidated the measure, according to a recent decision of the Kentucky Court of Appeals, sitting at Frankfort. The ordinance would have compelled the South Covington & Cincinnati Street Railway to charge a 3-cent fare inside the city of Newport and 5-cent fares to all points on the line outside the city, with universal transfer privileges. The court sustained the finding as rendered by the Campbell Circuit Court.

Novel Anti-Parking Signs in Louisville.—Managements of office buildings and large department stores in Louisville, Ky., are making use of curb signs with the inscription: "Please Do Not Park Cars Here," written in white letters.

on a black field. The signs are placed at the entrances to the buildings and prove effective in keeping the street clear at those points. They are made from 6-in. x 6-in. timbers about 5 ft. long, which are sawed lengthwise to give an approximate triangular section. The inscription is placed on the sloping surface so as to be easily seen from vehicles.

Utica Fare Increase Contested.—The tariff of the New York State Railways, Utica Lines, which was filed with the Public Service Commission for the Second District, increasing by 5 cents the round-trip fares from Utica to Rome, Frankfort, Ilion, Mohawk, Herkimer and Little Falls became effective on May 15. The Mayor of Little Falls and other residents made complaint against these increases, but the complaint was not received until after the new tariffs became effective. The complaint is accordingly being served on the company as a complaint against existing fares, to which the company has twenty days to make a reply.

Albany Fare Case Settled.—In the matter of a change of fares on the lines from Albany to Troy of the United Traction Company, Albany, N. Y., which was one issue of a general controversy in that city recently the company has withdrawn its proposition. A half-hourly service is now furnished on the Albany-Troy steam belt line for a 15-cent fare, while the electric railway rate between the two cities is 10 cents, with no transfers at either end. The attempt was originally to compel a reduction in fare through a bill introduced in the Legislature, which stipulated a 10-cent fare on this line, with transfer privileges.

Costs Will Affect Fares in Detroit.—The Detroit (Mich.) United Railway, through the columns of a recent issue of its weekly publication, *Electric Railway Service*, has explained to its patrons, in a simple and straightforward manner, what the prevailing high prices mean to the electric railway industry, and that if costs continue to rise fares on that road must be expected to advance. The company estimates that an additional expenditure of $600,000 will be required this year to meet the increased cost of coal. It is pointed out that in the case of other public utilities, and also private enterprises, selling prices are regulated to suit varying costs, which is not readily done by railways.

Twin Cities Service Portrayed in Folder.—A well-illustrated booklet entitled "The Twin Cities To-day" has just been issued by the Twin City Rapid Transit Company, of which A. W. Warnock is general passenger agent. The booklet is intended to convey a cordial invitation to strangers to visit the many enjoyable places of interest in Minneapolis and St. Paul, which are sometimes characterized by the phrase "the cities of lakes, rivers and parks." It contains, besides illustrations and statistical data, colored maps of the two cities, the University of Minnesota grounds and some of the more important parks, showing the connection of trolley lines, and gives information concerning car schedules.

Electric Railway Accident Statistics.—The accident bulletin issued by the Interstate Commerce Commission for the quarter ended Sept. 30, 1916, summarizes the accidents of various kinds which occurred on electric railways during that period. According to the report there were sixty-one train accidents which resulted in the death of four persons and the injury of 210. The number of deaths resulting from ordinary train-service accidents was 153, seventy-three of which involved grade-crossing accidents; the number of injuries was 714, of which 268 were received in getting on or off cars, while 187 of these involved grade-crossing accidents. To these figures are added the number of non-train casualties, making the total number of deaths 180 and the number of accidents 1326.

Suit Brought in Duluth Fare Case.—James E. Gardner, Jr., has brought suit against the Duluth (Minn.) Street Railway in the district court of that city in an effort to test the right of that company to charge a double fare on one of its lines. This situation was reviewed in the ELECTRIC RAILWAY JOURNAL for May 5, page 848. The Public Affairs Committee granted the company permission to charge a 10-cent fare on its Morgan Park line in order that the company might get funds for extending the line to New Duluth. Many of the patrons have opposed the measure, but the city attorney pointed out that in his opinion the city could not prevent it. To make an issue, Gardner refused to pay the double fare and was put off the car, for which he is suing the company for $500 damages.

Universal Transfer System for Cincinnati.—Mayor Puchta has approved the new universal transfer schedule for Cincinnati and it is now in effect. It provides for transportation between two points by the most direct route at a fare of 5 cents, as provided in the loop lease and revision ordinance recently approved. The principal features of the system are the triple transfer provision for East End patrons, enabling them to go to Norwood or Avondale without going down town, double transfers on crosstown lines, double transfers for College Hill residents on Winton Place lines to Avondale and Winton Place, and a 5-cent fare on the Millcreek Valley line within the city limits. Each conductor has been provided with a book of 124 pages showing the transfer privileges on every line in the city.

State Commissions Order Safety Measures.—In connection with the Public Service Commission of the First District of New York, the up-State Public Service Commission at Albany has announced an order requiring the Long Island Railroad, New York, N. Y., to maintain a guard between each two passenger cars of its multiple-unit trains, to equip all such cars with vestibule gates or doors and trapdoors, which must be kept closed except when stopping at stations, and to keep trapdoors closed except when the train is proceeding between consecutive stations at which the station platforms are substantially on a level with the rails. This decision was reached after a long investigation by both commissions and after a full hearing and rehearing of the case. The commissions announced that it was necessary in order to make travel safe in the crowded commuting district involved.

Military Work Swells Traffic.—The amount of business handled by the Louisville & Southern Indiana Traction Company, New Albany, Ind., has increased as a result of the present military activities. The quartermasters' depot at Jeffersonville, Ind., is one of the important supply depots for the entire army, and a tremendous volume of business is being handled there. One of the big branches of this depot is the sewing department, which issues large quantities of material out of which the clothing for the soldiers is made. Thousands of women from across the Ohio River, who are constantly engaged on this work, reach the depot via the cross-river line to Louisville, the line to New Albany and the Jeffersonville city line. In addition there is a large amount of freight being handled, most of it by steam cars, since the government takes possession of these cars at will. Electric cars are loaded at the depot when the wagons of the company in Jeffersonville are not sufficient in number to make the collections.

Three Auto-Bus Lines for Rome.—The Public Service Commission for the Second District of New York has granted certificates of convenience and necessity for three motor-bus lines running into Rome. The Rome & Boonville Auto Bus Company, Inc., is permitted to operate through Dominick Street, North James Street, North George Street and Turin Street. A certificate is granted to the Rome & Northern Auto Bus Company to operate along North James Street and upon other streets in Rome for the purpose of delivering and picking up passengers and parcels. These lines are parts of a line to Boonville. The minimum fare is to be 15 cents, and no local passengers are to be carried within the city of Rome. J. Franklin Hyde has also received permission to operate a line from Rome to Oneida and Sylvan Beach. These buses will carry passengers and will carry freight in trailers, provided such a practice is not deemed dangerous. The route will run from James and Dominick Streets in Rome to the Oswego Road and into the town of Verona; also along South James Street to where the Rome and Verona roads intersect. In Oneida the buses will travel the usual route through that city to the bridge on Sococonda Street, over the Oneida Creek. The applicant agrees to file with the commission any proposed changes in freight and passenger rates.

Personal Mention

C. W. Bridges is now traffic agent of the Pittsburg County Railway, McAlester, Okla., having succeeded F. M. Essig.

Thomas B. Willard, assistant treasurer of the Tidewater Power Company, Wilmington, N. C., has been made assistant secretary-treasurer.

Fred E. Sterling has been appointed a member of the State Public Utilities Commission of Illinois by Governor Lowden, effective on July 1.

H. A. Bullock, secretary of the New York Municipal Railway Corporation, Brooklyn, N. Y., began service in the training camp at Plattsburg on May 22.

Harry Woollcott, secretary and purchasing agent of the Tidewater Power Company, Wilmington, N. C., has been elected treasurer of the company to succeed the late R. J. Jones.

Walter H. Taylor has resigned as solicitor at Norfolk for the Virginia Railway & Power Company on account of the pressure of other business. The duties of the office will be discharged by W. H. Venable, general attorney of that city.

Edward Dana, manager of surface transportation of the Boston (Mass.) Elevated Railway, recently gave an illustrated lecture before senior students of electrical engineering at the Massachusetts Institute of Technology on the subject of traffic studies and their importance in the fixing of schedules.

Arthur W. Brady, president of the Union Traction Company of Indiana, Anderson, Ind., on May 17 was appointed by Governor Goodrich a member of the State Council of Defense. The State Council is organized to co-operate with the Council of National Defense and will take charge of the organization and direction of all the resources of the State.

Charles G. Miller has resigned as assistant secretary of the Cincinnati (Ohio) Traction Company to accept the position of business manager of the Cincinnati Zoological Park Association. Mr. Miller had been in temporary charge of the Zoo for about six months. He began his services with the local traction company in Cincinnati about ten years ago. He served successively as secretary and chief clerk to Vice-President Draper before becoming assistant secretary of the company.

C. E. Fasoldt has been appointed engineer of power and lines for the United Traction Company, Albany, N. Y.. to succeed H. J. Childs, who is now electrical engineer for the Chateaugay Ore & Iron Company, Lyon Mountain, N. Y. Mr. Fasoldt has been in the employ of the General Electric Company, Schenectady, N. Y., since 1902. He spent about two and a half years in the testing department and has since been engaged in power-plant construction and in the office of the construction department.

A. H. Towne, who has been engineer of maintenance of way for the Berkshire Street Railway, Pittsfield, Mass., since 1914, has resigned. He will return to Springfield to resume work with the engineering firm of Durkee, Towne & White, of which he is a member. Mr. Towne entered the employ of the Berkshire Street Railway in 1901. He had charge of the construction of the company's line from Bennington, Vt., to Canaan, Conn., the extension from Great Barrington to Egremont, and also its Lee-Huntington line. No successor to Mr. Towne has yet been appointed.

George Gibbs, of the firm of Gibbs & Hill, consulting engineers, New York City, has sailed for Russia, together with five other representative railway men of this country, forming the advisory commission of American railway experts whose services are to be placed at the disposal of the Russian government. The commission, which is headed by John F. Stevens as chairman, is to act in a consulting capacity with the aim of improving the chaotic conditions existing to-day in the transportation industry in Russia. It is to lend its aid in the construction of new lines and the rehabilitation of existing railroads and their equipment, and in addition will consider the immediate problems of operation which have been such a serious handicap to Russia since the war began.

Ellsworth L. Mills, who has been chief of the track division of the Public Service Commission of the First District of New York, has resigned from the firm of Gibbs & Hill, consulting engineers to the commission, to become associated with the firm of Dilworth, Lockwood & Company, steel merchants, New York. During his connection with the commission Mr. Mills was in charge of the design and the preparation of the contracts for the track work for the city-owned lines of the dual system. Before becoming associated with Messrs. Gibbs & Hill, Mr. Mills was engaged on the Grand Central Terminal improvements of the New York Central Railroad. The supervision of track design and of all contracts for the purchase of materials has been assumed by Robert H. Jacobs, division engineer.

James Harmon, who was safety agent for the Middle West Utilities Company with headquarters at Indianapolis, has been transferred to Chicago as claim adjuster of the bureau of safety of the same interests. Mr. Harmon has been engaged in accident prevention work for several years. He received his first experience with railway operation while working as a conductor. He was one of the first to recommend street car cards to designate the proper methods of boarding and leaving cars. About 1910 Mr. Harmon became claim and safety agent for the United Gas & Electric Company and later of all the Samuel Insull properties in New Albany and Jeffersonville, Ind., and in Louisville, Ky. During that time he introduced periodical examinations for trainmen and other employees and gave other instruction in safety methods. In October, 1914, he was made safety agent for all the Insull properties in Indiana with headquarters at Indianapolis, and was succeeded in that position a few weeks ago by Frank H. Warren of the Union Traction Company of Indiana.

Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., was elected president of the Missouri Association of Public Utilities at its 1917 annual convention. Mr. Cameron was born on a farm in Vernon County, Mo., in 1877. After he had completed the Nevada High School course he studied at Missouri University and later attended Fort Worth College at Fort Worth, Tex. His first connection with the United Railways was formed in 1898, when he entered the engineering department after a venture in the asphalt business at Dougherty, I. T. He was later assigned to work in the operating department of which he has since been a vital factor continuously, with the exception of a few months in 1906 when he engaged in the lumber business in Helena, Ark. The following year he returned to St. Louis to become superintendent of transportation, his present position. Mr. Cameron has shown an active interest in the welfare work of the company.

BRUCE CAMERON

Obituary

L. R. Pomeroy, consulting railway and electrical engineer, died at his home in Orange, N. J., at the age of sixty years. Mr. Pomeroy was graduated from Irving Institute, and had dealt with electric railway problems since that time. In 1902 he became connected with the General Electric Company and devoted most of his time to the study of railway electrification for several years. He also spent two years in the employ of the Safety Car Heating & Lighting Company, and in 1910 became engineer of the railway and industrial division of J. G. White & Company. A year later he entered consulting engineering work in New York City.

Construction News

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

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

RECENT INCORPORATIONS

*Eastern Transit Line, Inc., Weehawken, N. J.—Incorporated to construct and operate a general passenger and freight line in New Jersey. Capital stock, $350,000. L. H. Smith, 911 Boulevard, Weehawken, vice-president.

Syracuse & Northern Electric Railway, Syracuse, N. Y.—Incorporated to take over the Syracuse & South Bay Railway and the Syracuse, Watertown & St. Lawrence Railway. Capital stock, $1,243,750. Incorporators: C. Loomis Allen, Talmadge C. Cherry and Alexander H. Cowle.

FRANCHISES

Wilmington, Del.—DeArmond Lindes, Philadelphia, has asked the Levy Court for a franchise to construct an electric railway beginning just outside the limits of the city of Wilmington, extending south along the county road through Farnhurst to Hare's Corner, State Road, Bear Station, Red Lion, Corbit, St. Georges, Macdonough, Odessa, Middletown, Townsend, Blackbird and Smyrna. Mr. Lindes' petition stated that he is about to organize a corporation under the laws of Delaware for the purpose of building the road, which will carry both passengers and freight.

Springfield, Ill.—The Chicago, Springfield & Cairo Railway has asked the Public Utilities Commission of Illinois for a certificate of convenience and necessity authorizing it to construct and operate a line from Springfield to Cairo, via Pawnee, Hillsboro, Greenville, Nashville, Pinckneyville, Murphysboro and Jonesboro. J. B. Campbell, president, and A. E. Taylor, secretary. [July 22, '16.]

Waterloo, Iowa.—The City Council recently passed an ordinance granting a new franchise to the Waterloo, Cedar Falls & Northern Railway in Waterloo. The franchise provides definite terms and conditions under which the company may occupy the streets and for the admission into the city of other interurban railways over the tracks of the Waterloo, Cedar Falls & Northern Railway. The franchise will be presented to the people for approval at a special election to be held June 11.

St. Clair Heights, Mich.—The Detroit United Railway has asked the City Council of St. Clair Heights for a thirty-year franchise to construct an extension on Harper Avenue from Gratiot to Montclair Avenue, thence on Montclair to Shoemaker Avenue to St. Jean Avenue, south on St. Jean Avenue to the city limits.

Kansas City, Mo.—The Kansas City Railways has received a franchise from the City Council to double-track its line on Thirty-ninth Street from Summit Street to Main Street.

Brooklyn, N. Y.—The application of the Brooklyn Rapid Transit Company for a franchise to construct an extension on Eighty-sixth Street from Fifth to Third Avenue has been referred by the Board of Estimate to its committee on franchises. One of the ideas in the extension is to accommodate patrons of the surface cars in making connections with the Fourth Avenue subway.

New Rochelle, N. Y.—The Westchester Electric Railroad has received permission from the Public Service Commission for the Second District of New York to build a second track on Main Street, New Rochelle, from Rose Street to near Harrison Street; a double-track curve from Main Street into Franklin Avenue, with curves into Rose Street and an extension of its single-track line in Winyah Avenue from North Avenue to the west city line. Local franchises for both the extensions have been approved by the commission.

Cincinnati, Ohio.—The Cincinnati, Lawrenceburg & Aurora Electric Street Railroad has asked the City Council for a renewal of its existing franchise for a period of twenty-five years. While the present franchise has eight years to run, the renewal for the twenty-five-year period is desired to conform with other franchises along the route, and for the purpose of bringing about legislation providing for rapid transit service for the western part of the city. The company also desires to relocate its present track on Lower River Road within the former villages of Delhi, Sayler Park and Fernbank on private right-of-way and on Commercial Avenue.

Pennsburg, Pa.—The City Councils of Pennsburg, East Greenville and Red Hill have passed ordinances granting the Montgomery Transit Company the right-of-way for its proposed trolley line from Norristown to Allentown. Work has been begun at Lederachville.

Milwaukee, Wis.—A franchise has been passed by the City Council of Milwaukee for the construction of an extension by the Milwaukee Electric Railway & Light Company on Mitchell Street to Muskego Avenue, on Muskego Avenue to Burnham Street and on Burnham Street to Twenty-sixth Avenue.

TRACK AND ROADWAY

*Lakeport, Cal.—G. L. Hardison, Rialto Building, San Francisco, is reported interested in a project to construct a line from a point near Hopland to Lakeport, about 24 miles.

Georgia Railway & Power Company, Atlanta, Ga.—A contract has been entered into whereby the Georgia Railway & Power Company will furnish the electric energy for Cartersville for all private and public light and power purposes.

Chicago, Fox Lake & Northern Electric Railway, Chicago, Ill.—This company is now ready to begin construction work on its proposed line from Evanston to Palatine, via Niles Center, Niles, Park Ridge, Desplaines, Mount Prospect and Arlington Heights. It is reported the company will take over the Palatine, Lake Zurich & Wauconda Railroad, which operates a steam line from Palatine to Wauconda. From Wauconda the new line will extend north to Volo, Fox Lake, Lake Geneva, Antioch, then west and north to Elkhorn and Jefferson, Wis. L. K. Sherman, Chicago, chief engineer. [March 24, '17.]

Chicago & Interurban Traction Company, Chicago, Ill.—This company reports that it is rehabilitating its double-track lines on Western Avenue and Burr Oak Avenue in Blue Island. Trolley guards will be installed at all railroad crossings this summer.

Louisville & Southern Indiana Traction Company, New Albany, Ind.—This company has completed repairs to its State and Vincennes Street lines, damaged by the tornado in March. The repairs involved the purchase of new poles and about 2 miles of new trolley cable.

Fort Dodge, Des Moines & Southern Railway, Boone, Iowa.—It is reported that the Fort Dodge, Des Moines & Southern Railway will expend $250,000 in extensions and improvements.

Tri-City Railway, Davenport, Iowa.—Work will soon be begun by the Tri-City Railway on the reconstruction of its tracks on Rock Island arsenal island from Fort Armstrong Avenue to the arsenal shops. It is estimated that the work will cost about $60,000.

Union Traction Company, Coffeyville, Kan.—A committee of Claremore business men has been appointed to confer with officials of the Union Traction Company with a view to the extension of that company's line from Nowata to Claremore, thence to Tulsa via Collinsville.

Boston (Mass.) Elevated Railway.—The legislative committee on metropolitan affairs on May 21 voted to report favorably the bill providing for the extension of the Malden subway to Everett. The act is made contingent upon acceptance by the municipal government of the two cities and also acceptance by the directors of the Boston Elevated Railway.

Michigan Railway, Kalamazoo, Mich.—Chief Construction Engineer Watkins of the Michigan Railway has stated that it is possible that the route of the proposed line from Owosso to Flint will be changed. The possibility of expensive litigation to get the right-of-way is responsible for the company looking for another route.

*Lansing, Mich.—It is reported that an electric railway may be constructed from Lansing to Mount Pleasant, via Alma. Marcus Polasky, Alma, is interested.

Southwest Missouri Railroad, Webb City, Mo.—This company plans to extend its line from Baxter Springs, Kan., to Pilcher, 7 miles. This will be a continuation of its extension from Galena to Baxter Springs.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—This company will improve the roadway between its rails in the boroughs of Pennington and Hopewell.

International Railway, Buffalo, N. Y.—Work will be begun at once by the International Railway on the construction of an extension of its Delavan Avenue line to Ridge Road and along the Ridge Road to Schiller Road.

East Liverpool Traction & Light Company, East Liverpool, Ohio.—Work has been begun by the East Liverpool Traction & Light Company repairing the Chester-East Liverpool bridge. A number of other repairs to the tracks in East Liverpool are also under way or will be begun in the near future.

Mansfield Public Service & Utility Company, Mansfield, Ohio.—This company is erecting a new bridge over the Pennsylvania Railroad lines at Spring Mills.

Ohio Electric Railway, Springfield, Ohio.—Work has been begun by the Ohio Electric Railway rebuilding the temporary bridge across the Miami River south of Middletown. A portion of the bridge, 300 ft. in length, was torn away during the high water of early March.

Sand Springs (Okla.) Railway.—It is reported that the Sand Springs Railway is considering the use of the surface contact system for the operation of its line between Tulsa and Sand Springs in place of the overhead system now being used.

St. Thomas (Ont.) Municipal Railway.—The City Council of St. Thomas has under consideration the construction of an extension of the St. Thomas Municipal Railway to Pinafore Park. A trestle to cost $8,000 will be erected at Elm Street hill.

Beaver Valley Traction Company, New Brighton, Pa.—A new signal system has been installed by the Beaver Valley Traction Company along its single-track line in Bridgewater.

Stroudsburg (Pa.) Passenger Railway.—Work will be begun at once by the Stroudsburg Passenger Railway reconstructing its track along Washington Street between the State bridge and Crystal Street.

Bristol (Tenn.) Traction Company.—According to a resolution recently passed by the City Commissioners of Bristol, the Bristol Traction Company will be asked to remove all the poles, track, ties and trolley owned by the company on West State Street west of Little Creek in Bristol.

Yakima Valley Transportation Company, North Yakima, Wash.—This company plans the construction of a 3-mile extension to its Selah branch, and a 1-mile extension in the Wide Hollow-Summit View district west of the city. Both extensions will enter heavy fruit districts.

Tacoma Railway & Power Company, Tacoma, Wash.—This company's plan of co-operation with the city of Tacoma in establishing and operating the municipal street car line to the Todd shipyards on the tideflats was recently accepted by the City Council and signed by the Mayor. The question of operating the line is left open to final settlement, but it is probable the city will operate the line. No mention is made of a transfer agreement. The Tacoma Railway & Power Company gives up its franchise to operate the present Eleventh Street line, municipally-owned, to take effect when the proposed extension to the Todd plant is completed.

SHOPS AND BUILDINGS

Chicago & Interurban Traction Company, Chicago, Ill.—This company reports that it has just completed and is now using its new terminal tracks and building in Kankakee.

Evansville (Ind.) Railways.—The city of Evansville will construct a station at Howell, a suburb, to be used by the Evansville Railways and the Louisville & Nashville Railroad. The structure will cost about $60,000.

Worcester (Mass.) Consolidated Street Railway.—Bids have been asked by the Worcester Consolidated Street Railway for the construction of two trolley freight terminals at Shrewsbury and Albany Streets, near Boulevard Park, one to be used by the Boston & Worcester Street Railway and the other by the Worcester Consolidated Street Railway. The stations will be 280 ft. long and 30 ft. wide, of mill construction on concrete foundations and provided with loading platforms. One will have a second story at one end to provide offices for the freight department clerical force. The contemplated cost of construction is about $75,000.

Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont.—Fire recently damaged the carhouse and power plant of the Windsor, Essex & Lake Shore Rapid Railway to the extent of about $150,000.

Jefferson County Traction Company, Beaumont, Tex.—Work will be begun at once by this company on the construction of a new interurban station on Waco Avenue between Proctor and Fifth Streets. Two buildings will be constructed, one to be used for the interurban station and the other for the interurban express station. The buildings will be one story high and will be constructed of hollow tile and will have a stucco finish. It is estimated that the completed station will cost approximately $20,000.

POWER HOUSES AND SUBSTATIONS

Pacific Electric Railway, Los Angeles, Cal.—Work will soon be begun by the Pacific Electric Railway on the construction of a mechanical plant in San Bernardino to handle all repairs for the company on the eastern division, or all the lines in southern California east of Upland. The cost is estimated at about $50,000.

Chicago & Interurban Traction Company, Chicago, Ill.—This company reports that it is installing automatic control of the 500-kw. rotary in its substation at Monee and is equipping one 300-kw. portable rotary for use where service may require.

Galesburg Railway, Lighting & Power Company, Galesburg, Ill.—This company contemplates improvements to its power plant.

Springfield (Mass.) Street Railway.—A new substation will be erected by the Springfield Street Railway at 101 Margaret Street to cost about $30,000.

Delta Light & Traction Company, Greenville, Miss.—This company reports that it has purchased one GE 1000-kw., 2300-volt, 60-cycle, three-phase high-pressure turbine and one barometric condenser from the Ingersoll-Rand Company, delivery to be made on Jan. 1, 1918.

Poughkeepsie & Wappingers Falls Electric Railway, Poughkeepsie, N. Y.—Improvements in its power plant are being contemplated by this company.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—This company is constructing a new transmission line from Lowellville to Masury. Work has been begun on the construction of a large outdoor substation at Masury, at which the transmission line will terminate. The company has practically completed the remodeling of its Sharon substation, which has been made fireproof throughout. Much new apparatus has been installed and other equipment is expected shortly.

Charleston Consolidated Railway & Light Company, Charleston, S. C.—A transformer station will be erected by the Charleston Consolidated Railway & Light Company costing about $5,000.

South Carolina Light, Power & Railways Company, Spartanburg, S. C.—This company contemplates a number of extensions to its transmission lines.

Roanoke Railway & Electric Company, Roanoke, Va.—This company is rehabilitating its Walnut Avenue power plant and increasing its capacity from 6000 hp. to 19,075 hp., at a cost of approximately $300,000.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—This company will construct a frame substation building at First Avenue South and Spokane Street, having a motor generator with 500-kw. capacity, to be increased later to 1000 kw. The building and equipment will cost $12,000.

Manufactures and Markets

Discussions of Market and Trade Conditions for the Manufacturer, Salesman and Purchasing Agent

Rolling Stock Purchases Market Quotations Business Announcements

Gear Deliveries Set at Three to Four Months

Delivery Is Dependent on the Receipt of Blanks—Standardization Hardly Possible

During the past year, as a result of the shortage in gears, there have been several long delays in the assembling of equipment under new cars. Therefore the present status in the gear delivery situation should command attention. This paper was recently requested by the purchasing department of a large railway company to present in the "Manufactures and Markets" department a summary of the delivery conditions for railway motor gears as given by the various prominent manufacturers of this very important part of car propulsion equipment.

Four Months Delivery

According to the largest producers of railway gears, the delivery on treated gears may be stated as three to four months. This is a close limit, however, and one manufacturer says: "We believe that no railroad is safe at the present time unless it has forecast its delivery needs by four to five months. We are strongly recommending that all purchases be made now for one year or more in advance with bona fide orders placed now and delivery spread out as the customer may require the material. This will enable us to lay in our raw materials at present prices and to protect the customers on the later deliveries."

All manufacturers, of course, when a real emergency arises, will exert every effort to anticipate gear deliveries under the three or four months' limit stated above. It is understood that it is the regularly quoted delivery.

One large manufacturer is quoting treated pinions and untreated gears at ten weeks, and makes the following explanation: "These promises are based on gears and pinions which are standard with us and which are sizes that can be cut from our standard blanks. In cases where a customer demands special gears and pinions, the best shipment which we could offer is from six to seven months. The limiting feature on any special gear or pinion would be the securing of satisfactory blanks from the steel manufacturers." In this connection one manufacturer has stated that, due to the abnormal pressure put upon the steel plants, the standard of inspection has necessarily fallen with the demand for increased tonnage. This results in more rejections in the gear cutting plants, even after work has been started on the castings or blanks. It is understood that the gear cutters are endeavoring in every possible way to maintain their previous standards of inspection.

Deliveries on Pinions Poor

Another large manufacturer comments on deliveries as follows: "On certain types of railway gearing we may have a goodly quantity of castings or forgings in stock which could be turned out in a minimum time. In other cases where we are to order the castings or blanks the delivery would appear unreasonable. However, inasmuch as other gear manufacturers purchase from the same or similar sources of supply, their conditions would be the same, varying only with those cases where they may have a good stock of material on hand. Of course the gear situation is worse than on pinions because so many different types must be kept in stock to cover all requirements. We aim to keep on hand enough castings and forgings to supply rush requirements on those types of motors where the demand is great, in both treated and untreated grades.

"In the case of cast steel gears it requires approximately eight weeks to get castings, while on forged steel the conditions are much worse, the promises now being given by the steel companies at six to eight months. This covers both treated and untreated gearing. In the case of pinions, where a small shipment is required to keep a car running, we can fill a small order in ten days to two weeks and large quantities in correspondingly good time. This is based upon the assumption that we will have the forgings in stock, which we have for all ordinary sizes. While it is not quite so difficult to obtain pinion forgings as it is gear forgings, it is requiring approximately two months to make deliveries."

On the subject of greater standardization of railway motor gears, the manufacturers are a unit in agreeing that more complete standardization would be of great benefit. It is the belief, however, that complete standardization is impossible without a sacrifice of the mechanical end, and one manufacturer states that this would more than offset the inconveniences to him in having to manufacture such a great number of non-standard gears.

Used Rails Bring Record Prices

Light Rails Sold Well Into 1918—Scarcity of Rerolling Rails Marked—Production in 1916 About 3,000,000 Tons

That the prices in the steel market are abnormal is apparent from the fact that old rails are actually worth as much or more than new tonnage, which brings $38 to $40 a ton, these being the prices of standard sections of Bessemer and of open-hearth rails, respectively. Scrap rails have been sold in Chicago for as high as $30 a ton and in Pittsburgh for practically the same amount. In Philadelphia they have brought in the neighborhood of $35 a ton. These old rails which are still in condition for use have been sought for eagerly by many purchasers who would be glad to get these rails rather than to wait for a year or more to secure tonnage already on order.

At the present time no large orders are being placed for standard sections, but orders for light rails are active from coal mining and lumber interests. The mills rolling light rails from billets are sold up for at least a year, and on this account numerous sales of light rails have been reported at about $5 a ton higher than recent prices. The scarcity of rerolling rails is more marked than usual because on this product the mills are sold up well into 1918.

At the present time about 60,000 tons of rails have been purchased in this country for delivery in 1919. Canada is in the market for rails, as nearly 600 miles of old rail has been torn up in the Dominion and shipped to France to be used in the construction of railroads that supply the troops at the front. It is evident that these rails must soon be replaced in Canada, or railroad facilities there will be crippled in many sections.

Production of Steel Rails Best Since 1913

The total production of steel rails of all kinds in the United States in 1916 was 2,854,518 tons, as against 2,204,203 tons in 1915 and 1,945,095 tons in 1914, according to the figures compiled by the American Iron and Steel Institute. The record year was 1906, when 3,977,887 tons were produced.

The production of all kinds of rails in 1916, classified according to their weight per yard, was as follows:

Gross Tons	Under 50 Lb.	Under 85 Lb.	85 Lb. and Over	Total Gross Tons
Open-hearth steel rails..	134,594	313,840	1,821,166	2,269,600
Bessemer steel rails....	28,378	252,076	159,638	440,092
Other	132,563	875	11,388	144,826
Total	295,535	566,791	1,992,192	2,854,518

Of the 1916 output 2,269,600 tons were produced by the open-hearth process, 440,092 tons by the Bessemer process and 144,826 tons were rerolled.

The production of steel rails in the last ten years by weight was as follows:

Years	Under 45 Lb.	45 Lb. and Less than 85	85 Lb. and Over	Total Gross Tons
1907	295,838	1,569,985	1,767,831	3,663,654
1908	183,869	687,632	1,049,514	1,921,015
1909	255,726	1,024,856	1,743,263	3,023,845
1910	222,662	1,285,972	2,125,395	3,634,029
1911	218,758	1,067,696	1,536,336	2,822,790
1912	248,672	1,118,592	1,960,651	3,237,915
1913	270,405	†967,313	2,265,062	3,502,780
1914 .....*238,423		‡309,865	1,396,807	1,945,095
1915 .....*254,101		†518,291	1,431,811	2,204,203
1916 .....*295,535		†566,791	1,992,192	2,854,518

*Includes rails under 50 lb. †Includes 50 lb. and less than 85 lb.

Associated Manufacturers Act on War Revenue Tax

"Better Business" Adopted as New Slogan—Section Meetings and Election of New Officers

At a meeting of the board of governors of the Associated Manufacturers of Electrical Supplies, held in New York on May 16, a telegram was sent to the finance committee of the United States Senate and to the United States Chamber of Commerce in regard to the act on war revenue tax. It was to the effect that while it would accept without demur the decision ultimately reached, the board believed that the principle upon which the English government bases the assessment of so-called excess profit taxes is superior to that embodied in present United States legislation from the viewpoint of equity, simplicity and continuing business activity.

H. B. Crouse, president of the Crouse-Hinds Company, Syracuse, N. Y., was elected president at the meeting. He succeeds Robert K. Sheppard, the first president, who expressed a desire for rotation in the chief executive office. A. W. Berresford, Cutler-Hammer Manufacturing Company, Milwaukee, Wis., was elected vice-president. J. W. Perry, H. W. Johns-Manville Company, was re-elected treasurer. Charles K. Dustin, the general secretary, also was re-elected.

Section Officers Elected

At the meeting of the wire and cable section, held on April 17, the following officers were re-elected: LeRoy Clark, chairman, Safety Insulated Wire & Cable Company, New York; J. Nelson Shreve, secretary, Electric Cable Company, Bridgeport, Conn.; Edward F. Sawyer, treasurer, Atlantic Insulated Wire & Cable Company, New York. The line material section elected the following officers on May 4: W. R. Williams, chairman, General Electric Company, Schenectady, N. Y.; H. L. Garbutt, secretary, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.; R. C. Buell, treasurer, Johns-Pratt Company, Hartford, Conn.

"Better Business," which was suggested by Robert McKean Thomas, president of the Thomas & Betts Company, New York, has been adopted as the slogan for the association.

Electric Power Club Announces Program

The annual meeting of the Electric Power Club will be held at the New Willard Hotel, Washington, D. C., on June 11 and 12. The program for the first day will be devoted to routine business and important standardization work, which will include the following classes of equipment: Fractional horsepower motors, large d.c. motors, adjustable-speed motors, d.c. generators, large polyphase motors, wearing depth of commutators.

On the second day Howard E. Coffin will make an address on general manufacturing problems in connection with the present national emergency. C. E. Patterson, comptroller of the General Electric Company, will give his paper on "Uniform Cost Accounting," and perhaps a short talk will be made by a representative of the Federal Trade Commission. There will also be a paper by a member of the club analyzing manufacturing conditions during the last two years and showing the causes of increased costs. There may also be some matters that the Army and Navy Departments may wish to present.

The idea underlying this program is to assist every member company in putting its own "house in order" and fitting itself to be of the greatest use to the nation at this time of stress.

Pole Shipments Restricted by Car Shortage

In the issue of May 5, page 853, there appeared an interview with A. L. Johnston, sales manager Electric Railway Equipment Company, Cincinnati, Ohio. The data which were presented included the average prices of tubular steel poles for each year since 1895. Attention is called to the fact that the name of Mr. Johnston's company was incorrectly printed.

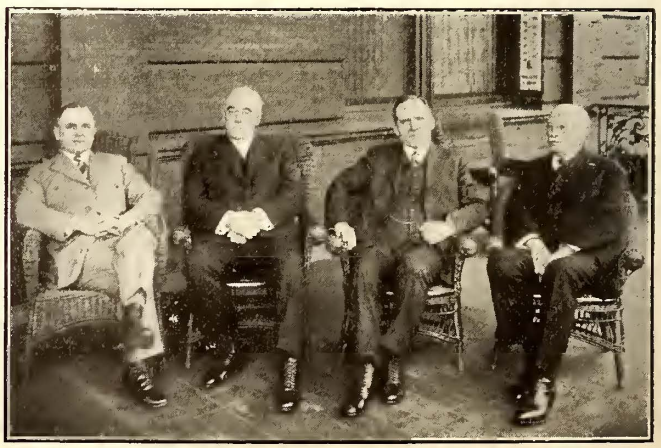
In connection with the pole delivery situation mentioned in the previous article, Mr. Johnston states that the Electric Railway Equipment Company now has ready for shipment a number of pole orders but is unable to secure cars for shipment. It is understood that the manufacturers in the Ohio River and Lake districts are to be restricted to the use of but 20 per cent of the gondola cars formerly available. The reason for this ruling is stated to be that the cars are required for hauling coal and ore from the lake ports.

Mailing Catalogs for Export

Letters are frequently received at the foreign consulates from manufacturers in the United States who send their catalogs and ask for reports on the market for their supplies. As all mail matter is necessarily subjected to a good deal of wear while en route, it frequently happens that the wrapper of the catalog is torn off. The result is that a considerable number of catalogs mailed not only to the consulates but also to business houses never reach their destination, and it would seem to be to the advantage of the American exporters to see to it that their catalogs are so wrapped as to insure safe arrival. It also frequently happens that catalogs do not reach the consulate for days, or even weeks, after the arrival of the letters which announce that the catalogs have been sent. It would therefore be best to mail the catalogs in advance of the letters, if possible, in order to insure the prompt return from the consulate of the information desired.

Gear Manufacturers' Convention

Brief mention was made last week in these columns of the recently organized American Gear Manufacturers Association which held its first convention at the Hotel Schenley, Pittsburgh, Pa., on May 14 and 15. In view of the present national situation this convention will undoubtedly have a very important bearing on the efforts being put forth by the government for absolute standardization in all lines of manufacture. In addition to the four papers previously



LEFT TO RIGHT: F. W. SINRAM, FRANK HORSBURGH, F. D. HAMLIN AND H. EBERHARDT

mentioned, which were presented, George L. Markland discussed the "Difficulties of Gear Standardization." An inspection trip was made to the works of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa., where the delegates witnessed methods of manufacturing Bakelite-Micarta for gears, after which they were the guests of the Westinghouse Company at a dinner in the club rooms of the Pittsburgh Athletic Association.

The officers of the association shown in the accompanying illustration are F. W. Sinram, Van Dorn & Dutton Company, Cleveland, President; H. E. Eberhardt, Newark Gear Cutting Machine Company, Newark, N. J., vice-president; F. D. Hamlin, Earle Gear & Machine Company, Philadelphia, secretary, and Frank Horsburgh, Horsburgh & Scott, Cleveland, treasurer.

Copper Market Shows Improvement

The copper market shows some improvement, although most buyers are holding off until some definite announcement about government purchases has been made. According to the *Wall Street Journal* of May 23: "One large public utility corporation has contracted for its requirements through the last half of the year at 29 cents a pound. Representatives of leading producers mention 28 cents a pound as a probable level for deliveries in the last half of the year to be fixed by the government."

In reviewing the copper market, the *Wire Message*, the official publication of the Habirshaw Electric Cable Company and of the Electric Cable Company, says in part:

"Without some knowledge on which to base an estimate of what our government and its allies are going to require during the next six or eight months, and some positive knowledge of the terms on which sales will be made, a condition of uncertainty must prevail. One fact should be clearly understood—though it does not seem to be: Whatever concession is made to our government and its allies, it concerns only the producers making the concession, and cannot be taken as indicating what the price of copper should be, based on the law of supply and demand. This law must ultimately prevail in fixing the price to the outside public."

NEW YORK METAL MARKET PRICES

	May 3	May 26
Prime Lake, cents per lb	31	31½
Electrolytic, cents per lb	31	31½
Copper wire base, cents per lb	36	36
Lead, cents per lb	9⅞	10⅞
Nickel, cents per lb	50	50
Spelter, cents per lb	9½	9½
Tin, Straits, cents per lb	58½	65½
Aluminum, 98 to 99 per cent, cents per lb	60	60

OLD METAL PRICES

	May 3	May 26
Heavy copper, cents per lb	24½	27½
Light copper, cents per lb	21½	25
Red brass, cents per lb	18½	19½
Yellow brass, cents per lb	17½	18
Lead, heavy, cents per lb	7¾	8½
Zinc, cents per lb	7	7
Steel car axles, Chicago, per net ton	$41.50	$42.50
Iron car wheels, Chicago, per gross ton	$24	$30.50
Steel rail (scrap), Chicago, per gross ton	$31.50	$34.50
Steel rail (relaying), Chicago, per gross ton	$39	$39
Machine shop turnings, Chicago, per net ton	$11.00	$12.50

CURRENT PRICES FOR MATERIALS

	May 3	May 26
Rubber-covered wire base, New York, cents per lb.	36½	36½
No. 0000 feeder cable (bare), New York, cents per lb.	36½	36½
No. 0000 feeder cable stranded, New York, cents per lb.	33¾	33¾
No. 6 copper wire (insulated), New York, cents per lb.	33	33
No. 6 copper wire (bare), New York, cents per lb.	36	36
Rails, heavy, O. H., Pittsburgh, per gross ton	$40	$40
Rails, heavy Bessemer, Pittsburgh, per gross ton.	$38	$38
Wire nails, Pittsburgh, per 100 lb.	$3.50	$3.50
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$3.85	$4.00
Steel bars, Pittsburgh, per 100 lb.	$4.00	$4.00
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$6.35	$6.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$7.55	$7.55
I-beams over 15 in., Pittsburgh, cents per lb.	10	10
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.15	$4.15
Cement (carload lots), New York, per bbl.	$2.12	$2.12
Cement (carload lots), Chicago, per bbl.	$2.16	$2.16
Cement (carload lots), Seattle, per bbl.	$2.60	$2.50
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.21	$1.23
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.22	$1.24
White lead (100 lb. keg), New York, cents per lb.	10¾	11¾
Turpentine (bbl. lots), New York, cents per gal.	52	49

ROLLING STOCK

Orleans-Kenner Interurban Railway, New Orleans, La., will purchase seven trail cars.

Chicago & Interurban Traction Company, Chicago, Ill., expects to purchase one semi-steel passenger motor car.

Northern Electric Company, Chico, Cal., is constructing six freight cars in its shops.

Billings Railway, Light & Power Company, Billings, Mont., which was recently incorporated for $300,000, expects to electrify the local lines which are now operated by storage-battery cars. It has been reported that this company has placed an order for several pay-as-you-enter cars.

Georgia Railway & Power Company, Atlanta, Ga., noted in the May 5 issue as expecting to build ten pay-as-you-enter cars, has decided upon the following details for this equipment:

Number 10
Delivery ..... During the year
Builder ... Georgia Ry. & Power
Type ..... Pay-as-you-enter
Seating capacity 42
Weight (total) ..... 34,000 lb.
Bolster centers, length, 21 ft. 2½ in.
Length over bumpers. 44 ft. 0 in.
Length over vestibule. 43 ft. 0 in.
Width over all ..... 8 ft. 2¾ in.
Rail to trolley base. 12 ft. 1½ in.
Body ..... Semi-steel
Interior trim ..... Cherry
Headlining ..... Agasote
Roof ..... Arch
Air brakes ..... Westinghouse
Axles ..... Carnegie
Bumpers ..... Not specified
Car trimmings. Dayton Mfg. Co.
Conduits ..... Not specified
Control, type K-35-G
Couplers, Stationary draw heads and bar
Curtain fixtures, National Lock Washer
Curtain material ..... Pantasote
Designation signs, Made by company
Door mechanism, Made by company
Fare boxes ..... None
Fenders or wheelguards, Not specified
Gears and pinions ..... Nuttall
Hand brakes ..... Not specified
Heaters ..... Consolidated
Headlights ..... Golden Glow
Journal boxes ..... Brill
Lightning arresters ..... GE.
Motors ..... GE. No. 201, outside hung
Paint, varnish ..... Hildreths
Registers ..... International
Sanders ..... O-B air sanders
Sash fixtures ..... Dayton
Seats ..... Hale & Kilburn
Seating material ..... Rattan
Springs ..... Brill
Step treads ..... Not specified
Trolley catchers ..... Keystone
Trolley base ..... GE.
Trolley wheels, Made by company
Trucks, type .. Brill No. 39-E-1
Ventilators ..... Railway Utility
Wheels ..... 33 in. and 22 in.

Oklahoma Union Traction Company, Tulso, Okla., noted in the April 21 issue as placing an order with the American Car Company, has specified the following details for part of this equipment:

Details for Motor Cars	Baggage and Express Motor Car
Number of cars ordered 6	1
Builder ..... American Car	American Car
Type ... Double-end pay-as-you-enter one-man safety car	Baggage and express motor car
Seating capacity 34	
Bolster centers, length ..... ———	32 ft. 4 in.
Length over bumpers ..... 27 ft. 9½ in.	50 ft. 0 in.
Length over vestibule ..... 26 ft. 9½ in.	48 ft. 0 in.
Width over all ..... 8 ft. 0 in.	9 ft. 0 in.
Rail to trolley base ..... 12 ft. 6 in.	12 ft. 11¾ in.
Body ..... Semi steel	Semi-steel
Interior trim ..... Statuary bronze	Iron and bronze
Headlining ..... None, rafter finish	
Roof ..... Arch	Arch
Air brakes ..... Safety Car Devices Co.	
Axles ..... Brill	Brill
Bumpers .. American Car .. channel iron	Rico anti-climber
Car trimmings ..... Brill	Brill
Control, type GE.-K-10	
Couplers ..... None, pull bars used	Tomlinson MCB radial
Curtain fixtures ..... Curtain Supply	
Curtain material ..... Pantasote	
Designation signs ..... Hunter	
Door mechanism: Safety Car Devices Co.—air-operated	
Wheelguards ..... HB. Life Guards	American Car—steel Pilots
Gears and pinions ..... GE.	GE.
Hand brakes .... American Car with Pittsburgh ratchet drop brake handle	American Car with vertical wheel
Heaters .. Consolidated Car Heating Co.	
Headlights ..... Golden Glow S-M-95	Golden Glow T-128
Journal boxes ..... Brill	Brill
Lightning arresters ..... GE.	GE.
Motors .... Two GE.-258-A inside hung	Four GE. No. 217, inside hung
Paint ..... ———	Amer.can Car
Sanders ..... Keystone	Nichols-Lintern air-type
Sash fixtures ..... O. M. Edwards	American Car
Seats, style .... American Car light-weight reversible	
Seating material ... Mahogany, steel, and canvas lined rattan	
Springs ..... Brill	Brill
Step treads ..... Feralun	
Trolley catchers ..... Keystone	
Trolley base ..... GE.	GE.
Trolley wheels or shoes ..... GE.	GE.
Trucks, type ..... Brill 78-M-1 Special	Brill 27-MCB-3
Ventilators .. Brill exhaust, 6 per car	
Wheels ..... 24 in. diam.	37 in., MCB steel
Special devices .. Faraday high voltage push button system	

TRADE NOTES

McIntosh & Seymour Corporation, Auburn, N. Y., has changed its New York office from 50 Church Street to 149 Broadway.

American Conduit Company, New York, N. Y., is building a new plant at Fulton, N. Y., for the manufacture of its specialties.

Driver-Harris Wire Company, Harrison, N. J., has filed notice of change in company name to the Driver-Harris Company, Inc. The capital of the company has been increased to provide for business extensions.

Kansas City (Mo.) Railways have closed a contract with the International Register Company for 600 International metal ticket fare boxes to be put in service as soon as they can be constructed.

Ohio Brass Company, Mansfield, Ohio, announces that it has received an order from the Boston Elevated Railway for 800 standard trolley crossovers of the live, rigid and adjustable types equipped with renewable cam tips.

Walter A. Zelnicker Supply Company, St. Louis, Mo., announces that A. R. Topping, who has been associated with the company for the past eleven years, has been elected secretary.

Coto-Coil Company, Boston, Mass., has been incorporated with a capital stock of $100,000 to manufacture machines for electric coil winding. Robert A. Leeson is president and Frank N. French, 95 South Street, Boston, is treasurer.

Morgan Crucible Company, New York, N. Y., has moved from 114 Liberty Street to 519 West Thirty-ninth Street. The company's factory is being moved from Brooklyn to New York, so that it will not only have larger quarters but also gain the advantage of having factory and office under one roof.

Clive Runnels, who for the last two years has been assistant to the president of the Pullman company, has been elected vice-president of the corporation. Previous to coming to the Pullman company, Mr. Runnels was connected with the Western Steel Car & Foundry Company and the American Car & Foundry Company. Mr. Runnels will continue in his capacity as assistant to President J. S. Runnels.

American Railways Equipment Company, Dayton, Ohio.—In testing out fare boxes to be installed on ten new cars only one failure of the fare box mechanism was reported after six days' trial, that failure being a pin sheared in one of the gears. Minor difficulties experienced by conductors with fare boxes were overcome after a few days' use of the new device.

Dunn Wire-Cut Lug Brick Company, Conneaut, Ohio, wired Secretary of War Baker, as soon as war was declared, tendering the output of the sixty-eight paving brick plants in twelve states, which operate under Dunn license, for supply of wire-cut lug brick for immediate use in building military roads. This company also offered the government free advisory and inspection services of its corps of expert engineers in making surveys and constructing wire-cut lug brick roads designed for military purposes.

Wigmore, Hall & Company, 445 Pacific Electric Building, Los Angeles, Cal., has been formed to carry on the railway-supply business heretofore conducted under the name Alphonso A. Wigmore. The company is the Pacific Coast representative of the Railway Improvement Company and several other railway-supply manufacturers. This reorganization has been effected to permit the enlargement of the company's sales territory and the increase of lines handled. Mr. Wigmore has been a Pacific Coast railway sales representative for many years, while Charles Watts Hall is a railway engineer conversant with the actual installation of railway equipment. The company will be pleased to hear from manufacturers who desire to increase their business on the Pacific Coast.

General Railway Signal Company, Rochester, N. Y., announces that C. O. Poor, formerly assistant resident manager of the Chicago district and later in charge of this company's munition plant, has been appointed president and general manager of the General Railway Signal Company of Canada. Ltd., and is now located at Montreal. Mr. Poor came to this company in 1905 from the Hall Signal Company. From 1905 to 1912 he was superintendent of the company at the Rochester plant and in 1912 was made assistant resident manager at Chicago. V. I. Smart has been appointed consulting engineer. F. H. Jones, who has been with the company for more than twelve years, has returned to his former position as assistant resident manager of the Chicago district, and will be located in the Peoples Gas Building, Chicago.

Bare Wire Company, Inc., New York, N. Y., has been incorporated under the laws of the State of New York with a capitalization of $500,000. The offices of the company are at 10 East Forty-third Street. This new company has acquired from the N. Y. C. & H. R. R. R. a valuable tract of land in Yonkers. It will proceed at once to erect a building and instal the most modern machinery for the manufacture of all forms of bare copper wires and cables. The company is closely affiliated with the Habirshaw Electric Cable Company and the Electric Cable Company. One of the principal purposes of the new company is to assure the two above-named companies at all times an adequate supply of every size of wire needed to enable them to give prompt and efficient service to their customers. The incorporators of the Bare Wire Company are Edwin W. Moore, J. Nelson Shreve, G. F. Waterbury, John S. Keith and Thomas C. Perkins.

ADVERTISING LITERATURE

W. N. Matthews & Brother, St. Louis, Mo.: A folder descriptive of their "Scrulix" anchors.

Hickey & Schneider, New York, N. Y.: Bulletin No. 50 descriptive of Burn-Boston carbon-ground cones.

V. V. Fittings Company, Philadelphia, Pa.: A folder descriptive of its safety switches designed particularly to protect the operator as well as the entire installation.

MacGovern & Company, New York, N. Y.: A catalog on power machinery and contractors' equipment. Contains lists of electrical, hydraulic, steam and gas machinery available for immediate delivery.

B. F. Goodrich Rubber Company, Akron, Ohio.: A thirty-six-page bulletin on Goodrich products, including packing, belting, molded goods, insulated wire, battery jars and miscellaneous hard rubber goods.

Westinghouse Church Kerr & Company, New York, N. Y.: A bulletin, "The 1916 W. C. K. City." All the buildings shown, costing more than $60,000,000, were built during 1916, and all of them were designed and constructed throughout by the Westinghouse Church Kerr organization.

General Electric Company, Schenectady, N. Y.—Bulletin No. 43,503 on "The Application of Novalux Units to Ornamental Street Lighting." This bulletin contains thirty-six pages illustrating correct lighting units for business streets, residential streets and outlying districts.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: A neat and attractive publication of the address, "A Plea for Defense of Human Rights and Liberty" presented by President Woodrow Wilson before the Sixty-seventh Congress, on Monday, April 2, 1917.

Ingersoll-Rand Company, New York, N. Y.: Bulletin 3311 covering Imperial type X duplex steam-driven compressors. Tables of sizes and capacities given; also Bulletin 8507 on Little David pneumatic drills. Models shown with recommendations as to character of work for which they are best adapted.

La Clede-Christy Clay Products Company, St. Louis, Mo.: A bulletin, "Now What Is Going to Happen?" The relations between consumers' demand, visible raw materials and average price levels for the last three years are illustrated appropriately. A short résumé of present market conditions is also given.

William P. Bonbright & Company, New York, N. Y.: A twenty-page pamphlet, "United States War Loans." This gives a brief but comprehensive outline of the loans issued by the United States government since Revolutionary days. The general features of the present Liberty Loan are discussed, and the full text of the law authorizing it is appended.