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"CO-OPERATING" WITH THE COMMISSION

When Mayor Mitchel instructed the corporation counsel of New York City "strenuously and constantly to oppose the requests of the street railways unless and until they show that the need for increased rates is imperative and permanent," we did not suppose that the city would object to a fair hearing on the companies' petitions. Yet that is exactly the attitude that has been taken by the city counsel at the opening hearings for the Third Avenue Railway this week. Counsel for the company has asked for nothing except simple justice and has been trying to present facts in a frank and open manner, but the city lawyers have endeavored so to obstruct proceedings with technical objections that the commission has seen fit to remind them that before it if not before the courts evidence is admitted upon the basis of common sense. The point of the whole matter is that the city has approached the case from an *ex parte* point of view. In over-emphasizing its solicitude that no transfer charge be "imposed" upon passengers, the city has forgotten that a rate fixed by the commission as fair and reasonable cannot be an imposition upon the car riders. The commission, we believe, will be just. If New York City objects to justice being done, it is not right for it in using obstructive tactics to say that it is co-operating with the commission. If the city wants to co-operate, it must appreciate the impartial position which the commission occupies in the proceedings.

THE PRESENT STATUS OF THE PAVING TAX

Among the avenues of possible financial relief which are open before electric railways one of the most promising is that leading to amelioration of the paving tax burden. This has been referred to frequently of late in connection with the agitation for higher fares, but much of the reference has been of a general nature. In order that the present status of the matter might be clearly understood the ELECTRIC RAILWAY JOURNAL commissioned R. C. Cram, of the way and structure department of the Brooklyn Rapid Transit Company, to make a study of the facts on a typical property and of the attitude of judicial and regulative bodies toward the facts in general. The result is the article published in this issue. It furnishes a convincing demonstration of the heritage which has come down from horse-car days and of the power which municipalities have in many cases to compel the railways to do paving work not contemplated when the franchises were originally bargained for. At the same time the evidence cited by the author of the article indicates a growing desire on the part of the commissions and courts to be reasonable in demanding the rights technically possessed by the public under the franchises. Each reasonable ruling by a public service commission or a court of justice will tend toward further relief, for precedent is powerful in matters of this kind. It was precedent that loaded the paving burden on the electric railways, the precedent set in horse-car days, and precedent after precedent will mark the progress toward better conditions.

EMPLOYMENT OF WOMEN IS INEVITABLE

We quoted last week words of urgent advice from abroad to the electric railway companies of this country to prepare for the depletion of the supply of men in this country, owing to war conditions. All of the belligerents have found that modern war requires a reduction in the number of men unnecessarily employed in home industries and the substitution, where possible, of women where the work still has to go on. In the opinion of leading electric railway men abroad, this change, with the maintenance of efficient railway service, is the most valuable contribution which our electric railway companies can make in the fight for democracy in which we are engaged. Such a plan does not mean a loss of employment to the present employees. Any change of this kind would have to be made gradually to fit the new employees to their tasks, if women conductors are employed on a large scale. Hence, on most roads, the cessation of the engagement of new men would be sufficient to secure the result sought. But even if a few men should be displaced, there is no danger of unemployment in this country for a long time to come. Any person who loses a job will find two others awaiting him, and he will not have to look for them longer than twenty-four hours. As Secretary of War Baker said recently, the exigencies of the war will require readjustment in a great many trades and industries in this country, but this need cause no apprehension because there is important work for all to do. We hardly believe that there will be any serious difficulty with the men on either union or non-union roads if our traction properties should go on a war basis in the way suggested. As matters stand now they cannot get the labor they require. Their need and that of the nation is great, and the labor leaders have already shown their patriotism in many ways. Moreover, in Great Britain, where unions are strong, the use of women in all sorts of labor where formerly men only were employed is extensive. Nevertheless, we urge all companies to set the facts frankly before both their men and the public, and the present is none too early to begin.

ROBBING PETER TO PAY PAUL

In these columns we have set forth the great possibilities for additional earnings through the solicitation of package and general freight traffic and have urged this course as a means of expanding business beyond the possibilities of the passenger traffic. However, this should not be done to the neglect of the passenger traffic. The latter represents the bread and butter of the electric interurban, so to speak, while the freight traffic might be regarded as a sort of bonus. Hence, any development of freight traffic which acts materially to discourage passengers is not good business. A case has come to our attention recently of a road which apparently does not realize this fact. About two years ago it started to carry package freight on the front ends of its passenger cars. The business was profitable and rapidly increased to a volume beyond the capacity of the front vestibules. Instead of providing additional equipment, the company moved the front bulkheads back into the cars, thus decreasing the passenger space to provide freight space. As no additional cars were put in service, the effect on the passengers has not been good because whenever the cars are crowded the standing passengers feel that they are being deprived of seats because of the freight carried. A better plan would have been to operate separate package cars, if the rules of the company did not permit the passengers to overflow into the baggage compartment when there were no seats in the body of the car, or else to increase the number of cars and explain to the public that owing to the use of combination cars a more frequent service was possible.

COURTESY AND SERVICE

Car men who are slow to realize their duty to serve the public courteously are not likely to meet with favor in the public eye. This was well illustrated in a recent court case in which a patron was being tried for pulling the pole from the wire. He admitted the charge, but entered the defense that the car crew had unjustly refused to open the door for him. The magistrate, seeing the scornful expression on the conductor's face during this testimony, made this statement: "I know the kind. A similar thing happened to me. I stood speechless while the car sped away, and all I got was a broad smile from the conductor."

Although the defendant in this case was held under bail to keep the peace, it is quite evident that the experience of the judge must have placed a severe strain upon his judgment. There are too many electric railway employees like the one who aroused the judge's ire. It is true that a car man almost daily meets circumstances which try his patience with the traveling public, but the employee who is a real asset to his company is the one who can rise superior to the occasion, however disagreeable, and do what he is supposed to do—sell rides.

A great deal has been said lately in electric railway circles about selling service. The idea is as old as this industry, and some of the electric railways have practiced it from their beginning. Too many have not. That is why there is an air of newness about it to some companies. In the steam railway industry—good examples might also be pointed out in the electric railway field—perhaps the most conspicuous example of courtesy or selling service applied daily is the Pennsylvania Railroad. "Pennsylvania Railroad" has come to mean courtesy and service.

Lack of courtesy has often damned an otherwise admirable street railway service. The very monopolistic aspect of such service tends to accentuate lack of courtesy on the part of employees, for as a usual thing there is no escape from it. The feeling of resentment that is engendered may not manifest itself openly, but it is no less potent on that account. Indeed, it is much more disastrous in its far-reaching and lasting effects than an abuse which is flagrant and about which specific complaint can be made.

A great deal of attention is given to the physical and the moral fitness of men applying for positions as car men in electric railway work. The possession of selling ability, however, ought also be required in prospective employees. An inquiry about this at the beginning would make unnecessary much of the corrective work that a number of companies have felt it incumbent upon them to carry out among old men who are admirably fitted in some ways for their duties but who lack the pleasing manner that fills one with a sense of satisfaction in having dealt with them.

SETTLE THE STATUS OF THE MANUFACTURER

As there will be no exhibit this year, an excellent opportunity is afforded for determining the relation of the manufacturers to the conduct of future exhibits—in fact, for reviewing the whole subject of the status of the manufacturers in the American Electric Railway Association. It is only fair to say that the convention arrangement of last year by which the conduct of the exhibit was taken out of the hands of the manufacturers and carried on by the railway association was not entirely satisfactory to the manufacturers as a body, but there was not time to work out any different plan. There is this opportunity now, and it should be utilized to effect a permanent plan of organization.

Two fundamental considerations should be recognized in any arrangement made for the future. One of these is that the association should represent in its membership the entire industry because its primary purpose is to improve the conditions in the industry, and this will be for the benefit of companies and manufacturers alike. Hence, the plan adopted at Chicago of full and equal membership for both manufacturers and railway companies is correct and should be retained. This arrangement will give the association the larger income which it needs, especially at the present time.

The second fundamental consideration in a successful association is that the work within the organization should be divided along natural lines. It must be recognized frankly that while the ultimate aims of both classes of members are the same, that is, to improve the status of the industry, their immediate aims are radically different. The function of the railways is to

sell transportation to the public at a reasonable profit; that of the manufacturers is to sell equipment to the railways, also at a reasonable profit. Hence, within the association, the part of the work which relates to transportation questions and the relations of the railway with the public should be undertaken primarily by railway members, while that relating to the sale of equipment should devolve upon the manufacturing members.

This division, if accepted, is controlling in determining the question who will conduct the exhibits. This work is no more a proper function of the railway members than is the solicitation from the manufacturers of advertising in *Aera*. The manufacturers should be the best judges of the way in which their equipment should be offered to the railway members. Past differences of opinion between the railway and manufacturing members have arisen largely because this fact has not been recognized. If the manufacturers take over the conduct of the exhibit, as we believe should be done, the work could well be carried out under the general approval of the association executive committee, on which there should be adequate representation from both the manufacturing and railway sides of the industry.

WHAT IS AHEAD OF THE ELECTRIC RAILWAY INDUSTRY?

The momentum of the movement to make the charges for electric railway service accord more accurately with the cost of giving the service grows apace. Hearings have been held this week before the Public Service Commission for the First District of New York concerning the application to make a charge of 2 cents for transfers. It is expected that the application for 6-cent fare for most of the up-State companies in New York will be filed either at the end of this week or early next week. The movement to secure a similar advance, is, we understand, being considered in Massachusetts, and the same is probably the case in several other states. The reports which are constantly coming in of increasing costs of operation show that economic law is forcing this issue to a crisis, quite as much as the activities of the companies themselves.

The electric railway industry is undoubtedly at the parting of the ways. The old 5-cent fare is doomed. What may come in its place we do not know. Probably a general 6-cent fare is apt to be quite widely adopted. Some modification of the zone system may be worked out where it can be made practicable. Charges for transfers will meet the situation elsewhere. But the conclusion is incontestable that the 5-cent fare as a national institution, regarded as inviolate as the constitution of the United States, cannot much longer hold its sway over the public mind.

A good deal of public opposition is manifest to the changed conditions. Railway rates may be raised, but comparatively few people realize that they are paying railway rates; the actual number of shippers is relatively smaller. Taxes may be constantly going up, yet only a few people realize that they are paying taxes. But everybody pays car fare. A rise of 1 cent in the unit of payment seems something abnormal. There is in fact nothing abnormal about it; it is simply the disturbance of a habit of mind.

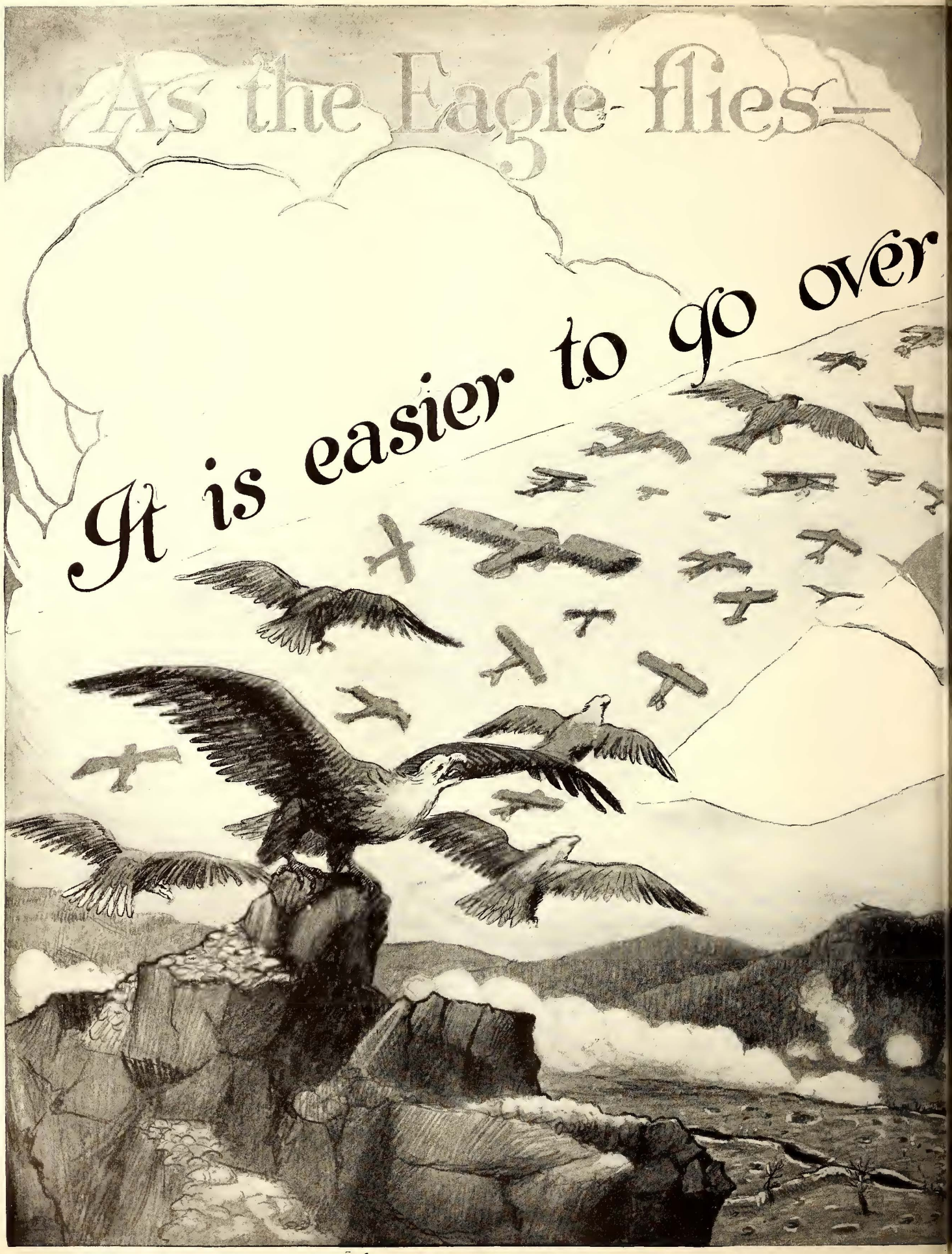
The public must be made to see that electric railway service is a commodity. It is a commodity which should be provided for the public at the lowest possible cost. But the elements which enter into that cost cannot be disregarded. If the public can be served most cheaply through municipal ownership, it is in the public interest that there should be municipal ownership. But if it is, as we believe it to be, a fact that the most economical service can be provided through private operation, it is certainly in the interests of the public to promote efficient private operation. That private operation is subject to a very definite arithmetical equation is set forth in the article on another page showing how the costs of all operation are going up.

Mayor Mitchel of New York has suggested that electric railway companies ought not to add to the other burdens imposed upon the public by the war by adding to the charges for their service. He has intimated that the electric railway companies in New York City are seeking to be exempt from bearing their share of the burdens incident to the war. It is astonishing that such an argument should be made by one so intelligent as Mayor Mitchel. Manufacturing companies of all kinds, merchants, working men, the government itself, have increased their charges for performing the service they render. It is all considered to be regrettable but inevitable. But if companies subject to public utility laws seek to increase their prices to take care of the increasing costs, it is intimated that they are seeking to avoid bearing their share of the burdens of the war!

The only reason that any such claim could be put forth at all is that these companies must obtain the sanction of public service commissions to increase their prices. That focuses upon public authority the necessity for making a decision to allow such increases to be made. Any such decision is bound to be unpopular, no matter how justified it may be. Public officers are selected by votes—by popular votes. And on the eve of a campaign the temptation to make political capital seems too great to resist.

But we hold firm to the faith that the people are perfectly fair and that politicians who appeal for popular applause by imposing unjust burdens upon public utility companies are but sowing the wind against the inevitable whirlwind of public disfavor. The people sooner or later will realize the truth, and the public officer who shows courage and follows his honest convictions, rather than makes a specious appeal to the fleeting popularity of the multitude, will in the long run secure and hold public confidence.

We are therefore among those who believe that out of the vast mass of conflicting currents which are now sweeping over our national life, there will ultimately emerge a tidal wave of common sense and sanity of view which will once more restore to our people the sound foundations of economic law upon which alone a permanent edifice of national prosperity can be built. And upon that foundation we expect to see erected a constructive treatment of the electric railway problem.



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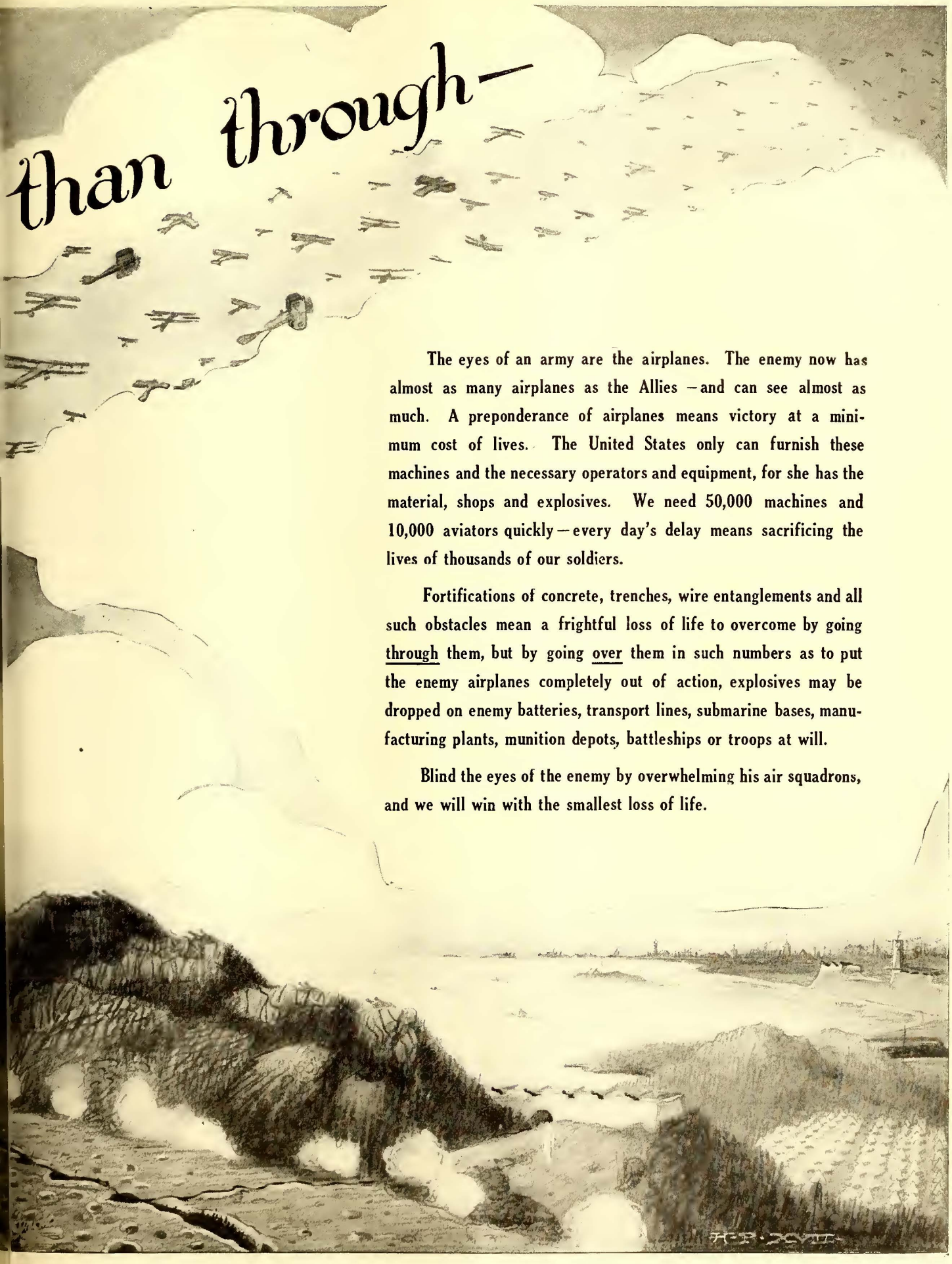
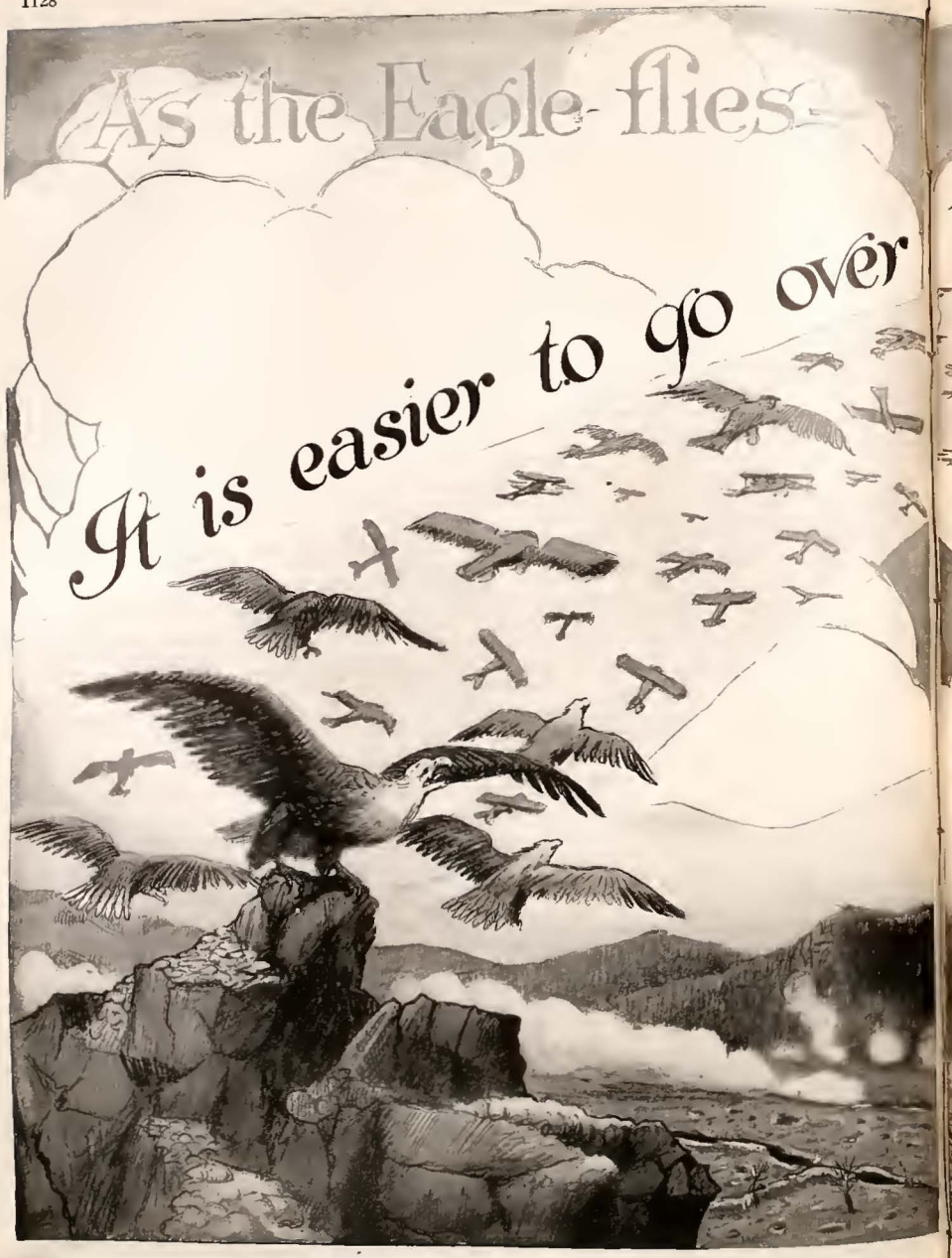


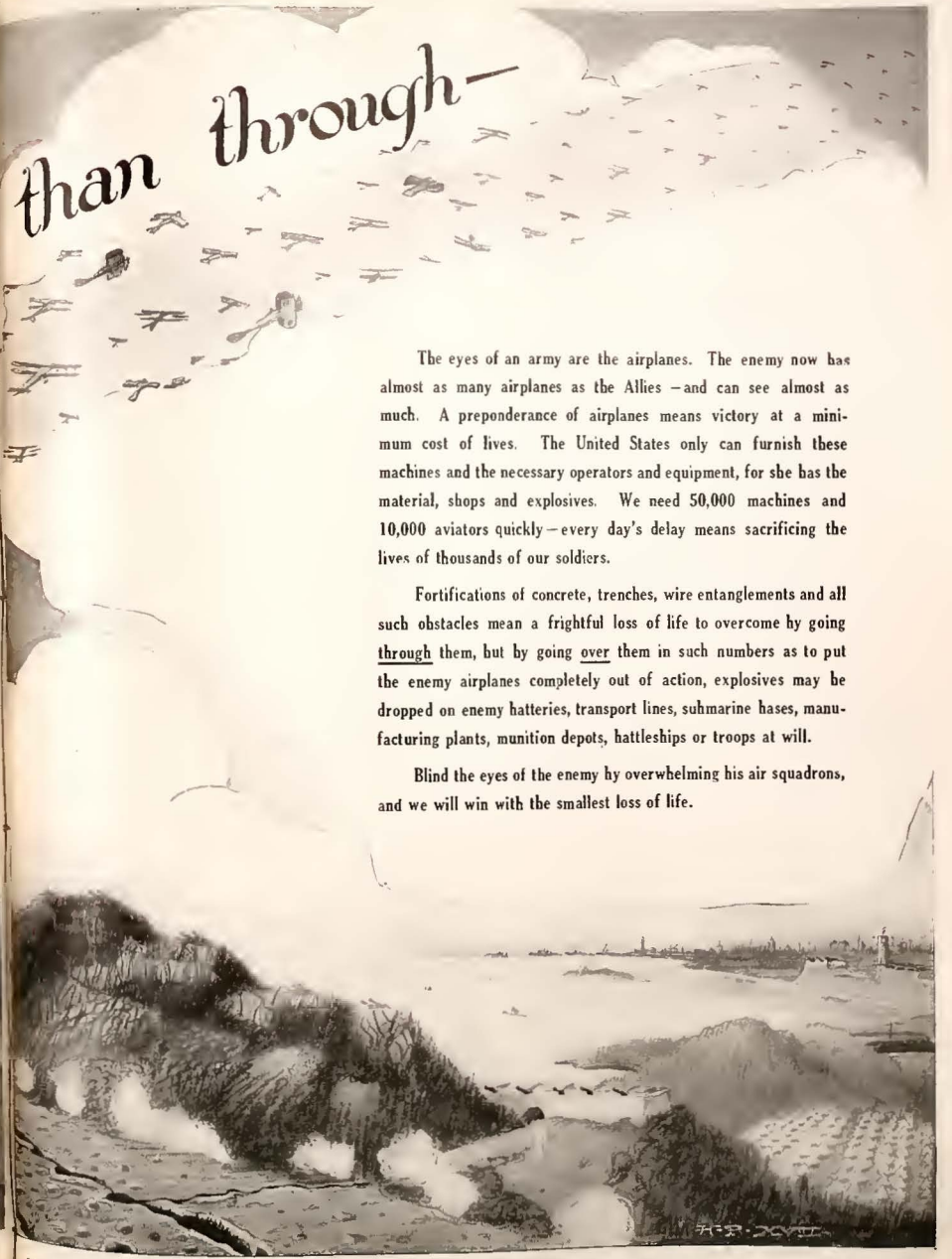
The eyes of an army are the airplanes. The enemy now has almost as many airplanes as the Allies—and can see almost as much. A preponderance of airplanes means victory at a minimum cost of lives. The United States only can furnish these machines and the necessary operators and equipment, for she has the material, shops and explosives. We need 50,000 machines and 10,000 aviators quickly—every day's delay means sacrificing the lives of thousands of our soldiers.

Fortifications of concrete, trenches, wire entanglements and all such obstacles mean a frightful loss of life to overcome by going through them, but by going over them in such numbers as to put the enemy airplanes completely out of action, explosives may be dropped on enemy batteries, transport lines, submarine bases, manufacturing plants, munition depots, battleships or troops at will.

Blind the eyes of the enemy by overwhelming his air squadrons, and we will win with the smallest loss of life.

nc., to illustrate the editorial in our last issue on "Air Supremacy Cheap at Half-a-Billion."





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What Shall We Do With the Paving Burden?

The Author Sums Up the Repaving Situation and Summons Authorities to Prove the Injustice of the Historic but Outgrown Tax—He Cites Some Convincing Data from Brooklyn

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

THE object of this article is threefold: (1) To call attention to the ever-increasing importance of the pavement as an item now considered a part of track maintenance and construction costs. (2) To develop interest in the means for securing a more equitable adjustment of the track pavement burden between the municipalities and the street railways. (3) To suggest revision of the classification of accounts so that the track pavement maintenance cost may be more properly considered as a deduction from income under the head of "Taxes" instead of a track maintenance charge under "Operating Expenses." It is believed that the subject is of particular moment at this time, when every effort is being made to "increase the fare," because the contributions of the railways for pavement (even though required by franchises) are rapidly growing and are not generally considered, either by the public or by the railways, as taxes.

It is necessary to go back to the historical horse-car days to find the reason for the imposition of the track pavement burden upon the street railways. History tells us that when horses furnished the motive power the track pavement was often worn excessively by the constant travel of horses in regular paths between and adjacent to the rails. There was considerable justice in requiring the railways to maintain the pavements under those conditions, but with the advent of motor-operated cars the conditions were immediately changed and the contributory wear of pavement was removed. Nevertheless most of the early operators of electric street railways failed to realize this important fact and continued to seek and accept franchises with pavement burdens attached thereto.

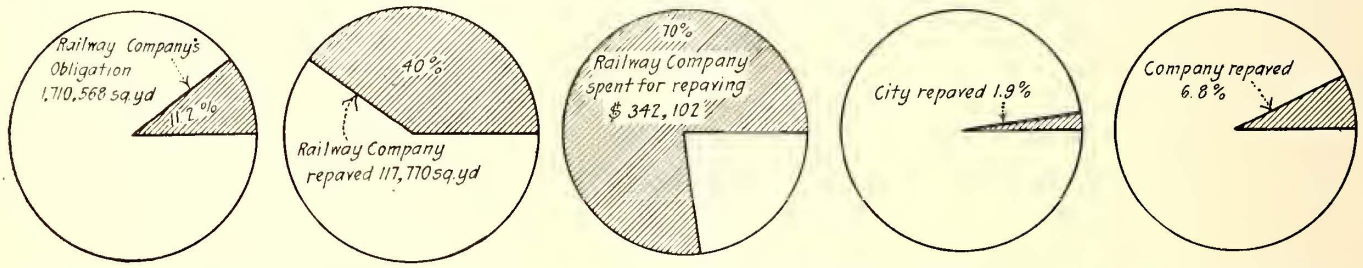
It is also a matter of record that during the horse-car and early electrification periods the track pavements were usually composed of cobble or macadam, costing from 50 cents to 70 cents per square yard. In contrast we now have track pavements of granite, wood or brick costing $2.80 to $3.50 per square yard, representing an increase of from 500 to 700 per cent. In other words, the present situation is one wherein we now have a vastly increased pavement cost with no contributory wear in contrast with the former condition of a considerable contributory wear with a comparatively small pavement cost.

Data on the Extent of the Burden

In order to determine the correctness of the impression that the railway company's share in maintenance of city pavements is larger than is ordinarily supposed, the writer recently had a study made of the widths between curbs on streets occupied by tracks in Brooklyn. It was found that there were tracks in some 200 different streets, and computations for 100 streets indicated that the average width between curbs is 39½ ft., and that the pavement areas maintained by the railway and the city amount to 48 per cent and 52 per cent respectively.

In a number of streets in the older sections of the city the railway area reached 61 per cent. The railway area was computed on the standard track centers of 9 ft., 8½ in., and the statutory obligation to pave "between the rails of the tracks and 2 ft. outside thereof." It is particularly interesting to note that, while the railway maintains areas substantially equal to city areas in these streets, traffic counts as reported by the way committee on way matters in the 1915 *Proceedings* of the American Electric Railway Engineering Association show that "from 50 per cent to 90 per cent of the vehicular traffic comes upon the railway pavement area in many streets."

The argument might be advanced that this fact would indicate excessive wear of pavement due to tracks in streets and such wear should be a burden upon the street railways. It is observed, however, that in any streets of similar widths the simple factor of the parking of automobiles forces the normal stream of traffic to the center of the street and that this occurs on streets without tracks. The tracks themselves, when consisting of tram or groove girder rails, take excessive wear



Relative paving obligation, complete circle represents 15,332,105 sq. yd.

Relative repaving work, complete circle represents 297,379 sq. yd.

Relative repaving expense, complete circle represents $446,287.

City repaving in per cent of obligation represented by full circle as 100 per cent.

Company repaving in per cent of obligation represented by full circle as 100 per cent.

DIAGRAMS SHOWING RELATIVE QUANTITY AND EXPENSE OF PAVING IN BROOKLYN, N. Y., BY THE RAILWAY COMPANY AND THE MUNICIPALITY

from the street pavement; in fact, in Chicago it has been found that rails in streets upon which no cars have ever run are wearing out just as fast as though there was car traffic upon them, and this wear is solely due to wagon traffic. It is a fair question to ask what would happen to the pavement if it alone had to withstand wear of this character.

A comparison of the Brooklyn Rapid Transit Company's total paving obligation with that of the city discloses a number of rather surprising features, as indicated in the tables reproduced herewith, which were compiled from the records of the Bureau of Highways of Brooklyn. The figures and percentages obtained are naturally subject to various interpretations and the following explanation may not be out of place.

TABLE NO. 1—COMPARISON OF TOTAL PAVED AREAS

Year	City, Sq. Yd.	Railway Co., Sq. Yd.	Per Cent of City Area
1913	13,701,592	1,646,434	12.0
1914	14,341,273	1,699,098	11.8
1915	15,332,105	1,710,568	11.2

The tables do not include any expense or yardage for regular or "ordinary" miscellaneous paving repairs scattered about the city. This is indicated by the word "repaved," under which all areas repaved in toto, either by the city or the railway, because of wear and track conditions, are included. It must be borne in mind that the railway company's repaved area cannot bear the same relation to its total obligation area as does the city's because it is almost impossible to determine how much of the railway area required repaving because of defects and wear alone, while much of the city's area is repaved (at least on streets having no tracks) because of defects and wear only. However, a certain proportion of city repavement on track streets is at least partly required by adjustments in cross-section due to revised track grades given by the city. Even so, the railway company's expenditure is much higher in cost per square yard than the city's expenditure, due largely to the use in the main of granite on concrete by the railway and of sheet asphalt by the city. The latter can thus secure a greater repavement area for an expense equal to that of the railway. Attention is directed to the tables and graphs which indicate more clearly the relations between the railroad pavements and the city pavements and the following explanations thereof should be of interest.

SOME COMMENTS ON THE TABULATED DATA

Table No. 1 is a three-year comparison of the total paved areas installed by the city and the railway company respectively to the end of the calendar year 1915. It will be noted that the railway company's obligation area ranges from 11.2 per cent to 12 per cent of the city's area.

Table No. 2 compares the areas repaved annually by the city and the railway company and indicates that the railway repaves areas equivalent to from 25 per cent to 40 per cent of the areas which the city repaves.

TABLE NO. 2—COMPARISON OF TOTAL REPAVED AREAS

Year	City, Sq. Yd.	Railway Co., Sq. Yd.	Per Cent of City Area
1913	661,290	165,058	25
1914	414,357	159,522	39
1915	297,379	117,770	40
	1,373,026	442,350	32 per cent for 3 yrs.

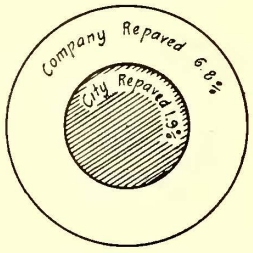
Table No. 3 compares the expenditures of the city and the railway company at Bureau of Highway rates, and brings out the point that the railway's expenditures range from 33 per cent to 77 per cent of the city's expenditure, although the railway's obligation area is only 11.2 per cent to 12 per cent of the city's. This table emphasizes the point that the railway pavements cost more in proportion than the city's, due to the general use of more costly pavements by the railway company. It is only fair to state in connection with the figures for 1915, that the highway bureau was hampered by lack of funds for pavement work until very late in the year, which greatly reduced the amount of work which could be accomplished that year.

TABLE NO. 3—COMPARISON OF TOTAL REPAVEMENT EXPENSE

Year	City	Railway Co.	Per Cent of City Expense
1913	$1,505,515	$498,220	33
1914	1,046,828	495,655	47
1915	446,287	344,102	77

Table No. 4 compares the relations of the repaved areas to the total paved areas maintained by the city and the railway and shows the striking fact that the railway repaves very much more of its area annually than does the city, in proportion to the respective obligations, even though the railway's expense is also greater for equivalent areas.

The magnitude of the railway's paving obligation is more fully realized when expressed in terms other than yardage alone. The Brooklyn Rapid Transit System maintains approximately 2,640,000 sq. yd. of pavement in the Boroughs of Brooklyn and Queens, which at an average cost of $2.50 per square yard would have a value of $6,600,000. Ultimately the above area, if all paved with granite on concrete, would have an estimated value of over $9,000,000. The foregoing yardage is equivalent to that required for a state highway 18 ft. wide and 250 miles long, or for a 30-ft. street 150 miles long—enough for a fair-sized city. It has been stated that the pavement investment in tracks in Chicago up to the end of 1914 represented an investment of $7,373,683. These figures represent original investments, but we have also to consider repavement charges. In the Borough of Brooklyn alone, the railway company expends from $350,000 to $500,000 annually for repavement, with an additional sum ranging from $50,000 to $70,000 yearly for miscellaneous pavement repairs.



CITY AND COMPANY REPAVING COMPARED

The Connecticut Company recently filed a brief with the Public Utilities Commission of Connecticut wherein the statement is made that the company has expended an average of $400,000 per year on pavements for the last three years. Furthermore it appears that from 30 per cent to 40 per cent of track maintenance charges are for pavement, while about 50 per cent of the new construction expense goes to the pavement account. Such figures, combined with the rapidly in-

TABLE NO. 4*—COMPARISON OF RELATION OF REPAVED AREAS TO TOTAL PAVED AREAS

	City			Railway Co.		
Year	Total Paved Area, Sq. Yd.	Repaved Area, Sq. Yd.	Per Cent of Total	Total Paved Area, Sq. Yd.	Repaved Area, Sq. Yd.	Per Cent of Total
1913	13,701,592	661,290	4.8	1,646,434	165,058	10.0
1914	14,341,273	414,357	2.9	1,699,098	159,522	9.3
1915	15,332,105	297,379	1.9	1,710,568	117,770	6.8

*From Table No. 4 it will be seen that the railway repaved from two to three and one-half times as much area, proportionately, as did the city, based on the relative obligations.

creasing costs of labor and materials, may well cause us to seek for relief.

Public Officials Show New Interest

There is a growing interest on the part of the municipal and state authorities generally in the broad subject of public dealings with public utility corporations. This interest appears more and more to take the form of a real study into the fairness of such dealings as having a direct and vital bearing on the public welfare. The creation of public utility commissions charged with the study of such affairs and the comparatively recent wave of franchise renewal discussions in municipalities in all parts of the country has given the representatives of the people and the public in general a clearer view of the subject. Suspicion is being replaced with confidence gained largely by the open discussions which have all tended to show the fundamental truths underlying public relations. The most important of these is the fact that wrongs inflicted in the name of the public upon corporations supplying vital public utilities always react directly or indirectly upon the people themselves.

"Daylight Ahead" Indicated by These Facts

The author cites various instances of a more reasonable view of the paving burden, such as a commutation in Philadelphia for a stated sum of the former paving obligation, the distinction drawn in the Cleveland ordinance between pavement maintenance (which the company is obliged to do) and repaving (which it is not), the recommendation of the Massachusetts commission in the Bay State case that the companies be required "to meet only the reasonable cost" of such work, and the decision of the Maryland Court of Appeals, upheld by the United States Supreme Court, that there is a difference between repairs and repaving.

One of the earliest indications of the new public viewpoint, which has a particular interest in this discussion of the pavement obligation, is found in the now famous Ordinance of Councils of the City of Philadelphia, dated July 1, 1907, which is an agreement between that city and the Philadelphia Rapid Transit Company in a radical readjustment of many conflicting franchise obligations relating to that company's paving burden. The fourth and sixth paragraphs of the preamble to that agreement recognize that "the terms, conditions, restrictions and liabilities which have been imposed upon these various companies (all of which shall be taken as included in the words 'subsidiary companies' wherever the same are hereinafter used) differ widely, and there is dispute and uncertainty with respect to the effect of many of the provisions thereof, and it is believed that it is to the interest of the public as well as of the parties hereto to supersede the former regulations, and to define and regulate the relations between the parties hereto so as to make them fixed, fair and uniform." Further that "a large sum of money is required to improve, complete and extend the present system of the company in order that it shall better serve the public; and for this purpose it is essential that the position of the company be clearly defined, and the securities of itself and its underlying properties unquestioned, and its right to make extensions in the future assured, in order that it may obtain credit to finance the increased transit facilities so necessary for the welfare of the public and the development of the city."

The said agreement provides, among other things, for the paving, repaving and repairing of railway pavement areas by the city and relieves the company of charges for pavement, snow removal, bridge licenses and other similar burdens and prohibits all further imposition of such burdens upon payment, by the railway, of definite sums of money, beginning with $500,000 and increasing by $50,000 for each term of ten years. The railway, however, must replace or repair pavement removed or damaged by its construction and repair work.

The tenth clause of the agreement proper construes these payments as in the nature of taxes in the following words: "To such extent, however, as taxes and assessments not upon such real estate or dividends may hereafter be imposed upon the company for the benefit of the city, the city shall credit upon the taxes that may thus be hereafter imposed all payments made hereunder as well also as the sums which shall be divided with and paid to the city out of earnings."

From this synopsis of the Philadelphia situation it will be seen that the city recognized certain advantages to be gained from the modernized paving policy in definition of the paving obligation which would tend to better the financial position of the company without harm to the city, and thus assist in the development of transit facilities so essential to the growth of any community. At the same time the city also recognized the fact that franchise pavement burdens must be considered as taxes.

The great importance of defining the amount of the paving tax for a term of years cannot be emphasized too strongly, regardless of the question as to whether or not the particular method above cited would suit the prevailing conditions throughout the country, because most companies to-day do not know nor can they even prophesy as to what sums they will have to pay for the annual pavement tax. It may be $50,000 this year and $250,000 the next, largely subject to orders of public officials, who often have arbitrary and unrestricted powers to require unwarranted expenditures under the broad terms of most railway pavement obligations. Such an unknown quantity of taxation makes it necessary, when considering a fair rate of return on capital, to provide a rate of income which will produce the revenue to pay the highest amount this form of taxation may reach.

Reasons somewhat similar to those which actuated Philadelphia may have been in mind when the famous Cleveland 3-cent fare ordinance was drafted, because it seems evident that it would be practically impossible to forecast a net income which would insure even such a low rate of fare if huge and variable sums were to be expended by the railway for pavement taxes. Section 7 of the Cleveland ordinance is as follows: "The company shall maintain in constant repair the pavement within a space 7 ft. in width for single track and for double track the entire space between the outer rails of both tracks, including the space between the two tracks and 1 ft. outside of each outer rail, but in no event to exceed 18 ft., except about curves, special work and where there are more than two tracks in a street, in all paved streets occupied by its tracks, whether such streets were paved at the time of the passage of this ordinance or subsequently thereto; but the company shall not be required to repave by virtue of this obligation to repair, nor by virtue of any requirement of the general ordinances of the city of Cleveland during the continuance of this grant."

It will be noted that the railway is to maintain the pavement in constant repair in a definite track area, but it is not required to repave by virtue of the repair obligation. This distinction is important, and it is understood that under this section of the ordinance the repavement of track following reconstruction thereof is not held to be a burden upon the company, but it is instead an obligation upon the city. Furthermore, it does not seem to require the installation of pavement by the company in new track extensions. In effect, then, the Philadelphia situation is repeated to the extent that the railway company is only required to maintain existing pavement disturbed by it for track repairs and on account of defects only until the complete repavement becomes necessary.

The Philadelphia idea of fixing a definite sum to be paid to the municipality by the railway company in lieu of its obligation to maintain and repair pavement in tracks was antedated by almost ten years in the State of Massachusetts under an act passed in 1898. This provided that the railway companies were to pay a commutation tax to the State for this purpose, excepting that where local franchise obligations provided for caring of the street surface by the railways, this duty was still to continue.

The following quotation from the fourth annual report of the Public Service Commission of the commonwealth of Massachusetts is very interesting in this connection, and particularly in the statements contained therein to the effect that cities should in their own interest seek to relieve the companies of all unnecessary and unjust burdens:

In view of the present unsatisfactory financial condition of the street railway companies in general, it is imperative that the cities and towns in which they operate should, in their own interest, seek to relieve the companies from all unjust or unnecessary burdens. The importance of such public co-operation was fully discussed by the commission in its decision in the Bay State rate case and what was then said it is unnecessary now to repeat, except so far as it relates to the question of maintaining and repairing the public streets, where action by the general court is desirable. In regard to this matter the commission said:

"In 1898 an act was passed (St. 1898, c. 578) which was clearly intended to relieve street railway companies from the duty, formerly imposed, of maintaining and repairing the street surface within their track locations and to substitute an excise or 'commutation' tax in place of this duty, a tax which the Bay State company now pays. For the year ended June 30, 1914, it amounted to about $210,000. Nevertheless, the investigation in this case of the property accounts and operating expenses of the company has brought to the surface the fact that it has been required, ever since this law was passed, not only to pay the tax, but, with comparatively few exceptions, to do the same work which it was previously required to do.

"The courts have held that the law of 1898 did not in fact exempt companies from the duty of caring for the street surface where that duty was imposed, not by the general statutes, but by provisions in original location grants; but in the many cases throughout this system where the original grants contain no such provisions it develops that the Bay State company has, in effect, been required by various forms of persuasion to continue to do the old work. In securing new locations involved in the laying of double track, or in the reduction of curves or in other respects necessary to the efficient operation of the road, apparently the company has continually been obliged to dicker with the local authorities and finally to agree to perform work upon the streets which the statutes do not require or even contemplate (Record, pp. 4666-4675).

"It is perfectly natural that municipal governments, anxious to keep down the local tax rate by which they are so largely judged, should seek to unload upon the street railway company all possible expense, but such a policy, in the long run, reacts upon the public served. Street railway companies have no mysterious source of revenue, but obtain their funds from the people who ride in their cars. Any burden or tax imposed upon the company these people must ultimately pay. If the tax or burden is unjust it only means, in the final analysis, that a portion of the public is being subjected, by indirection, to an inevitable form of special taxation. Furthermore, the burden is not measured wholly by the cost of the physical work which the company is finally required to do, for the continual dickering over such matters consumes what is, in the aggregate, a very large amount of time and adds materially to the cost of management.

"The importance of this question is shown by the fact that, disregarding such matters as grading, bridge work, etc., the cost of the paving alone, for which the Bay State company has paid since the law of 1898 was enacted and which it has been expected to maintain, is estimated at more than $2,000,000. In a report made to the General Court at its last session, the commission strongly urged that the present system should be changed by eliminating, in effect, the present 'commutation' tax, by placing all paving work squarely in the hands of the municipalities, and by requiring the street railway companies to meet only the reasonable cost of any such work done within their track locations. Whether or not this is the best plan that might be adopted is here immaterial, but at all events it is perfectly clear that the companies ought not to be required to pay the present 'commutation' tax and at the same time do the work for which this tax was supposed to be a substitute."

Brooklyn Paving Data

The area of pavement maintained by the Brooklyn Rapid Transit Company is more than two and a half million square yards which, if ultimately paved with granite or concrete, will be worth $9,000,000.

This is equivalent to a state highway 18 ft. wide and 250 miles long, or to a 30-ft. street 150 miles long.

In the Borough of Brooklyn alone the company spends from a third to a half of a million dollars annually on repaving, besides large sums for miscellaneous paving repairs.

There are many phases of the application and effect of the burden imposed by the existing laws which requires railways to repair pavements, and they are well brought out in an article on "Highway Paving by Street Railways," by W. R. Dunham, Jr., in the issue of the ELECTRIC RAILWAY JOURNAL for Feb. 24, 1917. The most important two points made by Mr. Dunham are that the existing state laws covering the subject are very old, dating back to the days of the Civil War, and that their intent was to require pavement repairs but not renewals. He also emphasizes the fact that the present misinterpretations of such old statutes wrongfully impose burdens not warranted by proper application and interpretation of the law.

This last point is important, and actions in the courts in cases of such unwarranted and unlawful interpretations in application of such laws have been decided in favor of railway companies. A typical case of this nature recently reached the United States Supreme Court after having been decided in favor of the United Railways & Electric Company of Baltimore by the Maryland Court of Appeals. In a unanimous decision the Supreme Court upheld the Maryland Court (United Railways Company vs. Baltimore, 127 Md., 660. Baltimore vs. United Railways Company, Supreme Court U. S.—October Term, 1915, Memoranda Cases). The main contentions were upon the interpretations of the word "repair," and the point that repairs could not be

construed as repavements. In course of opinion the Maryland Court of Appeals said: "All the grants which have been made to the defendant company since its formation have been made subject to the paving and repairing obligations imposed by the ordinance of 1897, and subject also to the payment of the park tax and other charges fixed by the Board of Estimate under the City Charter. The obligations to pave and repair, where tracks have been laid under that ordinance, have been assumed by the defendant, and it has paid the park tax since its formation, a sum amounting to more than six million seven hundred thousand dollars, and all franchise charges and general taxes and other costs, aggregating large sums, in adapting and adjusting its tracks and paving operations. The defendant is not claiming an exemption from taxation * * *. All of its property is taxed, and it contributes in general taxes to the cost of public improvements and the general welfare of the city large sums of money. It is resisting what it contends to be an unlawful and illegal exaction laid upon it by the act of 1914, Chapter 37."

Another form of unwarranted and improper interpretation of the statute appears in the attempts now being made in New York to construe the word "repair" so as to make it cover the removal and replacement of track pavements in connection with sewer construction and repair undertaken by the municipality. There appears to be an obligation on the part of the railways to remove track structures which may interfere with sewer operations in common with other corporations having sub-surface structures in the streets. It will be seen that it is impossible to remove a paved track without first removing the pavement, involving the destruction of the pavement. But the pavement is not a part of the track, and the railway's duty under the law is only to repair and maintain pavement in its tracks and not wilfully to destroy it for some purpose desired by the municipality. Therefore, if the necessity arises for removal of tracks in such cases it follows that it is the duty of the municipality first to remove the pavement and also to restore the pavement after the track has been replaced. And this duty imposes no hardship on the municipality because it must remove and replace pavements in sewer operations in all streets where there are no tracks. Furthermore there arises the question as to who owns the pavement in the tracks, and P. B. Wittmer, Deputy State Tax Commissioner of the State of New York, in his "Letter to the Editor" appearing in the issue of the Journal for March 10, 1917, says: "The Court having ruled that such investment (in track paving) does not represent tangible property owned by the railroads but is on the contrary the property of the municipality * * *." Hence, if the track pavement is really owned by the municipality it must be its duty to remove it and replace it when necessary for purposes of its own sewer operations.

It is gratifying to know that a case in point has been decided in favor of the railroad companies in a recent decision handed down by Justice Lehman in the Case of the City of New York vs. Whitridge, receiver Third Ave. Railway Co.

Exercise of Power Arbitrary

Reference has been made to arbitrary and unrestricted powers conferred on officials to require unwarranted expenditures under the broad terms of most railroad pavement obligations. One instance of what appears to be an attempt to exercise this power unfairly may be cited. A subsidiary of a large street railway corporation operating in New York City has tracks in an outlying street leading to a summer resort. The tracks are over twenty years old and are paved with cobble, a comparatively cheap but serviceable form of pavement which was installed when the line was built. There is and has been nothing but dirt in the street outside the railroad pavement area. There are no proceedings in hand for the construction of pavement in the street by the city. The street and tracks are not at established grade and the tracks will require relocation at such time as the city undertakes to put the street at established lines and grades. Nevertheless the city officials ordered the railroad to repair the cobble track pavement by installing new granite blocks with grouted joints on a concrete foundation in the entire railroad area. Consider the injustice of this so-called "repair" with the foregoing conditions in mind. A pavement costing $3.50 or more per square yard is to replace a cobble pavement. The city hopes to get the use of a first-class pavement 18 ft. wide, about that of a state highway, and it proposes to do nothing itself in its own areas. Needless to say the railroad company is resisting such an arbitrary misuse of powers conferred upon the city officials.

In Connecticut there is a statute which prevents such a misuse of power. Section 3837 of the General Statutes reads in part, as follows: "Such authorities shall not order such company to use any better or more expensive kind of pavement or material for that part of the highway which it is the duty of such company to keep in repair, than is used by the town, city or borough upon the remaining width of the highway, except for a space of one foot on each side of each rail, unless such better or more expensive kind of pavement or material was required in the order permitting the original location of such railway on such highway."

Track Paving is Railway Taxation

Mr. Dunham in course of his article says: "To assume that this paving burden is of the nature of a franchise tax is erroneous * * *," and then he proceeds himself to discuss the burden as a tax. Webster says in definition of the word "tax" that it is "a charge, especially a pecuniary burden imposed by authority; a task exacted from one under control." But we do not have to rely solely on the dictionary for affirmation of the correctness of the opinion that the paving burden of the railroad is a tax. It was recognized as such in the Philadelphia ordinance quoted. It has been recognized as such by the State Tax Commission of the State of New York in connection with the taxation of the intangible element of special franchises, as stated by Mr. Wittmer in his letter previously referred to. Attorney B. L. Spahr, in an article on "Taxing Electric Railways" in the issue of the Electric Railway Journal for Dec. 16, 1916, calls the paving requirement a form of local taxation comprised in requirements in municipal ordinances and says in part: "An annual tax on cars or other property may be imposed as a condition of consent. The usual form, however, is a provision requiring either the paving or repairing of streets, or both." But the courts have also construed the obligation as a tax in the important case of the City of Rochester vs. Rochester Street Railway Company (182 N. Y., 99) in the opinion by Chief Justice Cullen, which says, among other things: "The provision of the General Railroad Law (Laws of 1890, Chapter 565, Section 98) requiring street railroads to pay the cost of paving between their tracks is an exercise of the taxing power of the legislature."

The present standard classification of accounts charges paving to capital under the construction accounts and to operating expense in operating accounts under the general head of "Maintenance of Way & Structures." The question arises as to whether those

classifications are correct. In the first place the courts have ruled that investment in pavements does not represent tangible property, and it seems improper to capitalize intangible property. But if the pavement requirement attaches to a franchise and is in the nature of a tax or payment for such franchise it must certainly be allowable to capitalize the cost of the pavement under the head of promotion expense or legal expense as a part of the intangible value of said franchise. In any event the investor and public should know that only about one-half of the total cost of a newly-paved track structure is for the track and that the other half represents the pavement cost which in turn is in reality a heavy tax or payment for the franchise.

Again, if the cost of maintaining pavements which produce no income is a tax it would seem to be improper to charge it to paving under operating expense, because all other taxes are not so charged but instead are placed under the general head of "Deductions from Income: Taxes." It would be better for all concerned to classify the paving maintenance account under the head of "Taxes: Paving Account," thus putting the item squarely into the accounts as a tax, where it more properly belongs.

CONCLUSIONS

The foregoing discussion of paving matters has been presented with the view of bringing out some features of a form of taxation which are not often thought of as such and some conclusions may not be out of place, as follows:

1. Existing statutes requiring pavement construction and repair in tracks are in urgent need of revision so as to render them more in accord with the present conditions.

2. Existing paving ordinances and regulations of municipalities which attach to railroad franchises also need revision. In fact a basis should be found whereby an equitable franchise tax of a fixed form can be substituted for the present inequitable and variable paving obligation.

3. If relief could be obtained from the entire paving burden except for such expense as is caused by constructing new tracks in existing pavements and by repairs or renewals occasioned only by track repair or reconstruction, such relief would greatly assist the railroad companies.

4. The present pavement requirements are unjust to the car rider because he alone pays for pavements which he does not use and his fare now assists in paying other people's taxes in helping to provide pavements for business and pleasure vehicles to use. Such facilities should be paid for by the entire community.

5. Statutory pavement requirements should be considered as franchise taxes and, as such, they should be classified in the accounts. The paving requirement is a constant liability. From the very first the money invested in track pavements is an investment in franchise taxes and this money is all expended in creating a source of endless future taxation now expended under the guise of paving maintenance.

The capital stock of the United Railways Savings & Loan Association, composed of employees of the United Railways, St. Louis, Mo., has been increased from $2,000,000 to $2,500,000, being the third increase since the organization in 1915. The original capitalization was $1,000,000. The association has 2400 members, who are saving $25,000 monthly. Thirty new homes have been built for members, and sixty-five other homes purchased. Loans have been made to 190 others.

Co-operation Between Transportation and Equipment Departments

IN order to impel platform men to assist in reducing equipment maintenance costs, H. W. Irwin, superintendent of car repairs Bay State Street Railway, recently furnished to *Bay State Triangle Talks* the following suggestions:

Ways in Which Motormen Can Save Money for the Company.

By notching the controller properly. This will save power and lengthen the life of motors, gears, controller and car body. It will reduce accidents, conduce to public comfort through smooth acceleration, create a better-natured conductor who will work more efficiently, and save some time.

By proper operation of the air-brake valve. This will save power and reduce wear and tear on air-brake and other equipment, and car body; will prevent accidents, create better public attitude through smooth braking, reduce number of flat wheels, save brakeshoe wear and make the conductor happy and cheerful, and therefore efficient.

By running slowly over special work and railroad crossings. This will save flanges, trucks, etc.

By not running on resistance, a common habit.

By using switch sticks as they are intended to be used; not as crowbars, sign sticks or ice chisels.

By being careful not to break windows when switch sticks are hung on front of car.

By opening and closing vestibule doors and windows properly.

By pushing in or holding up fenders before car is put in carhouse.

By watching clearance for double running boards, steps and arc headlights on corner of dashes.

By not running on three motors.

By proper handling of sand pail, scoop, motorman's seat, etc.

Ways in Which Conductors Can Save Money for the Company.

By giving proper signals. This will reduce accidents, save time and promote co-operation from the motorman.

By not slamming seat backs when turning, which loosens, mars and breaks them.

By not trying their strength on the register and bell cords.

By not dropping hinged fenders but rather lowering them carefully.

By not slamming double running boards down or up.

By not throwing and dropping tail lights.

By turning off heaters when not required.

By handling adapter signs properly, not throwing them on the ground at the carhouse or under seats in the car, but rather placing them in the sign box.

By careful handling of sign sticks, flags, brooms, and pails and scoops.

Increase in Earnings

The earnings of the Arkansas Valley Interurban Railway, Wichita, Kan., practically doubled in 1916, on a 21 per cent increased mileage. The road is also showing gains this year over 1916. The freight business, which is about 12 per cent of the total, is increasing at practically the same rate as the passenger business. It is an interesting fact, in view of the passenger increase, that Sedgwick, Harvey and Reno, the three counties served by the interurban, have 11 per cent of the automobiles owned in the 105 counties of Kansas.

Track Construction Scenes in Dallas, Tex.

Illustrations Showing Methods of Preparing Roadbed, Welding Joints, Setting Steel Ties and Draining Track

A Modern Type of Track Construction

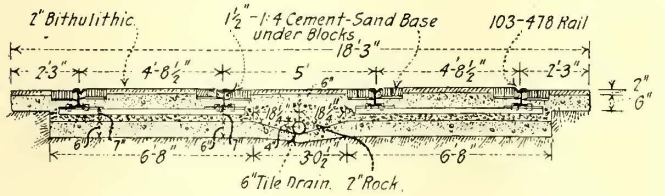
Welded Joints, Steel Ties and Tile Drainage System Play Important Parts in New Track Work—The Author Describes the Methods Employed in Rebuilding the Recently Completed Double-Track System of the Dallas Consolidated Electric Street Railway

By R. G. TABER

Superintendent of Construction Stone & Webster Corporation, Dallas, Tex.

DURING the last few years track construction in permanently paved streets in Dallas, Tex., has been through a revolutionary stage, many new features being introduced, such as the Goldschmidt Thermit welded joints, International twin steel ties, gravel ballast with longitudinal tile drains, and numerous smaller details.

It is not the intention of the writer to describe in this article what he considers the best type of track construction, for during the last twelve years of his connection with city street railway track work many concrete opinions that were formed have been "knocked into a cocked hat." There still exist considerable differences of opinion as to what constitutes the best type of track construction on permanently paved streets, not only in Dallas but also in other cities. It has been proved here, and elsewhere as well, that the concrete beam construction without ties of any nature is an absolute failure. Another type, namely, the solid concrete construction with 6-in. concrete base under 6-in. x 6-in. wooden ties, spaced on 4-ft. centers, is not considered



CROSS-SECTION OF NEW TRACK IN DALLAS, TEXAS

successful by all engineers, even though it is conceded to be far better than the beam construction. The rail becoming loose, either from cutting down into the tie and concrete or from pounding joints, which in the majority of cases is the cause of all loose rails, starts a pumping action, destroying the paving foundation and paving surface adjoining the rail. It is impracticable to break out the concrete for repairs, especially where operation has to be maintained. The solid concrete construction gives a very firm roadbed, to be sure, but in my opinion this rigidity plays an all-important part in the production of corrugation; in fact, this is considered by some to be the primary cause which creates this condition. Of course, there is corrugation to some extent on street railway tracks not laid with the concrete foundation, but not so much and it only occurs where the track has been down for some time and the ballast under the ties has become compact in place, thus losing its resiliency.

With the knowledge of these defects before us, our problem was to design a track adequately drained and resilient to a certain degree, and to eliminate the well-known trouble starter, the joint. In other words, we were trying to find that type of track construction of low first cost, which gives a long life with least maintenance cost. Whether or not the type of construction which the writer is about to describe is one of this class can only be answered by time, which condemned the beam construction and brought out the defects of the solid concrete construction.

On Jan. 3, 1916, the rebuilding of the double track of the Dallas Consolidated Electric Street Railway on Commerce Street from the H. & T. C. R. R. to Exposition Avenue, a distance of approximately 4800 ft., was started. The street was originally laid with Carnegie 77½-lb. low T-rail in macadam paving. The old track was torn out with No. 19 Barrett track jacks, and the rails were hauled about 1 mile and stacked at a cost of approximately 10 cents per lineal track-foot.

USE OF STEAM SHOVEL PROVES IMPRACTICABLE

The excavation, which was sub-contracted, was then started, and an attempt to do this with a steam shovel, as shown in photograph No. 1, was made, but to no avail, on account of the shallow cut. The shovel would take the street down only to within a tenth of the proper sub-grade and then it was necessary to dress off by hand. After a trial for two blocks the steam shovel was taken out, as it proved to be too expensive. It might be well to state here that as soon as any section of the ditch was completed, tile laterals, that were to connect to the main tile drain in the center of the completed track, were connected to the storm sewer inlets. This was done to drain the ditch in case of rain as quickly as possible and thereby to avoid delaying the work—just a little safety-first in actual construction. The ditch sloped from the outside edge toward the center. This was done to throw all seepage water into the drain and to avoid any puddling of the sub-base directly under the tracks. The trench completed, concreting was started as shown in photograph No. 2. This consisted in placing a 6-in. concrete sub-base or concrete mat, the aggregate being bank run gravel of the proper proportion, which was lined out along the side of the trench in convenient amount. The concrete mixer, a Koehring traction paver, used this gravel as the concrete was poured. Precaution was taken to have the slab slope toward the drain in the center to prevent any water from collecting under the ties and thereby causing the ballast to become mucky.

STEEL TIES USED

After this sub-base had set for about five days, the International twin steel tie was placed upon it on 6-ft. centers and the rails fastened thereto, as shown in photograph No. 3. The cross-section reproduced herewith shows the general detail of track construction used. The rail was the Lorain Steel Company's section 103-478 grooved girder with the latest curved head, this curved head being considered another aid for the prevention of rail corrugation. The rails were held together with 2-in. x 6-in. temporary wooden splice bars with a ¾-in. "dutchman" separating the rails, as shown in photograph No. 4. These joints were later welded. After the rails and the ties were in place, the ballasting followed. The method used in pulling the ballast into the track was described in the Jan. 6, 1917,

issue of the ELECTRIC RAILWAY JOURNAL. It consisted in fastening one end of a rope to a scraper, passing the rope through a pulley which was hooked over a rail of the adjoining track, and tying the other end to a car. The scraper was taken out beyond the dirt pile and the car was started, causing the scraper to be pulled in toward the track, gathering a load of ballast as it came. The old adage that "necessity is the mother of invention" again proved to be true. Upon discovering that shoveling the ballast by hand was costing 12 cents per cubic yard and at that rate the item of ballasting would overrun the cost allotted, the above-mentioned scheme was resorted to, thereby reducing the cost to 5 cents per cubic yard.

TILE PIPE USED TO DRAIN BALLAST

While the ballast was being placed, the 6-in. tile drain in the center of the track (see photographs Nos. 5 and 6) was installed. This tile was laid with loose joints, covered with 2-in. rock, the tile being tapped off with a lateral to the inlet boxes in the gutter at approximately every 1000 ft. and then connected to the city's storm sewer as previously stated. When the ballast was placed the track was lined, surfaced and tamped to the proper grade. While the surfacing and tamping were being done on one track a water car filled with water and weighing 75,000 lb. was operated over the track previously tamped. These operations were carried on alternately until the slightest depression in the surface was cleared up and the tracks remained in good condition as to line and surface, care being taken that the ballast was thoroughly dampened while being tamped. The water car was operated over the track approximately ten hours prior to the laying of 6-in. concrete paving foundation, and by this means the ballast under the ties was thoroughly settled. The concrete paving base was then poured in the same manner as was the sub-base. At each joint concrete was left out to allow for welding.

WELDED JOINTS USED

Two days after the concrete paving base had set up the welding was begun, the temporary wooden fishplates being removed and the joints cleaned preparatory to the welding. The type of weld used was the Goldschmidt Thermit, as stated before. This method consists briefly of placing an insert in the ¾-in. opening left when the rails were placed, the rail being thoroughly cleaned and molasses asbestos strips applied around it about 2½ in. from the joints. Molds were made by the molder (photograph No. 7) and were then luted (photograph No. 8) after they had been made fast to the joint. The joint was then preheated (photograph No. 9), and in the meantime crucibles were made ready to pour when the rail ends were heated to a cherry red heat. The joint was then poured (photograph No. 10), after which it was dressed down by the grinder to the completed joint. The paving, which consists of a 2-in. surface of Bitulithic pavement with two rows of 3½-in. x 4-in. x 8-in. creosoted wooden blocks on each side of the rail, followed close behind the welding, and the job was finally completed on May 1, 1916.

FOUNDATIONS FOR CROSSINGS

In connection with this job, there were installed under one single-steam double-electric manganese crossing and one double-steam double-electric manganese crossing, the International twin steel crossing foundation. Photograph No. 11 shows the steel foundation for the single-steam double-electric crossing inverted, ready for concreting. Photograph No. 12 shows the crossing in place on the foundation.

Review of Workingmen's Compensation Acts

THE National Industrial Conference Board has just published a report entitled "Workingmen's Compensation Acts in the United States—the Legal Phase." According to this report, thirty-seven states and four territories of the United States now have such compensation laws, and the principal of workingmen's compensation applies to more than two-thirds of the wage earners of the United States. A striking feature of these acts are their inconsistencies. One source of conflict among them is the significance given to the term "accident." In the English compensation act, largely used as a basis for American legislation, the liability is expressed by the phrase "personal injury by accident arising out of and in the course of employment." In the compensation acts of fourteen states, this language is followed identically; in others, the words "by accident" are omitted, thus broadening the liability; in some cases the words "out of" are also omitted, further extending the liability to cover injuries received in the course of employment, although the occupation has no direct connection with the injury. For instance, the Ohio Industrial Commission awarded compensation to the dependent of a stenographer because, while taking dictation from her employer, she was murdered by a jealous suitor; the New York Industrial Commission awarded compensation for the death of a street railway process server from gangrenous diabetes, alleged to have resulted from having his toes trodden upon by a fellow-passenger in a street railway car of the company which employed him.

Several important constructive suggestions are made in the report. The first is that the various states, in order to reduce existing conflicts and uncertainty, immediately undertake to establish a permanent scientific and uniform system of compiling accident statistics. This would be a great step toward determining definite standards of liability and equitable compensation rates and would enable legislators to judge the real hazards of various occupations and "permit the just extension of the compensation principles to many workers now arbitrarily excluded from its terms." A second is that a clear distinction be drawn in statutes between "occupational disease," "accident" and "injury."

This report on the legal phase of workingmen's compensation act is to be followed by other reports on the medical, economic and administrative phases. The National Industrial Conference Board, whose headquarters are at 15 Beacon Street, Boston, is also conducting investigations of various other industrial problems on which reports will be issued in due course.

New Haven to Curtail Schedule

The New York, New Haven & Hartford Railroad plans to reduce its schedule by 199 passenger trains a week, subject to consideration with the public service commissions of Massachusetts, Connecticut, Rhode Island and New York, in compliance with the orders and suggestions of the special committee on National Defense of the American Railway Association. This curtailment is to be made in order to provide for the maximum movement of fuel, food, supplies and troops necessitated by the war. Of the total number of trains to be eliminated, 157 are weekday trains and forty-two Sunday. The curtailment of this service will be made where there will be the least interference with travel, and by discontinuing trains the patronage of which is light. The Massachusetts Public Service Commission ordered a hearing to consider the proposed curtailment of service.

How the Costs of Rendering Service Are Steadily Going Up

Comparison of Reports from a Number of Electric Railway Companies in All Sections of the Country Show Marked Increase in Materials and Labor—Statistics Are Given—The Effect of the War

By IVY L. LEE

IVY L. LEE

THE electric railways constitute the one great American industry which has so far been unable to adjust its prices to the increased costs of the last few years. The point has been suggested that electric railways should not seek exemption from the burdens of the war by imposing added charges upon the public. The fact is that electric railways are the only industry which so far has been unable to adjust itself to the burdens imposed before America entered the war.

Added costs incident to America's entrance into the war remain to be seen. The increased costs already encountered are not a result of the war—they are the result of a revolutionary change in all economic conditions which has been going on for the last ten years and which has become particularly acute during the European war.

It is the tendency which at the moment is at work which is the most dangerous factor in the situation. That tendency spells immediate bankruptcy for many companies; it spells danger in the future for very many more.

The world is undoubtedly approaching a state of economic exhaustion. The stock of what economists call the "consumable wealth" is being used up. That means that all the additional articles which are produced are, measured in terms of money, much more precious.

The vital fact relating to all commodities to-day—and street railway traffic is a commodity as much as anything else—is not only that the service or commodity itself is more valuable but that the dollar with which these commodities are purchased is very much less valuable.

Every industry in the world today is on an absolutely new basis. Revolutionary influences are at work. To disregard these influences, to refuse to admit the change in the economic weather which the barometric indications of the times undoubtedly foretell, is to do nothing less than to invite disaster.

The operation of every business is subject to a certain arithmetical equation which can no more be denied than can the oncoming of the tides. That equation is this: You cannot subtract a greater sum from a lesser.

If the street railway service of this country costs an average of 6 cents per passenger, that cost will have to be paid. The public may take it upon itself in the form of taxes rather than imposing it upon the person who uses the service. But that does not alter the fact that the bill will have to be paid. An essential part of that bill is the cost of obtaining the capital with which to render the service. These are economic considerations of the most fundamental character, yet it is astonishing how many public officials remain blind to them.

To find out just what the facts are, and especially the tendencies which are at work, the ELECTRIC RAILWAY JOURNAL recently addressed a questionaire to a large number of electric railway operating companies in different parts of the country. The results of these inquiries are most interesting. They are primarily indicative of the tendency. The actual figures do not yet disclose the results of the abnormal influences which are at work with steadily increasing intensity. But what has happened is startling enough.

It may be that particular companies will show favorable results even under present conditions, but to arrive at a sound conclusion as to the industry as a whole, fundamental tendencies universally at work must be studied. If those fundamental tendencies are undermining the industry, is it not vital to the industry as a whole that steps be taken to neutralize these tendencies? That can only be done by arranging that the public shall pay the increased costs for the service it is receiving.

Below will be found a recapitulation of the reports received from all over the country.

LABOR AND SUPPLIES

The cost of labor to electric railway companies may be very roughly stated to have risen during the past five years by about 25 per cent. This estimate is based upon returns from eighteen states and, if anything, is below the mark. The change in the wage factor has been less in the West than in the East. An electric railway operating on the Pacific Coast, for instance, reported that the added burden of increased labor cost was about 10 per cent. At the other extreme are Pennsylvania and Connecticut, where the demands of the steel plants and munition factories at times made unskilled labor almost unobtainable. In Pennsylvania one company reports having had to pay an increase of 100 per cent for common labor employed in track laying and other construction work, and from Connecticut comes a report showing an increase of 60 per cent for this labor.

The rise in wages of semi-skilled labor has been less, but taking the average motormen, conductors, yard hands, etc., the following increases may be accepted as thoroughly conservative: In Missouri, from 15 per cent to 20 per cent; Indiana, 20 per cent to 25 per cent; Wisconsin, 20 per cent; Maryland, 25 per cent to 30 per cent; Georgia and Massachusetts, about 30 per cent; Connecticut, from 17 per cent to 40 per cent; California, from 25 per cent to 45 per cent; Maine, from 15 per cent to 50 per cent, and Pennsylvania, from 25 per cent to 60 per cent.

The cost of materials and supplies used by electric railway companies has increased at least 42 per cent in the last three years. This is indicated by comparing 313 items used by eighteen different corporations scattered all over the United States.

While weighted averages are not available, the following table shows the classification of the items, the number considered under each classification and the

average per cent increase in present price over the price paid during the first half of 1914:

Division		Number of Items Considered	Average Per Cent Increase in Price Last Order Over Price Paid First Half 1914
1	Car truck parts	35	28.8
2	Car motor parts	35	41.1
3	Car controller parts	21	33.3
4	Car air brake parts	20	6.7
5	Car headlight parts	13	42.8
6	Car trolley parts	16	66.8
7	Car circuit breaker and contactor parts	6	49.3
8	Car supplies—Miscellaneous	43	38.4
9	Car parts—miscellaneous	20	20.4
10	Paint, varnish, etc.	16	43.0
11	Wire, miscellaneous	8	38.0
12	Nails, screws, iron, etc.	17	113.9
13	Track material	14	56.1
14	Overhead line material	25	38.4
15	Miscellaneous tools and supplies	24	51.0
		313	....
	Grand total for 313 items	..	42.0

In some parts of the country the total average increase seems to have been less; in others it is considerably more. The figures vary from 25 per cent increase on the Pacific Coast, to 50 per cent increase in the Eastern states. Some of the individual items have soared out of all proportion to the aggregate. Paints and varnishes, from linseed oil to English vermilion, have gone up, the former, 140 per cent, the latter, 470. Wire goods from nails to magnet wire have risen from 100 per cent to 150 per cent. Brakeshoes are up 200 per cent, and in some cases steel castings and tool steel have also trebled in price.

Steel rails have steadily risen and current prices vary from 30 per cent to 42 per cent above 1912 quotations. Rail bonds are up 80 per cent, and fastenings and points and pole-line hardware show similar increases. Ties have risen from 25 per cent to 40 per cent, and all lumber shows heavy advances, creosoted pine poles now being 75 per cent above what they were five years ago. It can be stated as an absolute fact that a car costing less than $5,000 only three years ago costs to-day something in excess of $8,000.

The costs of materials are steadily rising. The prospective shortage in industrial labor will be reflected in progressive increases in material costs. To the extent that the government absorbs commodities necessary for the war there is an increased price which must be paid by the electric railway company for its materials: it is a direct burden of the war.

Fuel and Taxes

Fuel has undergone and is undergoing an extraordinary increase in value. Of course, to some extent many corporations have been protected by long-time contracts or supplied with hydroelectric power, but those which have had to rely mainly on coal and have had to go into the open market and make their purchases, have paid as high as 100 per cent more than they did five years ago. One corporation in Connecticut was caught short during the worst period of last year and paid 360 per cent more for coal than the 1912 price. Another corporation in Ohio and one in Maine paid 200 per cent more, and all over the country increases of from 45 per cent to 100 per cent in fuel costs have been common among inadequately protected corporations.

New fuel contracts for next year are being made. In this item is to be found one of the most serious menaces to railway income accounts.

Taxes have increased on an average about 40 per cent in the last five years. Electric railways in Connecticut, to be sure, have benefited by a change in the law, and now that the assessment is levied by a percentage tax on gross revenue the taxes paid by the company have decreased about 6 per cent.

On the other hand, electric railway taxation in California has increased 269 per cent in ten years. Varying municipal taxation in different cities accounts for one corporation in the Middle West paying only 25 per cent increase over the taxes of five years ago, while another corporation in the same state but in a different town has seen its taxes increased 84 per cent in the same time. Cities in Ohio have been particularly severe on electric railways, the increase having been nearly 80 per cent.

Special Expenses Due to Regulation

Most of the companies canvassed do not appear to keep very accurate track of these costs which, of course, fluctuate with irregularity. Some corporations seem to think that the expense to them of public regulation is trifling compared with the materially improved service and more up-to-date operation which it has secured. Others advance the theory that much of the time of highly-paid executives and experts is frittered away at public hearings on frivolous complaints.

Some states require very full reports and valuation returns, and in California the cost of compiling these is estimated by one corporation as having exceeded $100,000 since 1912. Some companies which make a separate accounting of the cost of public regulation place it as high as 2 per cent total gross operating expenses.

The cost of regulation, however, cannot be considered an abnormal burden. The results of regulation are too valuable. But the cost ought to be borne in mind as a fact; the benefits accrue to the public quite as much as to the companies.

Losses from Competition

The general public has no conception of the enormous losses caused to the electric railways by the competition of the pleasure vehicle and the too often derided jitney bus. The estimates of various corporations differ widely, but a careful study of actual figures leads to the conclusion that every pleasure vehicle takes 25 cents a day out of the gross traffic receipts of the electric railways of the city in which it is run. In some cases in the Western states the aggregate loss amounts to 25 per cent of the gross traffic receipts.

In large cities like Boston and St. Louis, where the companies have made an effort to keep careful track of this factor, the loss runs from $3,000 to $4,000 a day. In Boston, where this loss has been subdivided, it is found that the jitney takes 6,000,000 nickels a year from the electric railways, and the automobile 22,000,000 nickels a year, a total loss of $1,400,000.

It will thus be seen that the added burden of the increase in cost of labor and in cost of materials and supplies combined with the ever-growing competition of jitney buses and automobiles, has been such in the last five years that it is only by paying the closest attention to economy and operating efficiency that many electric railways have been able to continue operation at all on the present 5-cent fare.

Effect of the War

The entry of the United States into the war will undoubtedly have a further adverse effect upon their economic situation. This country hardly realizes as yet that it is at war, but as the part taken by the United States in the actual conflict grows more and more important, war conditions will very rapidly press themselves upon every phase of our industrial and commercial life. The electric railways will be principally affected by the decrease of their earning power and the increase of their costs of operation.

It cannot be doubted that war conditions will increase the cost of labor and bring about higher wages, because all over the country the demand for semi-skilled labor in mechanical trades will be greatly in-

creased, and this will mean a corresponding rise in wages.

There is no reason to doubt that the present ascending scale of prices will be maintained not only until the end of the conflict but perhaps for two or three years after the restoration of peace.

Increased taxes will also be inevitable. The tendency among the national, state and municipal legislatures is very clearly toward increasing the taxes paid by corporations.

If costs will continue to soar under war conditions, the earning power of the electric railways will also be decreased. A great many trained men have already joined the colors and the selective draft will in many instances take young men between the ages of twenty-one and thirty whose places it will be impossible to fill. This factor reaches all through every branch of electric railway operation from the clerical forces in the president's offices to the unskilled labor in the construction department, but it will perhaps be most keenly felt in the engineering, mechanical and operating branches.

Besides the men called to the colors, others undoubtedly will be attracted by the higher wages offered elsewhere to fill the labor shortage in other mechanical trades. All this will lead to decreased efficiency of the operating forces and disorganization in the staffs. The net result will be a decrease both in the quality and quantity of labor which in turn cannot fail to decrease earning power.

Another factor which must not be lost sight of is the freight situation. Car shortage and embargoes will lead to deferred delivery of materials necessary to the maintenance and construction. There can be no doubt that in order to move the crops and handle the food situation as well as transport the enormous quantities of supplies which the government must have, it will be necessary to impose embargoes upon freight not essential to the conduct of the war.

* * *

The foregoing covers in a very general way a statement of the more fundamental factors which are at work. It is our purpose next week to print specific replies received, although the names of companies, according to our agreement, will be withheld. It is of moment that this whole question should be considered broadly on its merits rather than be judged with reference to merely local considerations or prejudices.

War Preparations Effect Traffic Increase

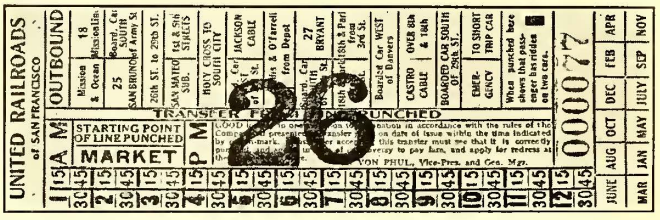
Since war preparations began the United States Quartermaster's Depot at Jeffersonville, Ind., has increased greatly in importance. From a few hundred, the number of seamstresses called there for work has been swelled to several thousands. The Louisville & Southern Indiana Traction Company, issuing transfers from the New Albany-Jeffersonville line to the Jeffersonville city car running to the depot, carries many from New Albany. The large amount of sewing has interested women on the Kentucky side of the river, and hundreds daily cross for the bundles of white canvas distributed by the depot. The cross-river service has been from station to station, and the jitneys began to monopolize the business from the Jeffersonville station to the government depot. A swarm of them entered the field, and prospered until the railway instituted a through service from the interurban station at Louisville to the government depot in Jeffersonville, fare 10 cents each way, with the result that the jitneys have virtually been put out of business. They swarmed to such a degree that the chief of police of Jeffersonville sought to have the City Council enact a $25 license ordinance. In this attempt, however, he failed.

Eight Transfers for Fifty-two

How United Railroads of San Francisco Has Mitigated the Terror of Transfer

LIKE other railways, the United Railroads of San Francisco has never lost sight of the losses due to the reckless and wrongful use of transfers. However, the rising cost of railroading, including the increase in paper itself, recently proved an extraordinary stimulus for improvement. In consequence a new transfer has been adopted, which reduces the varieties of transfers from fifty-two down to eight, as it is not necessary to have a separate transfer for each line.

Aside from this saving, the new transfer has also decreased the average number of transfer complaints from eight a day to that number per month. It has also cut the average length of ride because it has helped the transfer passenger to take the shortest route to his destination. Another advantage is that it is used by



GROUP STYLE OF TRANSFER—SAN FRANCISCO

front-end street collectors, who identify their issues by perforating the section marked "Extra Conductor."

All the routes of the company are divided into four groups: Group 1 comprises all lines terminating at Market Street Ferry. On this group a yellow transfer is used for inbound passengers and a white transfer for outbound passengers. These transfers show issuing group and the destination.

Group 2, of routes, comprises the lines terminating at Market Street or at the Southern Pacific Depot. Here, too, inbound transfers are yellow and outbound transfers are white.

Group 3 comprises the lines crossing Market Street. Pink is used for northbound and orange for southbound transfers.

Group 4 comprises short-trip or feeder lines. On these lines only one (white) transfer is required as the punch showing the destination takes care of the direction.

These groups call for seven varieties of transfer. The eighth variety is that issued at the corner of Kearny and Polk streets to the Municipal Railway on Geary Street. This transfer is yellow.

Passengers understand now that one transfer will enable them to ride on three cars when necessary. The conductor of the second car validates the transfer by punching the section which reads: "When punched here shows that passenger has ridden on two cars.' This transfer so validated is taken upon the third car. No record of this intermediate travel is made by the conductor of the second car inasmuch as the transfer itself tells the story.

From the third car a passenger can transfer to a feeder connection by asking for a short-line transfer. There are, of course, certain exceptions to prevent doubling back, but these are few and readily understood by all concerned.

Third Avenue Opens Fare Case

Opening Hearings Before the New York City Commission Deal with Counsels' Arguments Regarding Power of the Commission and with a Presentation of Financial Exhibits

THE campaign for increased electric railway fares in New York City was begun in earnest on Monday, June 18, with the opening presentation of the case of the Third Avenue Railway to the Public Service Commission for the First District of New York. The hearings continued all day Tuesday, and were scheduled also for Thursday and Friday.

From the very beginning it was evident that counsel for the city intended to oppose the company upon every conceivable ground. It was apparent that an attack would be specially directed against the company basing its case upon a reorganization valuation made in 1910. Furthermore, questions were raised as to how the refusal of the company to obey a depreciation order of the commission in 1912 should affect its calculations of a fair return, and as to whether the present financial condition of the company is to be permanent or is merely the temporary result of the long strike in the second half of 1916. The city challenged the power of the commission to increase rates and in general took technical exceptions to the company's exhibits upon the ground of irrelevancy.

Opening Statement by Company

In his opening statement for the Third Avenue Railway, Alfred A. Cook pointed out at length the financial ills of the company and the reasons for its application for relief. He outlined from statistics, later presented the steady decrease in receipts and the increase in expenses during the last few years, and said that even the desired 2-cent charge for transfers might not prove sufficient. Such relief would help, however, and all that the company desired was plain, simple justice. It was not asking for stock dividends, Mr. Cook said, but for a fair return on its honest physical valuation so as to avoid disintegration of the property.

Mr. Cook averred that under the Public Service Commission law the commission has power to increase rates so as to give a fair return. In his opinion the Ulster & Delaware decision by the New York Court of Appeals shows this conclusively. He referred to a recent decision by Charles E. Hughes as referee in a Brooklyn Borough Gas Company case, to the effect that the commission cannot increase rates above the 80-cent maximum prescribed by law. He explained, however, that the Public Service Commission law contains a specific mandate limiting commission jurisdiction over gas rates, but that no such prohibition exists in the case of electric railways, and the commission can act in exercise of the fully delegated power of the legislature either to lower or raise their rates. Mr. Cook also mentioned the North Shore Traction Company decision as showing that franchise rate provisions must give way when the legislature speaking through the commission believes that a carrier is receiving less than a fair return.

City Moves to Dismiss Case

Ernest E. Baldwin, special counsel for New York City, challenged the jurisdiction of the commission to grant the relief asked and also the competency and the adequacy of the company's petition. He asserted that if the company needed justice it must look to the Legislature. Moreover, if the commission had jurisdiction in the matter, the company's petition should show, first, that the present rates are insufficient, and, second, that they are unjust and unreasonable. If the existing rates are insufficient, the strike of last year is the cause, for operating costs have been about constant. In his opinion, therefore, the rates are not unjust or unreasonable. Chairman Oscar Straus refused to dismiss the company's petition, but stated that he would take under advisement Mr. Baldwin's motion regarding the power of the commission.

Company Revenues Have Decreased

In support of its petition for relief the Third Avenue Railway filed various financial exhibits, some of which

Table I—Consolidated Income Statement of Third Avenue Railway for the Four Months Ended April 30

	1917	1916	1915	1914
Car mileage...	11,028,903	11,335,485	11,458,284	10,733,942
Operating revenue:				
Transportation ..	$3,236,709	$3,407,895	$3,285,729	$3,098,647
Advertising	26,666	26,666	26,666	36,833
Rents	56,478	54,851	56,491	63,631
Sale of power....	14,391	14,127	8,054	36,911
Total operating revenue	$3,334,246	$3,503,542	$3,376,942	$3,236,024
Operating expenses:				
Maintenance of way	$256,766	$193,144	$227,492	$266,818
Maintenance of way — Removal of snow, ice and sand	61,827	123,974	48,645	143,498
Maintenance of equipment	253,429	201,711	222,647	230,221
Power	329,539	259,591	264,451	262,311
Operation of cars	1,015,438	976,027	944,350	922,136
Injuries to persons and property..	306,929	251,278	211,130	260,975
General and miscellaneous ...	151,904	175,254	167,536	156,521
Total operating expenses—not including depreciation ..	$2,375,835	$2,180,983	$2,086,254	$2,242,483
Net operating revenue	$958,411	$1,322,558	$1,290,687	$993,540
Taxes	276,594	295,191	242,694	239,434
Operating income.	$681,816	$1,027,367	$1,047,992	$754,105
Interest revenue...	55,549	54,616	26,416	26,844
Gross income...	$737,365	$1,081,983	$1,074,409	$780,950
Deductions from income:				
Interest on underlying mortgage bonds	$182,693	$182,693	$182,693	$187,808
Interest on first refunding bonds	293,206	293,206	266,266	232,406
Interest on adjustment mortgage bonds ..	375,600	375,600	375,600	375,600
Interest on notes payable	1,498	2,101	3,192	41,391
Track and terminal privileges	4,553	4,734	4,813	4,386
Miscellaneous rent deductions	3,339	4,176	5,564	5,036
Amortization of debt discount and expense...	6,148	4,295	972	972
Sinking fund accounts	11,160	10,000	10,000	10,000
Miscellaneous ...	8,550	7,990	2,932	2,560
Total deductions	$886,750	$884,798	$851,935	$860,162
Net income—not including depreciation	*$149,384	$197,184	$222,373	*$79,212
Deduct depreciation reserve	.....	.....	189,680	170,000
Net income	*$149,384	$197,184	$32,693	*$249,212

*Deficit.

TABLE II—EFFECT ON NET INCOME OF THIRD AVENUE RAILWAY HAD THE MAINTENANCE EXPENSES AND THE DEPRECIATION ALLOWANCE EQUALLED 20 PER CENT OF OPERATING REVENUES

	Four Months, Jan. 1 to April 30—				Twelve Months to June 30—			
	1917	1916	1915	1914	1916	1915	1914	1913
Operating revenue	$3,334,246.56	$3,503,542.37	$3,376,942.18	$3,236,024.11	$11,136,370.18	$10,885,859.39	$10,858,216.03	$10,117,847.36
20 per cent pursuant to Public Service Commission orders to cover actual maintenance and depreciation	$666,849.31	$700,708.47	$675,388.43	$647,204.82	$2,227,274.03	$2,177,171.87	$2,171,643.20	$2,023,569.47
Maintenance and depreciation—per the books:								
Maintenance of way and structures	$318,594.42	$317,119.04	$276,137.83	$410,317.11	$1,090,700.85	$925,973.89	$1,012,646.16	$838,620.95
Maintenance of equipment	253,429.01	201,711.68	222,647.11	230,221.03	599,549.69	678,573.99	713,003.13	614,792.51
Depreciation reserve	.....	.....	189,680.94	170,000.00	294,271.00	562,958.80	511,250.00	461,500.00
Total	$572,023.43	$518,830.72	$688,465.88	$810,538.14	$1,984,521.54	$2,167,506.68	$2,236,899.29	$1,914,913.46
Additional charge necessary under Public Service Commission orders	$94,825.88	$181,877.75	*$13,077.45	*$163,333.32	$242,752.49	$9,665.19	*$65,256.09	$108,656.01

*Excess over depreciation charge under commission orders.

are reproduced herewith. Through Table I, for example, and through the testimony of its public accountant, John Flint, of West & Flint, New York, the company showed that in the first four months of 1917 the total operating revenues decreased to $3,334,246 from $3,503,542 for the similar period in 1916. In 1917, however, the total operating expenses (not including depreciation) rose from $2,180,983 to $2,375,835. The net income (not including depreciation) was a surplus of $197,184 in 1916 and a deficit of $149,384 in 1917.

To bring the showing closer to date, the company reported receipts of $884,510 for May, 1917, as compared to $985,032 for this month in 1916, a decrease of $100,522 or $3,242 per day. At the same time the mileage decreased 200,562 car miles or 6470 per day. Of the eleven reporting companies in the system, all but one showed lower receipts. For the period from Friday, June 1, to Tuesday, June 19, 1917, inclusive, as compared with that from Friday, June 2, to Tuesday, June 20, 1916, the receipts decreased from $602,365 to $567,633, or $34,731. The company expects to present full figures up to the latest possible day.

In presenting revenue and expense figures the company disregarded the strike period during the second half of 1916. Consequently the last yearly figures were for the fiscal year ended June 30, 1916. The main subsequent figures were for the first four months of 1917, which could be compared with a part of 1916 not affected by the strike.

THE QUESTION OF DEPRECIATION

The introduction of Table II and Table III by the company met with considerable opposition on the part of city representatives and, on some points, even commission counsel. It appears that on Feb. 3, 1912, the commission ordered the company to set aside each year, before paying adjustment income bond interest or dividends, 20 per cent of its gross operating revenue for "maintenance, depreciation and renewals," the unexpended amount at the end of each year to be credited to a separate depreciation reserve. This order the company has refused to obey to the letter, although from evidence presented at the latest hearing it appears that in effect the commission requirement has been more than met.

As explained by Mr. Flint, the company beginning with the six months ended June 30, 1912, set aside a large sum of cash for depreciation irrespective of maintenance. The amount began at $30,000 a month, the reserve set up for the six months being therefore $180,000. The reserve fund accumulated to $2,009,979 and was invested in company bonds. After Dec. 31, 1915, there were no further additions to the fund. The totals set aside for the respective fiscal years ended June 30 follow: 1913, $461,500; 1914, $511,250; 1915, $562,958, and 1916, $294,271.

In calculating the additional charge that would have had to be made under the commission order, the company has not included in operating revenues intercompany items for rentals. On this basis the 20 per cent charge for maintenance and depreciation under the commission ruling amounted to $9,512,516 for the four and one-half years from Jan. 1, 1912, to June 30, 1916. During this period the company's actual expenditures for maintenance of way and structures and maintenance of equipment totaled $7,173,851. This, combined with the depreciation reserve set up by the company to the above-mentioned extent of $2,009,979, gave an aggregate amount of $9,183,831 for actual maintenance expenses and depreciation reserve during the period. This represents a deficiency of $328,685 from the charge to operating expenses arising under the 20 per cent requirement of the commission.

As more than an offset to such a deficiency, however, the company reports charges against surplus during the period to the extent of $339,599 for retirements of property. For the fiscal years ended June 30, these charges were: 1914, $36,340; 1915, $204,497, and 1916, $98,761. These charges, the company states, are equiv-

TABLE III—STATEMENT OF INCOME OF THIRD AVENUE RAILWAY FOR THE PERIOD JAN. 1 TO APRIL 30, 1917 (WITH COMPARISONS OF OTHER YEARS), SHOWING THE AMOUNT OF RETURN

	Four Months' Period, Jan. 1 to April 30—			
	1917	1916	1915	1914
Operating income	$681,816	$1,027,367	$1,047,992	$754,105
Less deficiency in depreciation pursuant to commission rulings	94,825	181,877	*13,077	*163,333
Operating income after allowance of 20 per cent for maintenance and depreciation	$586,990	$845,489	$1,061,070	$917,438
Interest revenue:				
Interest on bonds held by system in funds and interest on bank accounts and special deposits	55,549	54,616	26,416	26,844
	$642,539	$900,105	$1,087,487	$944,283
Deductions—rentals, etc.:				
Track and terminal privileges	$4,553	$4,734	$4,813	$4,386
Miscellaneous rent deductions	3,339	4,176	5,564	5,036
Amortization of debt discount	6,148	4,295	972	972
Sinking fund accruals	11,160	10,000	10,000	10,000
Miscellaneous	8,550	7,990	2,932	2,560
Total deductions—rentals, etc.	$33,752	$31,197	$24,282	$22,956
Amount applicable for reserves for contingencies, interest, dividends, surplus, etc.	$608,787	$868,907	$1,063,204	$921,327

*Excess over depreciation charge under commission orders.

alent to appropriations of surplus for the purpose of a depreciation reserve and show that the order of the commission has in effect if not in method been fully carried out. Thus none of the reservation ordered by the commission has been omitted on account of dividends, as was alleged by counsel for the city. By a similar calculation for the five years ended Dec. 31, 1916, the company showed that the deficiency of $259,782 below the 20 per cent operating expense requirement of the commission was more than offset by surplus charges of $390,296 for retirements of property.

Before the above data had been introduced by the railway, the commission allowed Table II to be entered as a hypothetical exhibit. Commission counsel strongly urged, however, that in the precedent finding of fact as to the sufficiency of present rates, only actual expenditures and reservations should be considered, but he said that the whole 20 per cent charge might be used in calculating a fair return for the future. Commissioner Travis H. Whitney asked Mr. Cook whether the company would obey the depreciation order in the future, and whether, if the charge for transfers were granted, it would agree to expend certain portions of the added revenues in ways designated by the commission. Mr. Cook stated that he would be glad to take these points up with the board of directors.

The Valuation of the Property

According to Table III, the amount applicable for interest and dividends for the first four months of 1917 was $608,787. After eliminating from this about $40,000 for intercompany bond holdings, the annual rate of return was 3.877 per cent on a physical valuation of $44,000,000. If 6 per cent is a fair return, there is a shortage of $311,312 for the four months' period, and if 8 per cent is fair, a shortage of $604,646.

The valuation figure of $44,000,000 was accepted by commission counsel as hypothetical pending reasonable proof. Its admission was challenged by the city. The figure was used by the company in its table simply because it was the one derived by the commission itself in the 1910 reorganization case of the Third Avenue Railway. After making a detailed appraisal of the physical property on the reproduction-cost basis, the commission then arrived at $35,100,000 as the present value of the property as of Feb. 28, 1910. To this was added $1,746,000 for current assets and $7,200,000 for a cash assessment, giving a total of about $44,000,000.

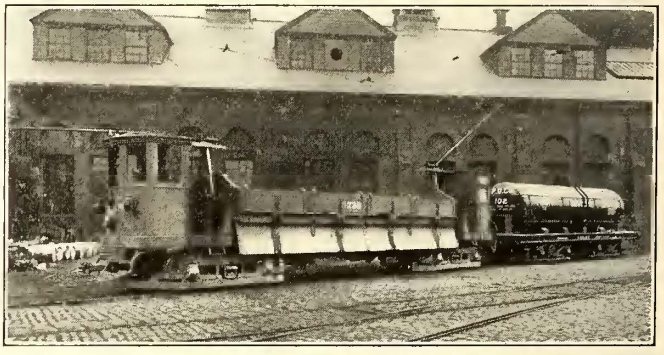
The city objected even to the use of this figure in calculations on the ground that it was derived in a capitalization case and that it would not meet the requirements in a rate case. Counsel for the company suggested that in 1910 there was no difference noted and that the commission established its figure for the physical value as it would have done in a rate case. The commission finally allowed the old orders dealing with the matter to be entered as evidence, to be considered upon their merits.

Tests to Determine Properties of Iron Alloys

The engineering experiment station of the University of Illinois has just completed another series of experiments to determine the magnetic and allied properties of alloys of iron and other metals. In 1915 experiments with iron-silicon alloys disclosed some remarkable properties which make it superior to any other material for use in certain electromagnetic machinery. These experiments were followed by others dealing with iron-aluminum alloys melted in vacuo, which have shown that aluminum, like silicon, greatly improves the magnetic properties of the metal, and also that aluminum imparts to the metal a greater toughness than silicon. The investigations were conducted by T. D. Yensen and W. A. Gatward. The results are presented in detail in Bulletin No. 95 of the Illinois Engineering Experiment Station, copies of which may be obtained by addressing C. R. Richards, director, Urbana, Ill.

Off-Peak Tank Car Service at Boston

THE advantages of off-peak electric freight traffic on a carload basis are well illustrated by a tank-car haulage service inaugurated in the latter part of 1916 by the Boston Elevated Railway. This service consists of the transportation of molasses from Copps Hill Wharf, Boston, to the plant of the Purity Distilling Company in Cambridge, the product being hauled in tank cars of about 5000-gal. capacity owned by the distilling company and built according to the specifications of the railway company. The traffic is handled between the hours of 8 p. m. and midnight, which are entirely outside the peak-load period of the railway. Either side-dump cars or snowplow motor cars are utilized as electric locomotives in this service without additional investment in rolling stock. The former are used in winter and the latter in summer. The accompanying illustration shows a typical train unit.



INCREASING THE SERVICE FACTOR OF ROLLING STOCK ON THE BOSTON ELEVATED

Molasses is received at Copps Hill Wharf in shiploads, a berthing space 400 ft. long being available. The molasses is pumped from the vessel into a storage tank of 1,500,000-gal. capacity and thence is pumped into the tank cars via a loading tank, the average time of filling per car being about four minutes. A maximum of twelve tank cars have been filled, hauled to East Cambridge and emptied in one night's run, three motor cars being required. The length of haul is about 2 miles from terminal to terminal and about ten minutes are required to empty each car. The motor and tank cars are equipped with air brakes. Two men constitute the locomotive crew on each trip.

The distilling company manufactures pure alcohol for commercial purposes, and before the present service began informed the Public Service Commission of Massachusetts that the former teaming expense practically absorbed all the profits of the business. The teaming charge was 0.3 cent per gallon. The Boston Elevated charge is $9 per loaded tank car one way, or 0.18 cent per gallon. About 12,000,000 gal. of molasses per year are handled. Thirteen trucks were formerly used in the service and a reduction in street congestion, wear and tear has been effected by electric haulage.

Have the New York Commissions Power to Increase Fares?

The Author Answers This Question in the Affirmative and Shows Why

By JAMES L. QUACKENBUSH
General Attorney New York Railways Company

In view of the question which has been raised as to the power of the New York Public Service Commissions to grant an increase in street railway fares, as against the provision in the New York Railroad law (Section 181, passed 1884), fixing a statutory fare of five cents, peculiar interest attaches to the following quotations from a memorandum filed by Mr. Quackenbush with the New York Public Service Commission of the First District. The memorandum is comprehensive, and the quotations are but fragmentary. They are, however, very significant and pertinent to the situation. EDITORS.

THE general authority to adjust the charges to be made by the corporation as compensation for the service, as distinguished from the character of service which it may be required to furnish the traveling public is given by Subdivision 1 of Sec. 49 of the public service commissions law. That section gives the commission complete supervision over "rates, fares or charges, . . . regulations or practices, . . . affecting such rates," in order that it may determine whether they are "unjust, unreasonable, unjustly discriminatory or unduly preferential, or in any wise in violation of any provision of law, or whether the maximum rates, fares or charges . . . are insufficient to yield reasonable compensation for the service rendered and are unjust and unreasonable"; with the further power of determining the "just and reasonable rates, fares and charges to be thereafter observed and in force as the maximum to be charged for the service to be performed."

The standard by which the commission is to be guided in determining the rates and fares to be ordered is, that they shall produce a "reasonable average return upon the value of property actually used in the public service" and enable the corporation to make "reservation out of increase for surplus and contingencies."

The jurisdiction of the commission with respect to rates and charges under this subdivision is sweeping, being held to be virtually "without statutory limitation or restraint."

It will be seen at a glance that the language of this subdivision does not contemplate a mere raising or lowering of rates already established by the common carrier, but clothes the commission with full power to regulate and supervise the entire system of rates and charges and the regulations and practices with respect thereto.

The commission may therefore not only adjust old rates but prescribe new charges for particular kinds of service where no charge was previously made, as well as discontinue charges which, in its judgment, are unjust, unreasonable, unjustly discriminatory or unduly preferential.

In short, the general power to regulate fares resting with the legislature, which is absolute and unlimited except as restrained by the constitution, has been delegated to the Public Service Commission by Sec. 49 of the public service commissions law, together with Sec. 181 of the railroad law, the latter specifically giving to the commission the same power possessed by the legislature to regulate rates of fare "to be exercised as prescribed in the public service commissions law."

Several authorities have held the power of the Public Service Commission to fix rates under Sec. 49 of the public service commissions law or statutes of similar import to be virtually without statutory limitation or restraint.

STATUTORY POWER TO RAISE RATES ALREADY ESTABLISHED

The question was raised as to the authority of the Public Service Commission for the Second District to increase the mileage book rates of the Ulster & Delaware Railroad in excess of the 2 cents per mile, fixed by Sec. 60 of the railroad law. The commission, after investigation, determined that the facts justified the increase but denied the application because of a want of statutory power in the commission to make the order.

The Appellate Division and Court of Appeals held that the commission had the necessary power to make such order, notwithstanding Sec. 60 of the railroad law, which provided that certain railroad corporations should issue mileage books "for which the corporation may charge a sum not to exceed 2 cents per mile." The power of the commission to prescribe maximum fares with respect to mileage books was given by the second paragraph of Sec. 49 of the public service commissions law, which is similar to the first paragraph of that section, heretofore quoted, except that the first paragraph contains the following words, to wit: "Notwithstanding that a higher rate, fare or charge has been heretofore authorized by statute."

The court held that the revision of the public service commissions law and the railroad law in 1910 indicated an intent on the part of the legislature to harmonize the railroad law with the public service commissions law and to make the public service commissions law superior to Sec. 60 of the railroad law in the matter of fixing limitations on rates of fare, and the court therefore reached the conclusion that in order to give full effect to the provision of Sec. 49 of the public service commissions law the commission should determine the reasonable and just rates to be observed as the "maximum."

Sec. 60 of the railroad law should be construed as establishing the maximum rate in the absence of an order by the commission, which body was empowered to fix rates without statutory limitation or restraint. The court said:

"Nothing like these provisions in Secs. 49 and 33 had ever existed before. In all the previous history of the public service commissions law the power of the commission had been confined to reducing rates, or at least to regulating rates within the statutory limitations. The law contemplated simply a reduction of rates by the commission in the interests of the public, and not an in-

crease, even though such increase might be just and reasonable to the carriers.

"The effect of this new legislation was, I think, to make the commission superior to Sec. 60 of the railroad law, fixing limitations on the rates of fare."

In *States ex rel. Missouri Southern R. Co. v. P. S. Comm. of Missouri,* 168 S.W., 1156 (Sup. Ct. of Mo., July 2, 1914), it was held that Sec. 47 of the public utilities act of Missouri, which was borrowed from Sec. 49 of the New York public service commissions law, empowered the Public Service Commission of that State to authorize a common carrier, where the maximum rates prescribed by statute did not produce a reasonable return on the value of the carrier's property, to charge greater rates and fares than the maximum rates so prescribed.

* * *

"All charges" for service of a common carrier and the method and system under which the same shall be collected are therefore under the supervision and regulation of the commission. The nature as well as the amount of rates, fares or charges are to be determined and put in force.

Analysis of Sec. 49, as Amended in 1910

It is to be noted also that while, prior to 1910, Sec. 49 seems to have been drawn primarily with a view of protecting the public from unjust charges, the amendments of that year were intended to safeguard the interests of the railroad corporations as well as of the public, no doubt due to the fact that experience had demonstrated that under a system of strict public supervision by the Public Service Commission brought into being in 1907, the mutual welfare of the public and the railroads required that the earnings of the corporation must be reasonably protected in order to insure adequate service to the public.

The amendment of Subdivision 1 giving power to determine maximum rates with due regard to a "reasonable average return" where the old rates are "insufficient to yield reasonable compensation for the service rendered" is manifestly intended to give the commission power to insure to the corporation adequate revenues and save it from possible bankruptcy.

A similar purpose appears in Subdivisions 6 and 7; the former giving power of changing the practices, service, rules and regulations with respect to transfers which may become unreasonable either to the public or to the railroad corporation, and the latter subdivision making the obligation of the railroad company to give free transfers, which was absolute under the former statute (Sec. 104 of the railroad law), dependent upon the action of the Public Service Commission, in pursuance of the public service commissions law. These changes were all made to give the commission plenary power to protect both the traveling public and the railroad corporations.

This view of Subdivision 1 of Sec. 49 giving the commission complete supervision of rates and charges, including not alone the raising and lowering of old rates but the readjustment of rates involving new rates for particular kinds of service and the elimination of old charges where called for, is consistent with the general scope of the entire section. The second paragraph of Subdivision 1 gives the commission power to fix maximum rates for reduced rate tickets and restore old rates previously discontinued.

Subdivision 2 relates to the service to be furnished by common carriers as distinguished from the charges for such service, reposing with the commission full power of determining "proper regulations, practices, equipment, appliances and service" to be observed and used in passenger and freight transportation.

Subdivision 3 gives the commission complete power to establish through routes and joint rates, fares and charges for the through transportation of passengers and property and to apportion the rates, fares and charges for such transportation among the railroad companies affected, thereby putting under the control of the commission the whole matter of inaugurating through routes and devising a new schedule of joint rates, with the further power of fixing the maximum charges and dividing the receipts according to its judgment among the corporations affected.

Subdivision 4 also relates to through transportation of property, empowering the commission to order the construction of new switch connections, declares the terms and conditions under which such service shall be conducted, and provides for the division of receipts and expenses among the corporations engaged in such service.

Subdivision 5 relates to jurisdiction with respect to joint rates and through routes as between the Public Service Commissions of the First and Second Districts respectively.

From this brief review of Sec. 49 of the public service commissions law the purpose stands forth clearly to place under the control of the Public Service Commission (a) all matters pertaining to safe, adequate and proper regulations, practices, equipment, appliances and service to be observed, used and furnished by the common carrier; and (b) equal jurisdiction over rates, fares and charges to be received by the carrier for the service which the commission may require it to give with complete and plenary power of fixing, adjusting and supervising the entire system of charges and schedules of rates.

The fact that the Public Service Commission is given such sweeping power with respect to service and equipment to be required of the railroad companies compels the conclusion that the commission is given a like power with respect to fares, charges and rate schedules. Any other interpretation would place the commission in the unfortunate position of being compelled either to demand the service and equipment which it deems proper, and thereby endanger the financial integrity of the companies affected by reason of its inability to raise and readjust rates to meet the new requirements, or abandon or limit efforts to require satisfactory public service of the railroads, thereby transferring the burden from the companies to the people, permitting the former to exist and causing the latter to suffer, an unsatisfactory condition for all parties concerned.

Brooklyn Gas Case Not Controlling

The recent decision of former Justice Hughes as referee, in *Brooklyn Borough Gas Company v. Public Service Commission, et al.,* holding that the Public Service Commission cannot, in fixing a reasonable rate for gas, exceed the maximum fixed by a valid statute, and denying the motion of the commission to dismiss the complaint, made upon the ground that the public service commissions law affords an adequate remedy, and an application to the commission for an increase in rates was a condition precedent to an application to a court for relief in the form of a suit to enjoin the enforcement of the statutory rate, does not question the power of the Public Service Commission to authorize railroad charges in excess of statutory rates.

Sec. 72 of the public service commissions law, conferring power upon the Public Service Commission to fix the maximum price of gas or electricity "not exceeding that fixed by statute," is held to contain an express restriction upon the power of the commission with respect to the regulation of rates for gas and electricity in the form of the unequivocal language

quoted, which was inserted in Sec. 72 by an amendment in 1910, and which does not appear in Sec. 49, relating to railroad rates.

JUSTICE HUGHES SAYS CASES ARE DIFFERENT

The differentiation of the powers of the commission with respect to the two classes of corporations is made in the following language of the opinion:

"Sec. 72 of the public service commission law provides that 'after a hearing and after such an investigation as shall have been made by the commission, or its officers, agents, examiners or inspectors, the commission within lawful limits, may, by order, fix the maximum price of gas or electricity not exceeding that fixed by statute, to be charged by such corporation or person for the service to be furnished.'

"The decision of the Court of Appeals, affirming the decision of the Appellate Division, upon its opinion, in the case of *People ex rel. Ulster & Delaware Railroad Company vs. Public Service Commission*, 171 App. Div., 607; 218 N. Y., 643, is not applicable here, inasmuch as the sections of the public service commission law there under consideration, which related to railroads, did not contain the explicit provision which I have mentioned as being found in Sec. 72 of the public service commission law relating to the powers of the commission in dealing with companies supplying gas and electricity.

"It will be noted that those words 'not exceeding that fixed by statute,' were not in the public service commission law originally. They were inserted by the amendments of 1910. In other words, at the same time when the Legislature amended the public service commission laws with respect to railroads in the manner pointed out by the court in the case above cited, and also amended that law with respect to gas and electric light companies, it inserted in Sec. 72 these words: 'Not exceeding that fixed by statute.'

"It seems to me that these words are very clear and that they cannot be disregarded. * * *

"No construction of the public service commission law with reference to other provisions of the act, either relating to railroads or relating to gas or electric light companies, can be admissible, as it seems to me, which would destroy the effect of this explicit provision which the Legislature has seen fit to incorporate in Sec. 72."

In the Brooklyn Borough Gas case it is also to be noted that the statute fixing the maximum rate for gas there under consideration was enacted by Chap. 604 of the Laws of 1916, thereby making it a more recent statute than Sec. 72 and the other provisions of the public service commissions law under which the Public Service Commission derived its authority to fix rates. In the present proceeding it is to be borne in mind that Sec. 181 of the railroad law, providing for a 5-cent fare on any street surface railroad or branch thereof within the limits of any incorporated city or village, is a re-enactment of Sec. 101 of the former railroad law, which had been in force for many years prior to 1910, when the Public Service Commission by amendment of Sec. 49 of the public service commissions law was given its present extensive powers over railroad rates and charges and, in fact, for many years prior to 1907, when the public service commissions law was originally enacted. Sec. 49 of the public service commissions law must therefore be deemed a later statute than Sec. 181 of the railroad law under the rule prescribed by Sec. 95 of the general construction law, which provides as follows:

"The provisions of a law repealing a prior law, which are substantial re-enactments of provisions of the prior law, shall be construed as a continuation of such provisions of such prior law, modified or amended according to the language employed, and not as new enactments."

Discussion on Coasting Recorders

Among the subjects discussed at a meeting of Stone & Webster operating men at Fort Worth, Tex., on March 28, was that of coasting recorders, which are now used on several Stone & Webster properties and have been ordered for others. It was pointed out that, in addition to energy savings, the coasting recorder had produced other benefits of equivalent value.

Some of those present thought that motormen who were anxious to obtain high coasting records would be liable to operate recklessly, thereby abusing equipment, distorting schedules and increasing accidents. However, others who had had experience with the coasting recorder stated that it had actually cut down the cost of maintaining electrical equipment, saved wheel wear and brakeshoes, promoted closer operation to schedules, more uniform speed and fewer and less serious accidents. The fundamental reason for this improvement lay in the fact that in order to make a high coasting percentage the motorman must be ever alert. This alertness does more than lead him to seize coasting opportunities, since it keeps the motorman on the lookout to make his time points and to avoid accidents. A still further advantage was that a large coasting percentage might be an indication of a slow schedule. In following this up some companies had been able to increase schedule speed, thereby making a saving in the number of cars operated.

Last, and really most important, was the feeling that if the desired advantages are to be obtained it is necessary for the entire organization to understand the principles of coasting, combined with a thorough instruction and follow-up system.

Effect of War in British Columbia

The British Columbia Electric Railway has found that the war has had no appreciable effect upon the company's personnel. Although a large number of men have enlisted, the standard of efficiency has been well maintained in the numerous classes which require skilled labor. Approximately 21 per cent of the company's employees have left the service to join the military or naval forces, or have taken up the manufacture of munitions. Their places have been filled—until they return, or for the duration of the war—by temporary help. The company's records show that the enlistments for military service among the various branches of the company's employees are as follows: Platform men, 19 per cent; shopmen, 13 per cent; electricians, 20 per cent. In connection with the last mentioned it may be noted that this includes substation operators, from which particular class the largest percentage of enlistments occurred, no less than 36 per cent of the company's substation men having joined the colors for service overseas.

New York Committee on Higher Fares Meets

A meeting of the full committee on higher fares of the New York State electric railway companies was held at 8 West Fortieth Street, New York, on the afternoon of June 20. The meeting was devoted to a discussion of ways and means of bringing the need of higher fares before the commissions and people of the State.

COMMUNICATIONS

Steel Trolley Wire on City Lines

Minneapolis Street Railway Company

Minneapolis, Minn., June 14, 1917.

To the Editors:

By way of discussion of the use of steel contact wire, as described in the article by S. H. Anderson, appearing in the issue of the Electric Railway Journal for June 9, 1917, page 1038, the following points may be of interest:

I believe that the use of steel trolley wire depends greatly upon the service requirements of the line and locality. While its use might prove a success on a system such as the Pacific Electric Railway, with heavy interurban service, I believe that many objections would arise to the use of this material on city streets with heavy single-car local service, particularly where the city requirements demand underground feeder supply and prohibit the use of overhead auxiliary mains. It would seem entirely out of the question to provide trolley taps every 400 ft. from an underground feeder, both on account of the difficulties of providing such taps and also on account of the necessity of greatly extending the underground feeder system.

Our experience shows a much greater wear on the trolley wire at hangers and other attachments even with the most flexible support, and from observation I believe that this extra wear is more a result of flashing and burning than mechanical wear. A remedy for this may be found in the use of a sliding contact in place of the trolley wheel. Some experimenting done along this line indicates that the arcing is greatly reduced by the sliding contact. Also a sliding contact may be operated with much less pressure on the wire than with the rolling contact, which fact tends to lessen the damage of crystallization by the pounding of the trolley.

If this extra wear on copper trolley wire at point of attachments could be eliminated by use of a sliding contact, the arguments for using steel trolley wire would be greatly reduced. E. H. Scofield,

Engineer of Power and Equipment.

Board of Supervising Engineers
Chicago Traction

Chicago, Ill., June 19, 1917.

To the Editors:

I have read the article by S. H. Anderson in the issue of June 9 concerning the use of steel trolley wire by the Pacific Electric Railway. In general this article does not cover the use of steel wire for city service, and while I have very little doubt as to its utility for interurban service or for steam railroad electrification, I am not enthusiastic concerning its use for city service, although I have had no personal experience with it. I think we might expect pitting of the wire at accelerating points, and I believe that this difficulty, which is in existence with ordinary trolley wire, will be increased when the contact is between dissimilar metals, such as steel wire and the composition trolley wheel.

In heavy city service practically all points on the line are accelerating points, as the regular service stops are so numerous and other emergency or necessary stops practically make the entire line subject to much pitting action. Furthermore, on city lines it is difficult to keep the pressure of the trolley wheel on the wire at a constant value, due to fluctuating heights of wire on account of subways under railroad elevations, grade crossings and bridges. The lower conductivity of the steel wire makes further feed-in points necessary. Such points are numerous enough at present and the addition of more such points would add to the expense and the difficulty of maintenance.

The article in question indicates the use of such wire chiefly for catenary construction, and for such purpose I believe it would be highly satisfactory.

For the reasons stated, I believe that the utility of the use of steel trolley for direct suspension work in city service is open to question. Ralph H. Rice,

Principal Assistant Engineer.

A Day's Labor in Four Tons of Coal

Department of the Interior
United States Geological Survey

Washington, D. C., June 18, 1917.

To the Editors:

I am very glad to learn of the efforts which you are exerting to persuade the electric railways to attain all practicable economy in the use of fuel. If the users of coal can be brought to realize that every 4 tons of coal has required a day's work of one man in the mining industry and has utilized a proportional amount of the energy of the railroads, I believe that much will have been accomplished for the efficiency of the nation in this crisis. Philip S. Smith, Acting Director.

AMERICAN ASSOCIATION NEWS

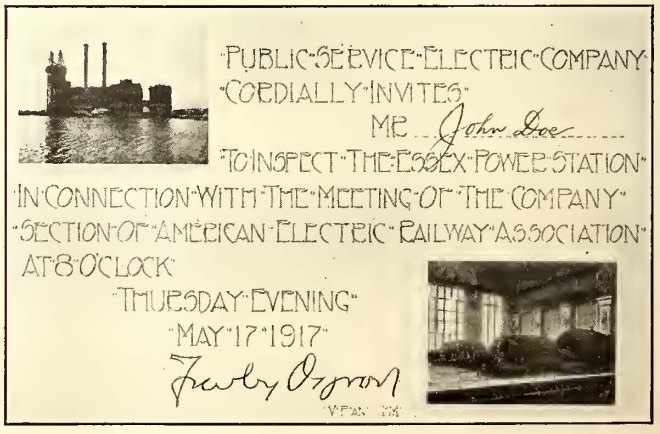
Coming Committee Meetings

A meeting of the executive committee of the American Association will be held at the association office in New York on June 26 and 27. At that time it is expected that all matters connected with the meeting in the fall will be settled.

On Wednesday, June 27, there will be a meeting of the executive committee of the Engineering Association.

Public Service Section

In connection with the inspection of the Essex power station of the Public Service Electric Company, described in the issues of this paper for May 26, page 962,



INVITATION TO POWER PLANT INSPECTION

and June 9, page 1040, the Electric Company sent out the invitation reproduced above. It was handsomely printed on large cards well worthy of framing.

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.

Track and Paving Construction in Seattle, Wash.

BY S. E. GOODWIN
Senior Inspector, Department of Public Utilities

In Seattle there are in general use but two types of pavement, brick and asphalt, on permanently improved street railway rights-of-way. The railway companies are obligated to improve their rights-of-way with the same pavement as is used by the city on each side of the tracks. In practically all streets on which traffic is light and the grade easy, asphalt has been used because of its smoothness, its cheapness and the short

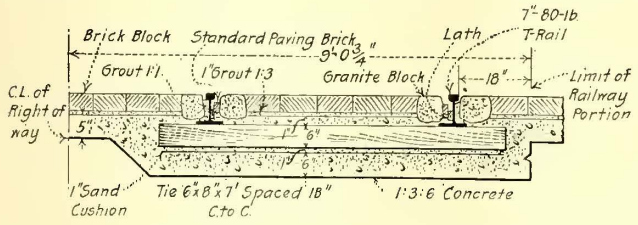


FIG. 1—COMBINATION PAVING, USING BRICK AND GRANITE BLOCK

time required to harden after having been laid. Brick pavement has, however, proved most satisfactory in Seattle, complying, as it does, with the three essentials, smoothness, good wearing qualities and ability to withstand rail vibrations. A most important factor in a good brick surface is, of course, the quality of the brick itself. In this respect Seattle is fortunate in having within its limits a manufacturer of a particularly excellent paving brick.

Granite block pavement has been used on some streets of heavy grade and has given good satisfaction. None

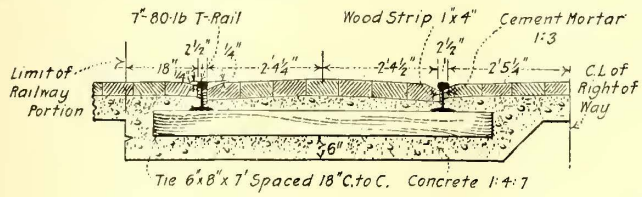


FIG. 3—WOOD-BLOCK WITHOUT SAND CUSHION

of this type has been installed during the last six years, however, although the Puget Sound Traction, Light & Power Company has in a number of cases employed granite block in combination with brick or asphalt as shown in cross-sections Figs. 1 and 2. The advantage of this type of construction is that the portion subjected to the greatest amount of wear and rail vibration is best adapted to withstand destructive forces.

Wood-block pavement, though still in the experimental stage in Seattle, will in all probability be used to a much greater extent in the coming years as it has met with general approval. It is noiseless, sanitary, durable, easily repaired and can be laid by the railway company's own construction force. The local standard for wood-block paving is shown in Fig. 3. It will be noticed that no sand cushion is provided under the blocks. The top of the concrete is smoothed with a ¾-in. layer of 1:2 cement mortar which, after setting, is painted with hot asphaltum and the wood blocks are laid immediately thereon.

The cross-section in Fig. 4 is of the type of pavement used on Second Avenue after the track reconstruction. The tracks on this street were originally laid in 1895 with high 72-lb. T-rails and brick paving. As this

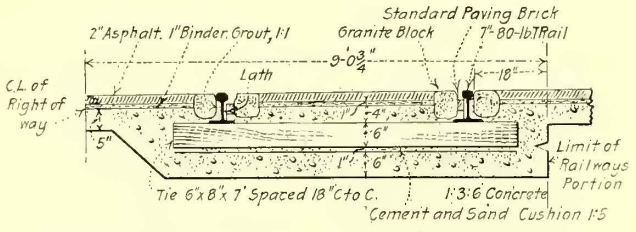


FIG. 2—COMBINATION PAVING, USING ASPHALT AND GRANITE BLOCK

is one of the most heavily traveled streets in the city it was requisite to provide as good a type of pavement construction as possible. In the reconstructed track the rails are of grooved type, 116 lb. per yard and 7 in. in height, this type being in use on only one other line in the city, the Municipal Railway. The rails are supported on creosoted fir ties and special combination tie plates, with rail braces at every fifth tie. On account of the shape of the rail the center of bearing does not

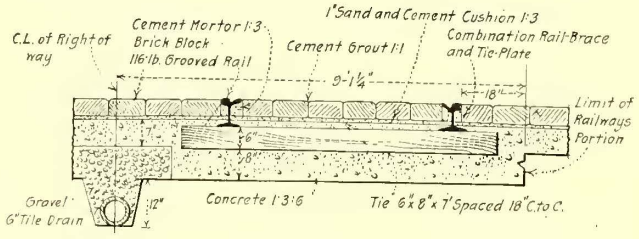


FIG. 4—TRACK CONSTRUCTION ON HEAVILY-TRAVELED BUSINESS STREET

fall in line with the center of gravity, and were it not for the braces there would be a pronounced tendency for the rail to tip outwards. Screw spikes are used to fasten the rails to the three ties on each side of each joint, ordinary spikes holding the intermediate ties. The joints are of the continuous type except in the west track between University and Seneca Streets, where Wightman joints are used.

Under the center of each track and under each rail are twisted reinforcement rods embedded in the 8-in. concrete base. A ⅜-in. x 2-in. flat tie rod is placed on

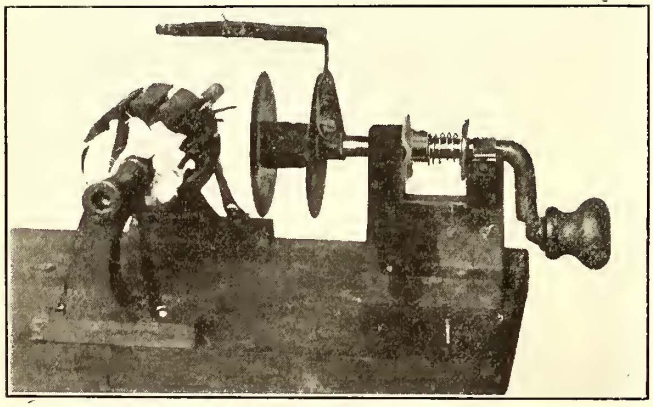
each side of the track joints. The concrete is proportioned 1:3:6 and the type of mixer used allows it to be poured directly into place. Under the center of the right-of-way is a 6-in. tile drain laid with open joints and embedded in gravel.

These tracks were reconstructed by the Stone & Webster Engineering Corporation and the work was so executed as to cause minimum impedance to the progress of the contractor paving the city's portion.

Winding Heater Motor Armatures

The armature winder in the Des Moines City Railway shops has built a crude but effective machine for winding the armatures of the small heater fan motors. A small bobbin for the wire is placed on a crankshaft, as seen in the photograph herewith, which is set on a block at right angles to the armature being wound. The wire feeds from this bobbin up onto an arm projecting over the armature and off this arm in line with the proper slot in the armature.

As the crank is turned and the arm approaches the armature shaft, a small cam mounted on the crank block pulls the crankshaft back so that the winding arm will pass by the armature shaft and then a small coil spring forces the arm back in line with the opposite slot of the armature, and so on. This cam is simply a



HOME-MADE DEVICE FOR WINDING HEATER MOTOR ARMATURES

washer with a hump bent into one side and fastened to the wooden block as shown. A steel bushing fastened to the shaft is held against this washer by a spring, and when it strikes the hump it is forced back and carries the shaft with it. Proper tension is given the wire by a small flat steel spring on top of the winding arm which presses the wire against the bottom of the arm as it is fed through. By the use of this ingenious device the winder has only to turn the crank and count the number of turns.

Simplified System for Stockroom Storekeeping

Storekeeping Methods Maintained by the Beaver Valley Traction Company of New Brighton, Pa., Are Efficient and Complete

BY W. D. PIERI
Storekeeper for the Beaver Valley Traction Company

Our stock book, in which every item of material in stock is listed, is the most important record of the stores department, and I might say that it is of the same form as shown in an article which appeared in the March 17 issue of the ELECTRIC RAILWAY JOURNAL. It shows the exact location of the bins or compartments in which the material is located, the amount of material on hand, the quantity on order, and the purchasing requisition number of all items ordered. It also gives an exact description of each item, giving the class or lot number, the exact movement of all stock items from month to month, and from this record an average monthly consumption is easily determined. The terms HO, Due, and OH, found under each monthly column, indicate respectively quantity for which orders are being held, quantity due on previous requisitions or shop orders, and quantity on hand. The books are thus kept up to date and will show any obsolete or surplus material which may be on hand.

Once a month stock is taken and, in order to ascertain the quantity still due on uncompleted orders, the stock books are checked for all back orders that have been received. Material is then ordered based on the monthly consumption, and any new construction work to be provided for.

To illustrate the system to the best advantage to the reader, we shall trace an item from the time it is ordered until it is put into use, showing the various forms used in the stores department. In going over the stock books (Fig. 1) it is seen that we are in need of some 23-watt Mazda lamps. A purchasing order material requisition blank (Fig. 2), is made out in duplicate, showing the quantity on hand, quantity due and quantity wanted; and also a description of the material, lot number and purpose for which it is to be used. After being approved, the original copy is forwarded to the purchasing agent, the duplicate filed, and the requisition number and quantity ordered are posted in the stock books (Fig. 1). The purchasing agent returns a storekeeper's memorandum (Fig. 3), which is an exact copy of the material requisition, and also gives the order number, date and firm from which the material was ordered. The memorandum is checked with the duplicate material requisition, and the date, order number and firm's name are posted on the duplicate requisition, which is on file. This helps to check any duplica-

THE BEAVER VALLEY TRACTION CO.

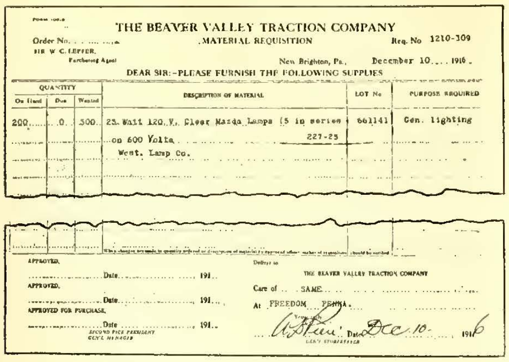
STOCK BOOK 227 Page 25 Department M

NAME AND DESCRIPTION OF ARTICLES	Unit	Class Number	GENERAL INFORMATION	Section and Compartment Number	Weight per Each	Purpose	JANUARY Counted	JANUARY Ordered
LAMPS, MAZDA			Car service and General			Lighting	HO / Due / OH	
23 watt 120 Volt, Clear 5 in series	Ea	661141						
on 600 Volts							HO / Due / OH	
West. Lamp Co.								
							HO / Due	

PURPLE LINE - Year 1915
RED LINE - - Year 1916

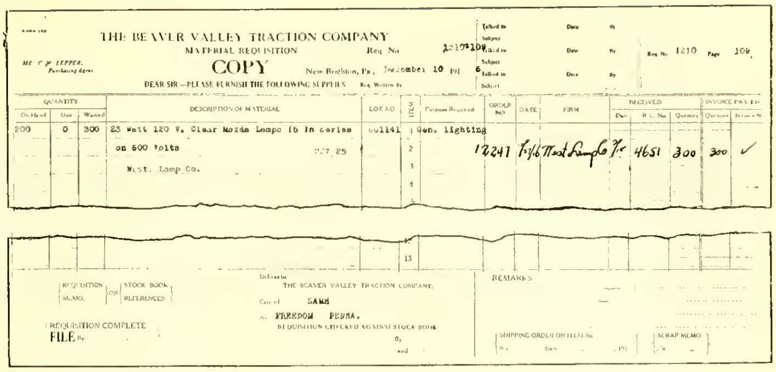
OCTOBER Ordered	NOVEMBER Counted	NOVEMBER Ordered	DECEMBER Counted	DECEMBER Ordered	Average Monthly Consumption Previous Years
Date / By	Date 3 / By AG	Date / By	Date 8 / By WF	Date 8 / By	1913
Date / By	Date 12/4 / By P.C.	Date / By	Date / By	Date / By	1914
	HO / Due / OH		HO / Due / OH 2.00	120-169 300	1915
					1916
	HO / Due / OH		HO / Due / OH		1913
	HO / Due		HO / Due		1914

STORE KEEPING—FIG. 1—STOCK BOOK PAGE, SHOWING MONTHLY RECORD OF NEW, OLD AND SCRAP MATERIAL


THE BEAVER VALLEY TRACTION COMPANY
MATERIAL REQUISITION Req. No 1210-309
New Brighton, Pa., December 10, 1916
DEAR SIR:—PLEASE FURNISH THE FOLLOWING SUPPLIES

On Hand	Due	Wanted	Description of Material	Lot No.	Purpose Required
200	0	300	23 Watt 120 V. Clear Mazda Lamps (5 in series on 600 Volts 221-25 West. Lamp Co.	661141	Gen. lighting

THE BEAVER VALLEY TRACTION COMPANY
Care of SAME
At FREEDOM PENNA.
Dec 10 1916


THE BEAVER VALLEY TRACTION COMPANY
MATERIAL REQUISITION
COPY
New Brighton, Pa., December 10 1916
DEAR SIR:—PLEASE FURNISH THE FOLLOWING SUPPLIES

On Hand	Due	Wanted	Description of Material	Lot No.	Purpose Required	Order No.	Firm	Rec. No.	Quantity	Invoice
200	0	300	23 watt 120 V. Clear Mazda Lamps (5 in series on 600 Volts 221-25 West. Lamp Co.	661141	Gen. lighting	12247	West. Lamp Co.	4651	300	300

REQUISITION COMPLETE FILE
THE BEAVER VALLEY TRACTION COMPANY
SAME
FREEDOM PENNA.
REMARKS

STORE KEEPING—FIG. 2—MATERIALS REQUISITION BLANK. FIG. 3—STOREKEEPER'S MEMORANDUM BLANK

tion of the order, and checks any error that might be made in the purchasing department.

When the material arrives at the storeroom it is checked by the receiving clerk, and a receiving card (Fig. 4) is made out in duplicate, showing the firm, date received, order and requisition numbers, quantity description of material, lot or class number, how received, and condition of material when received. The receiving card number, date and quantity received are shown in their proper places on the duplicate copy of the material requisition blank on file. This enables the storekeeper to check at once any duplicate shipment on this order. The duplicate copy of the receiving card is filed. After checking the material received with its requisition blank, a description tag (Fig. 5) is made out showing receiving card number, class number, date received, quantity, order number, requisition number, firm purchased from, and a description of the material. The material is then put away in its proper bin or compartment. The receiving card is posted in the ledger under the class number and the material shown is ready to be requisitioned out.

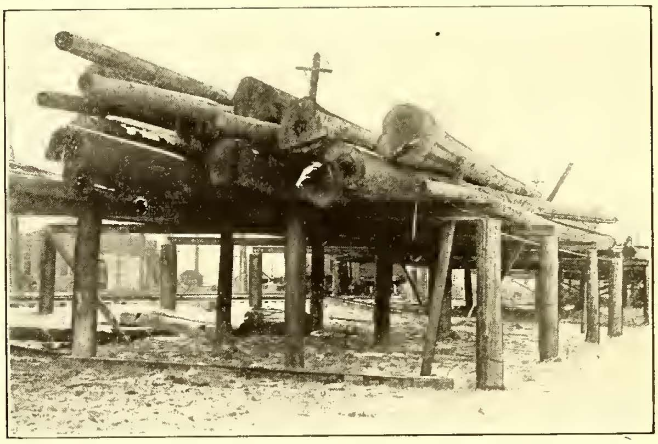
Material is given out of the storeroom on requisition only. Requisition books, having requisitions (Fig. 6) in duplicate, serially numbered, are furnished the foremen and heads of departments and all requisitions must be accounted for. They show the purpose for which the material is to be used, the quantity wanted, description of material, and the lot number and account to which it is to be charged, being placed thereon by the stores department. They also show to whom the material was given. This requisition is then forwarded to the auditing department for posting.

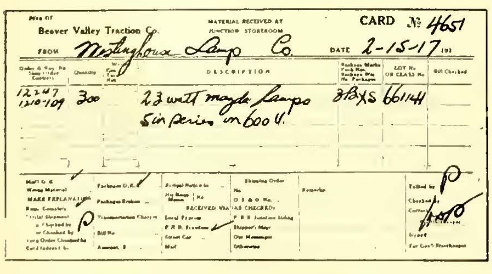
We require that all invoices for material purchased be furnished in triplicate. After the material has been received, and the invoice checked and approved for payment, the original and duplicate copies are forwarded to the auditing department. The triplicate copy is stamped by the storekeeper, and the blanks (Fig. 7) filled in to show the date material was received, receiving card number, checked "O. K." for payment, and the date on which the invoice was passed for payment. This triplicate copy of the invoice is filed in the storeroom, thus saving the expense and trouble of keeping a card file and index of the above information.

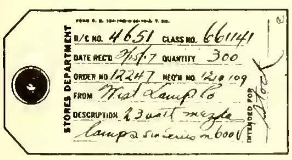
The system as described enables the company to have a record on hand at all times of the full transaction for all material purchased and received.

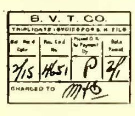
Storing Poles for Easy Loading

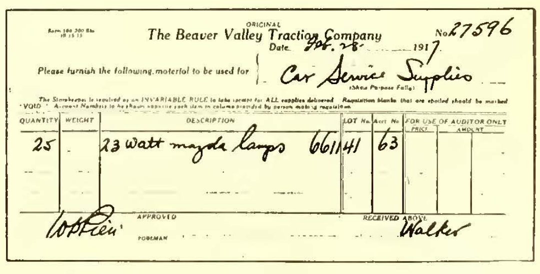
The Western Ohio Railway has built a pole storage at Wapakoneta, Ohio, adjacent to its right-of-way, which greatly facilitates the loading and unloading of poles from and into storage. This arrangement consists of a number of piles driven into the ground, with old girder rail laid across the top of them to form a support on which the poles can be rolled. This places the poles on about the same level above the ground as the flat cars used in hauling them. It is therefore a very simple matter to lay short pieces of rail from the piles nearest the track across to the car floor and roll the poles from the storage structure to the car. Also, by storing the poles in this elevated position they are kept up out of the moisture from the ground and the free circulation of air around them retards rotting.


POLE STORAGE STRUCTURE ON AN OHIO ELECTRIC LINE


Beaver Valley Traction Co.
MATERIAL RECEIVED AT STOREROOM
CARD № 4651
FROM Westinghouse Lamp Co. DATE 2-15-17
12247 1210-309 300 23 watt mazda lamps 5 in series on 600 V. 313XS 661141


STORES DEPARTMENT
R/C NO. 4651 CLASS NO. 661141
DATE REC'D 2/15/17 QUANTITY 300
ORDER NO 12247 REQ'N NO 1210-309
FROM West Lamp Co
DESCRIPTION 23 watt mazda lamps 5 in series on 600 V


B. V. T. CO.
TRIPLICATE INVOICE FOR S. R. FILE
2/15 4651 P 2/


ORIGINAL
The Beaver Valley Traction Company No 27596
Date Feb. 28 1917
Please furnish the following material to be used for Car Service Supplies
25 23 watt mazda lamps 661141 63
Walker

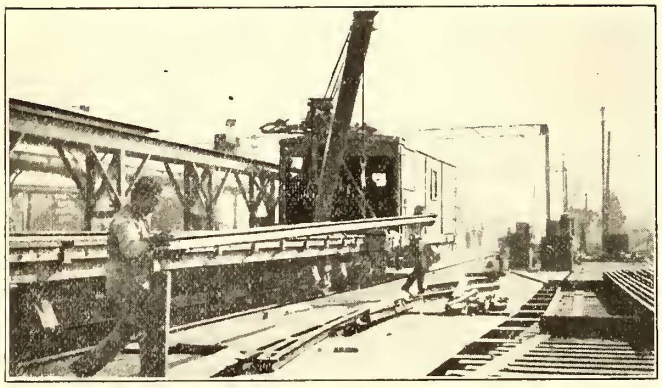
STORE KEEPING—FIG. 4—RECEIVING BLANK. FIG. 5—DESCRIPTION TAG. FIG. 6—REQUISITION BLANK. FIG. 7—INVOICE STAMP

Locomotive Cranes of Pacific Electric Railway

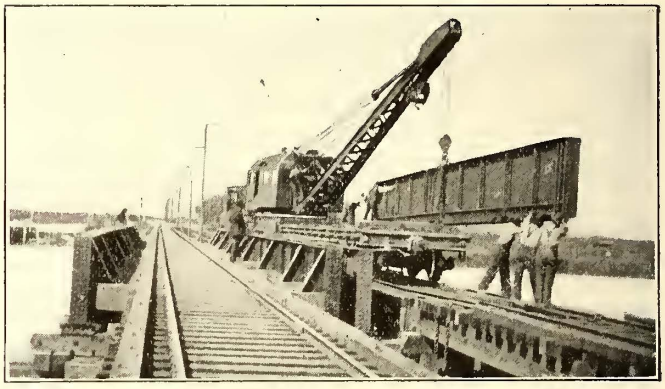
The Author Describes the Crane Equipment Used by This Company and the Work That Is Done with It

BY CLIFFORD A. ELLIOTT
Cost Engineer Pacific Electric Railway, Los Angeles, Cal.

The first electric crane purchased by the Pacific Electric Railway was placed in service in January, 1913. It was a 60-ton wrecking crane built by the Industrial Works of Bay City, Mich., and it has given valuable service in rerailing box cars and freight motors in several minor freight train wrecks. This crane has also served advantageously and economically in setting steel bridge girders, placing riprap rock at bridge approaches and along banks of streams for flood control, and setting railroad crossings and other heavy special-work layouts in place, as well as in the material store yards in loading and unloading rail and various classes of heavy material. The boom can be operated through a complete circle, whereby "bad-order" carloads of rail received at the yards are often transferred with dispatch by swinging the rail from the "bad-order" car to another car placed immediately in the rear of the crane on the same track. Sorting of a car of miscellaneous track material has also been accomplished by the same method. Recently the company erected with its own forces one of three proposed divisional carhouses and store track layouts. The timber trusses, bays and framework were erected in form on the ground and then placed in final position with the crane, this economical manner of handling the work effecting a great saving.



SHOP-BUILT CRANE USED BY MAINTENANCE-OF-WAY DEPARTMENT



PACIFIC ELECTRIC WRECKING CRANE PLACING BRIDGE GIRDER

In consequence of the successful operations of this first crane equipment, it was deemed expedient during the year 1915 to place in service a lighter capacity crane for doing rapid work in the various municipalities on the Pacific Electric Lines where traffic congestion, restrictive ordinances and undesirable conditions made it impractical to operate the larger crane. An obsolete 60-ton Vulcan steam shovel, with its swinging gear and hoist but without its steam propelling equipment, was rebuilt for the purpose, the boilers being removed and electric driving motors installed. This shop-built crane is of 5 tons capacity. The boom has a 30-ft. radius, and a vertical rise of 25 ft. is obtainable without obstruction of the trolley, or 18-ft. when the trolley interferes. An idler car is always included as part of the crane equipment, as is also a full set of track tools. Six 600-lb. scrap car wheels are carried on the back of the car as a counter weight. The total gross weight of the crane and equipment is 91,000 lb., and because the operating motor is set well back in car the balance is well maintained.

Since this crane was placed in service, a second rebuilt equipment of similar type has been provided for the exclusive use of the store department at the company's material yards, thus permitting the first shop-built crane to remain constantly in the maintenance of way department. This has resulted in more efficient work and elimination of interference to the department's maintenance programs, which have suffered through loaning the crane at times for the store department's work. The crane in the service of the store department is of only 3 tons capacity because it has a 36-ft. boom and a limited counterbalance. The extra length of boom required by the store department is for handling long steel and wooden trolley poles, rail of 50-ft. and 60-ft. lengths, and miscellaneous other material.

The Pacific Electric is constantly devising original methods of handling various classes of work for the cranes, whereby the cost of the work may be reduced to the minimum, and the element of dispatch in so handling the work is of the highest order. When this company recently constructed its new overhead viaduct in the rear of its Main Street terminal, two tracks existed on a portion of the old viaduct which could not be taken out of service while rearranging special work of the new layout. With the cranes the new special work was installed and old layouts were relocated while traffic was stopped, within a minimum time and with very little delay to train operation. In addition all track material for new tracks on the viaduct was unloaded with much rapidity.

The maintenance of way department maintains several branch material assembly yards at various points on the lines. At the most centrally-located yard a large stationary electric motor-driven rail bender is operated, designed particularly for curving the tee and girder sections of rail used in city paved streets. The rail is shipped to this yard and the crane unloads each rail separately. Then when it is curved by the rail bender, the rail is returned by the same operation to the same car or another car for shipment to the various jobs. Thus there is a considerable saving in time, labor and handling cost.

Recently the company performed a large job of grading for removal of a bluff to provide ground for one of its new divisional carhouses. After graders and steam shovel crews had left the work, the crane was used in leveling down the slope. A wooden slip was attached by a chain, and the boom of the crane adjusted so as to drag the slip over the graded area, thus performing cheaply a task that would have been difficult and tedious if attempted by manual effort.

The way department crane has been found of great aid in reconstruction work on single-track lines, where service is frequent and it is undesirable to detour traffic. After the 50-ft. lengths of rail are distributed with the crane alongside the track, a regular rail fork is attached to each rail in the center and the track men attach one pair of continuous joints, inserting only one bolt to secure it temporarily. Then the crane lifts the rail, setting it in place on spaced ties, while twenty track laborers immediately spike the rail and bolt the joints. The entire transaction consumes five minutes for each rail length handled. Since the length of crane boom is 30 ft., the 50-ft. rail lengths are conveniently handled.

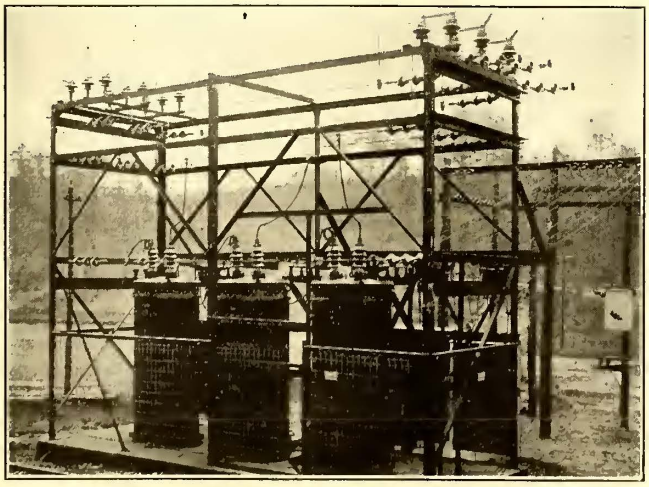
When the company's bridge and building department completes reconstruction of pile trestles, the crane serves in following the work and picking up scrap bridge timbers and piling, and gives the same service in unloading new material for the repair work of this nature. During the heavy spring rains each year there have been several seasons when severe floods occurred and considerable damage was done. In such cases the crane gives excellent emergency service in quickly reaching the various bridges on the lines and it is utilized in placing boulders to obstruct the flood waters from overflowing streams, thus preventing the waters changing their course and seriously damaging the tracks or disrupting operations of the lines. At the same time the crane is used in removing large obstructions that may have been washed up against bridges and are likely to cause extensive damage unless removed at once.

On the double-track construction of the Pacific Electric crossovers are frequently relocated from ¼ mile to 1 mile or more farther up or down the line. The expense of relocating these facilities has been lessened one-half, as compared with former practice, and the quickness of making such changes minimize delays to traffic.

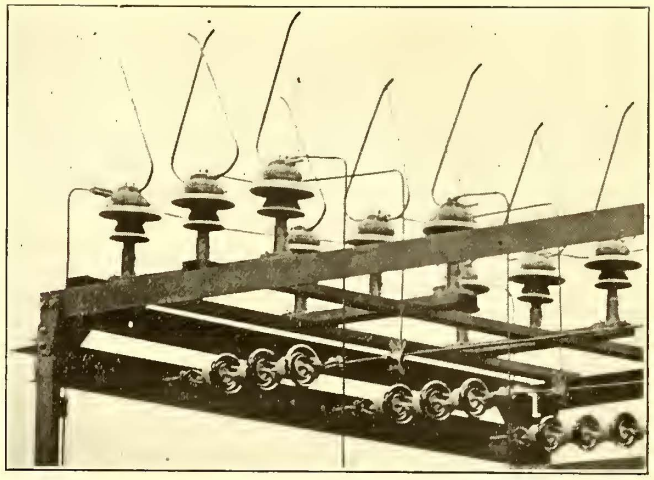
Georgia Railway & Power Company's Home-Made Outdoor Substations

About five years ago the Georgia Railway & Power Company began the installation of outdoor substations of its own design, using horn-gap lightning arresters, switches, and similar apparatus of its own special design and manufacture.

The accompanying illustration shows a substation at Cartersville, Ga., which is typical of the substations being built by the company. This is a three-phase, 60-cycle station with three General Electric 38,000/2300-volt transformers. The insulator pins are made of paraffined locust, which is the company's standard, and they are securely held in place by means of a split casting which firmly clamps the lower part to the pin. Care is taken to anchor the lines directly to the framing so that the side strain on the pins does not exceed 600 lb. The insulator cap and pin are removable, so that by making proper jumper connections insulators can be replaced without opening the circuit. Also, unlike standard apparatus, the transformer taps can be changed to raise and lower the voltage without shutting down the station.



OUTDOOR SUBSTATION WITH HOME-MADE CONSTRUCTION



HOME-MADE INSULATOR PINS AND HORN GAPS

During 1916 the company built substations of the kind described above at the rate of about one a week.

Operating Rotaries Without Compounding on a 1200-Volt Heavy Railway

BY E. R. CUNNINGHAM
Electric Superintendent Oregon Electric Railway, Portland, Ore.

Contrary to usual interurban practice, we operate our rotary converters as shunt-wound rotaries, without any compounding. We find this method of operation desirable for several reasons. Our system is quite different from the ordinary interurban railway as it is not operated in accordance with interurban practice, but just like a steam railroad, and by steam railroad officials. Thus, cars are never run singly on our lines, but in trains of from two to ten cars each, the average train consisting of about three 50-ton cars, with five to seven-car trains very common. About the only difference between our method of operation and that of a steam line is that since we use electricity, power can be applied to from 50 per cent to 75 per cent of the axles in the train, making the acceleration much faster than with either a steam or electric locomotive.

Five of the eight substations, which furnish power to about 175 miles of main-line track, have but one 500-kw. rotary each. The excessive swings on these stations incident to the rapid acceleration of a heavy train near the station makes it very desirable to operate the rotaries with a drooping characteristic. In our case this could best be obtained by cutting out the compound windings altogether and operating the converters shunt wound. Inasmuch as there are never more than two or three trains pulling on any one substation at a time, and usually but one train, we do not find it any disadvantage to allow the voltage to drop slightly at the substation when heavy trains are starting near it. On the

contrary, we find that it is a great advantage for the reason that when a train is starting, it is necessary either to cut down the voltage by means of grid resistors carried on the train, or to allow it to drop at the substation. There seems to be no good reason for carrying a large amount of grid resistors on the train to reduce the voltage at the same time that it is being raised at the substation by means of compound winding, if such windings are used.

Moreover, by allowing the voltage to drop slightly at the near station, the two adjacent substations are enabled to help by picking up a part of the load. With the compound windings cut in on rotary converters or on motor-generator sets under like conditions, the substation which is overloaded tends to boost the voltage. Not only will it then carry all the load on the line, but it will actually tend to pick up the adjacent stations and motor them unless knocked off the line by the overload—which is usually the case. We considered it far better, and results have demonstrated that we were right, to allow the voltage to drop at the station where the overload occurs, so that the station will stay on the line and deliver its full rated capacity at a reduced voltage, instead of going off the line entirely and not carrying any part of the load. Since cutting out the compound windings, flashovers have been eliminated almost entirely. The effects of a flashover, when one does occur, is greatly minimized, for the reason that the field excitation drops as a result of the short-circuit. Furthermore, the flashover is not nearly as vicious or destructive as it would be if the excitation was held up by the series winding, which would be the case if it were cut in.

We have also grounded the frame of our rotaries through a limiting resistance to minimize the destructive effect of flashovers. Before these changes were made, we found that the flashovers on our 1200-volt rotaries were most destructive.

How to Burn Anthracite Buckwheat Instead of Bituminous Coal in a Small Railway Plant

In a recent investigation of the power plant of the Concord, Maynard & Hudson Street Railway at Maynard, Mass., Prof. Edward F. Miller of the Massachusetts Institute of Technology outlined the methods to be followed in burning buckwheat instead of soft coal in the boiler installation. The boilers are of the Aultman-Taylor type, each having about 56 sq. ft. of grate surface and a rating of about 230 hp. Experience at the old power plant of the Institute in Boston indicated a large saving by burning buckwheat at times of moderate load. Professor Miller pointed out that in order to burn buckwheat at the Maynard plant it would be necessary to reduce the area of the openings through the grate and to provide a forced draft to furnish air under pressure to the ash pit.

This draft should be varied according to the depth of the fire and should be so regulated that the pressure over the fire is just about atmospheric. There would be no difficulty in burning 20 lb. of coal per square foot of grate area per hour, and a maximum of 28 lb. could be attained. At this higher rate of combustion there would be required 1 in. or 1¼ in. of air pressure on the discharge side of the blower. The evaporation of water per pound of buckwheat coal is about 8 lb., and from 2 to 2½ per cent of the steam would be taken by the fan engine. In winter this steam could be exhausted into the heating system.

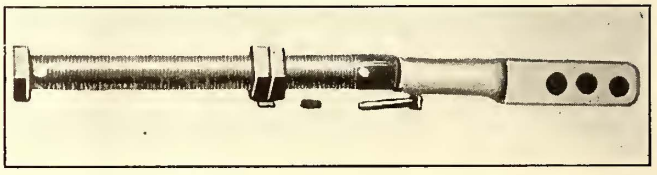
Each boiler burning about 20 lb. of coal per square foot of grate per hour and evaporating about 8 lb. of water per pound of coal would develop about 299 hp. The amount of air required for the two boilers when each is developing 299 hp. would be about 10,200 cu. ft. per minute, and a 5-hp. engine would be required for the fan. The discharge from the fan would be brought down through the side of the setting into the ash pit with a damper in the discharge pipe close to the boiler. It is necessary, Professor Miller pointed out, for the fan engine to have a steam valve between the governor and the boiler controlled by a damper regulator operated by the boiler pressure. A ¼-in. by-pass around the throttle makes it possible to keep the fan engine turning slowly, even though the damper regulator may have cut off the main steam supply to the engine. This prevents the stalling of the engine on the center.

Steam is supplied from the boilers to the heating system in the carhouse. About 5000 ft. of 1¼-in. pipe are installed and the estimated heating surface is 2170 sq. ft. of radiation. It is assumed that ½ lb. of steam per hour is condensed per square foot of heating surface, or 1185 lb. per hour, including a small building with 200 sq. ft. of radiating surface. Were this 1185 lb. of condensate to be returned to the boiler room at a temperature of 200 deg. there would be a saving of 140 B.t.u. per pound of water if the feed water taken in from the outside were at 60 deg. It was estimated that this return of condensate would save 432 lb. of coal per day of twenty-four hours, and the heating season of 128 days would enable a total saving of 55,296 lb.

Flexible Joint Remedies Turnbuckle Brake-Rod Failures

The Elmira Water, Light & Railroad Company has had considerable trouble due to the breaking of the turnbuckle brake rods on Standard O-45 maximum traction trucks. This rod is a rigid member carrying a turnbuckle, and failure was due to the compressive forces which were sometimes applied eccentrically so that they tended to bend the rods.

This was remedied by making a turnbuckle brake



TURNBUCKLE BRAKE ROD WITH FLEXIBLE JOINT

rod with a joint, the latter having sufficient play in it to avoid the bending action. One of these rods is shown in the accompanying illustration. To make the joint, a socket 4½-in. long and 1¼-in. in diameter was drilled in the threaded section. The rod that fits therein is 1 in. in diameter so that there is ¼-in. play, which is enough to take up the bending action. The two parts are held together by a loose-fitting bolt.

On the United Railroads of San Francisco, Cal., it is customary to give the air-brake reservoir a thorough test at every overhauling; but without removing it from the car. After the drain cock has been removed and an air vent attached, water is pumped into the reservoir to a pressure of 160 lb., although the normal air pressure for braking is but 70 lb. This test has proved effective in avoiding reservoir troubles.

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Mayor on St. Louis Controversy

Sets in Motion Plan for Renewing Conferences with United Railways—First Meeting on June 20

The plan of the city of St. Louis, Mo., to take up actively again the settlement of its differences with the United Railways is gradually unfolding. As stated in the ELECTRIC RAILWAY JOURNAL of June 16, page 1109, Mayor Kiel announced that on June 15 he would send a special message to the Board of Aldermen asking the members to appoint a committee of three who with the Mayor and City Counselor shall be authorized to take up the existing controversy with the United Railways over the mill tax. The Mayor carried his plan to the Board of Aldermen on June 15, in accordance with his announced purpose, but Alderman Schwartz and others rebelled against the plan of the Mayor to create a special committee including City Counselor Daues to conduct United Railways compromise negotiations. By a vote of nineteen to nine the Aldermen decided to eliminate Counselor Daues, an appointive official, and substitute Comptroller Louis Nolte, an elective official. Alderman Schwartz is chairman of the public utilities committee, and the effect of Mayor Kiel's special request was to take away from the standing committee headed by Mr. Schwartz the consideration of the United Railways tangle. Nathan Hall, acting president of the Board of Aldermen, appointed as a special committee of aldermen, Messrs. Tamme, Bergt and Schrantz. Comptroller Nolte and Mayor Kiel will act also for the city.

A few minutes after this matter had been disposed of Alderman Tamme introduced a second resolution directing the standing committee on streets, sewers and wharves to take steps to select the route of an interurban loop downtown in connection with the free bridge. This was a subject of legislation which for two years had also been referred to the public utilities committee.

On the same day Mayor Kiel wrote a letter to Richard McCulloch, president and general manager of the United Railways, asking him to name a committee of five to confer with the city's committeemen in the Mayor's office on June 20. The Mayor said this meeting and all subsequent ones would be open to the public.

Rapid Transit Commission Suggested

Mayor Davis of Cleveland Announces His Intention of Seeking to Create a Rapid Transit Commission

As a result of recommendations of the city planning commission and a number of civic organizations, Mayor Harry L. Davis of Cleveland, Ohio, has announced his intention of asking the City Council to authorize the appointment of a rapid transit commission, the submission to the voters of a bond issue for a sufficient amount to extend the subway entrance to the new Cuyahoga River bridge to the Public Square, and for the construction of an underground terminal at the Public Square. This work would require about $3,500,000.

The city charter provides for a rapid transit commission of five members to serve without compensation, when it is decided that such a commission is necessary. The commission would be authorized to lease any underground railway or rapid transit line to the Cleveland Railway. In this its operation would be similar to that of the Cincinnati plan.

It is believed by members of the city planning commission and others that, if the subway is ever to be extended in Superior Avenue to the Public Square, now is the time to do it while the underground approach to the bridge is under construction.

The proposed plans include two loops of track under the Public Square and terminal arrangements which would provide a concourse over the tracks, so that patrons could reach their cars directly by descending a stairway from this concourse, thus making it unnecessary to cross the tracks.

Arguments were presented to the Mayor for the immediate completion of this portion of an underground system, extensions in other directions to be taken up later. The experience gained in building the proposed stretch of underground road would reach many things that are peculiar to the city, and in future work officials could be guided by the experiences in this construction.

Chicago Legislation Lost

Chicago Traction Bills Die in House Committee—Development as Recommended by the Chicago Traction and Subway Commission at Standstill

After the four Chicago traction bills intended to supply the enabling legislation for Chicago's extensive traction plan had passed the Senate with a generous majority in their favor, they were reported to the House committee on public utilities and went to the third reading, when the committee adjourned finally without a record vote on any of the four measures. The General Assembly adjourned on Sunday morning after an all-night session on June 16. This means that the development of the Chicago transportation plan as recommended by the Chicago Traction & Subway Commission is at a standstill for a period of two years, or until the next meeting of the State Legislature.

Strike in Dayton

Sixty-six Employees of Dayton Line, Operating Fourteen Miles of Road and Fifty Cars, Struck on June 16

Sixty-six motormen and conductors of the Dayton (Ohio) Street Railway on June 16 drove their cars to the carhouses at 9 a. m., and declared a strike because the company had refused to recognize the union. They had previously been granted an increase of wages and were working under a schedule ranging from 26 to 32 cents an hour based on the length of service. Demands were made for 31 cents for night men and 32 cents for day men, with 16 cents an hour for substitutes.

The company has announced that the cars will be operated with volunteers from its own organization and new men living in the city. Not only had wages been increased, but the company had offered the men insurance entirely free of cost to them in lieu of recognition of the union. Several conferences were held with the men, and the officers of the company had been led to believe there would be no strike. It is said that organizers have been at work among the men for some time.

Among other things contained in a statement issued by the company is the following:

"The development of negotiations which led up to the present situation seems to indicate that our men are being persuaded against their own interest by an unknown influence, and the company will, therefore, endeavor to settle the matter without regard to the question involved in the recognition of the union or the right of doubtful outside influences to dictate its policy."

The wages of employees of other roads operating in the city have been increased, but as none of them recognize the union it is feared that an effort will be made to involve the men on the other lines.

Strike Investigation Closed

Washington Inquiry Concluded—Hearings in Progress More Than Five Weeks

The case before the Senate committee which has been investigating the recent strike of the employees of the Washington Railway & Electric Company, Washington, D. C., was closed on June 16, when counsel concluded their arguments. Senator Pittman announced that Senator Hughes, the chairman of the committee, who has been unable to attend any of the hearings, would probably not be able to join with the committee in its report to the Senate. He said, however, that Senator Hughes undoubtedly would be permitted to file his report, or to join with the committee in its report later.

Members of the investigating committee on June 18 began to frame individual statements of the facts in the case as they appear to them. As soon as all the members of the committee have these statements ready Senator Pittman, acting chairman of the committee, will call a meeting. He expects it will be possible to get the committee together in about a week's time. After the committee in executive session has considered the facts in the case it will then work on its recommendations to the Senate. Along with the suggestions made by counsel for the strikers, for the company and on behalf of the public, the committee will give consideration to the bill submitted to it by Secretary Wilson of the Department of Labor. This measure is designed to put an end to the causes of strikes and lockouts by clothing a commission with power to settle the questions of wages and hours of labor. The hearings before the Senate committee have extended over a period of five weeks.

Strike in Vancouver

A strike of conductors and motormen on June 13 tied up all the lines in Vancouver, North Vancouver and New Westminster, B. C., owned by the British Columbia Electric Railway. Not a wheel turned on the day of the strike, and the company made no effort to take the cars out of the carhouses. Hundreds of jitneys did a thriving business, but there were thousands of early workers who had to walk in from their homes in the outlying districts. The representatives of the union of employees presented a demand recently for an increase in wages to meet the high cost of living. The company offered a compromise which was not accepted.

It is stated that the company will make no effort to operate. Jitney competition has caused such a serious falling off in revenue that the cars in the city have for months been operated at a loss. There is said to be no intention of securing new men to replace the strikers. The strikers, it is claimed, realize that the company is unable to pay higher wages, but the men maintain that they cannot keep their families on the present wages. There has been no manifestation of hard feeling between the company officials and the union leaders, and both the company and the striking employees are looking toward the City Council for action that will remove the competing traffic.

A late report from Vancouver on the strike states that the 800 strikers on the company's lines have been joined by the 500 men employed by the same company in Victoria and that no cars are being operated in either city.

Columbus Suburban Franchise

The Columbus Railway, Power & Light Company, Columbus, Ohio, was granted a twenty-five-year franchise for its Westerville suburban line by the Franklin County Commissioners on June 13. This line is 10.364 miles in length. So long as the franchise has an unexpired period of not less than fifteen years, the control of the service is to be in the hands of the public, through the commissioners. They will exercise this authority through a street railway commissioner whose salary of not more than $50 a month is to be paid out of the revenue of the line.

The company is to receive an income of not more than 6 per cent on its present investment and 8 per cent on future capital required. The value of the investment was fixed at $350,000. For the first ten years the company waives all earnings on $75,000 of this amount, but a working capital of $25,000 is included, which makes the amount on which return shall be paid $300,000. All revenues are to be turned into the working fund and all expenses paid from it.

Three fare zones are provided between the Columbus city limits and the Westerville terminus, and the rate of fare for each zone is the same. There is to be a sliding rate of fare, the lowest to be 2½ cents per zone and the maximum 6 cents. At the start the fare is to be 4 cents per zone. Should this prove too high, the fare will drop to 3½ cents per zone when the working fund reaches $35,000. On the other hand, if it is too low, the rate will advance to 4½ cents per zone when the working fund reaches $15,000. In other words, the working fund is the barometer. The cash fare is to be 5 cents as long as the ticket fare is 4½ cents or less per zone, and 6 cents when the ticket fare is more than 4½ cents.

The public may purchase the line at the actual value ascertained at the time of purchase, plus 10 per cent. All disputes are to be settled by arbitration and the company must pay its share of public road improvements.

The company advertised the franchise in the Columbus *Dispatch* of June 16 as "a model for future street railway franchises in Ohio."

Baltimore Promotes Social Activities

United Railways & Electric Company Organizes Club for Social and Recreation Purposes

With a charter membership of 700 or 800 the employees in the offices of the United Railways & Electric Company, Baltimore, Md., are forming a club for social and recreation purposes. For years the company has provided clubrooms, bowling alleys, baseball diamonds, etc., for the platform men in its employ, but there has never been a definite organization for similar activities among the office employees.

T. A. Cross, president of the company, in a letter indorsing the movement has outlined the scope of the new organization, and made certain suggestions for the consideration of the board of governors of the new club. He has made it very clear, however, the participation of the officers as such will be in an advisory rather than in a governmental capacity.

The organization is to be composed of both women and men in the company's employ. Mr. Cross has indicated that the company will provide commodious and well-equipped clubrooms downtown close to the general offices, and will set aside for athletic purposes a portion of the tract owned by the company at its Columbia Avenue shops. This new field will not conflict with the athletic field at Columbia Avenue now used by the conductors and motormen. The name of the club will probably be the United's Recreatoinal League. Membership is to be contingent upon employment by the company, though the matter of making certain concessions to members of the families of employees is to be taken up at the organization meeting.

President Cross Indorses Project

President Cross in his letter indorsing the project said:

"In considering the question in its entirety, two sides have appeared to me. First, since an employee spends so much of his life in the place of his employment, it is highly desirable, from his standpoint, that both the place and the people with whom he is associated should be altogether congenial in order that his work may not become mere drudgery. An organization or a series of recreational activities that will throw the employees together more in social intercourse is bound in time to make the business surroundings more congenial. This is the employees' side. Second, when a body of employees is happy in the working surroundings and harmonious relations are maintained between the individual employees, they are bound to be more efficient. As a strictly business proposition, then, I feel that in offering such a project the company's heartiest support, I am simply making an investment which should be parallel to providing proper ventilation or clean floors in the offices. This is the company's side. Keeping both sides of the whole matter constantly in mind, I believe that the little innovation which it is now proposed to introduce will, in course of time, prove exceedingly beneficial to all concerned."

Compromise in Duluth

Agreement Reached with City as a Result of Which Condemnation Proceedings Will Be Withdrawn

The Duluth (Minn.) Street Railway has entered into a compromise agreement with the City Council as a result of which condemnation proceedings to take over the system under municipal management will be dropped. The company agrees to the immediate construction of an extension of its line from Morgan Park to New Duluth, a distance of 2¾ miles, a 5-cent fare on all lines at the end of the war, or in any event not later than Jan. 1, 1920, and universal transfers on all lines now constructed or to be built within the city limits.

The agreement was reached at a conference on June 18 between the City Commissioners and A. M. Robertson, Minneapolis, president of the company. It calls for the operation of the New Duluth line before Dec. 31, 1917. The United States Steel Corporation, through whose property the extension will be projected, is now preparing the right-of-way at a cost to it of $146,000. Under the terms of the compromise the company will continue to charge an extra fare for rides west of Eighty-fourth Avenue West going west and east of Forty-ninth Avenue West going east on the Morgan Park-New Duluth line until the time fixed by the agreement. The attitude of the city officials in the matter is expressed by Mayor Magney, who said:

"In view of the unsettled world conditions the adjustment now made is probably the best that could be obtained. It complies with the original demands of the city from the street railway before condemnation proceedings were authorized by the City Council. Municipal ownership of the street railway system is simply deferred, and the condemnation proceedings may be instituted at any time the city may find it necessary. The policy of the street railway in the future will have to be different from that which it has pursued in the past."

P. G. Phillips, commissioner of public utilities and a staunch advocate of municipal ownership of all utilities, cast the only vote against rescinding the action of the Council in condemning the street railway system.

Public Utilities in Russia

Under the title, "Public Utilities in Russia" there appeared in the May issue of *Russia*, a journal of Russian-American trade, an article in part as follows:

"Among the many lines of investment in Russia which will deserve the attention of American capital probably few are likely to be more attractive in the combination of safety with good returns than the loans which will be made by hundreds of Russian cities and towns for the construction of public utilities. On this subject Richard Martens of R. Martens & Company, Inc., New York, in a note among others on the results of his investigation of Russian conditions last summer, says:

"'Nearly all the cities and towns visited on our tour which do not already possess requisite civic improvements are preparing to float loans for the purpose of constructing tramway, lighting, water-supply and drainage systems—only another evidence of the widespread awakening of the people at large and their demand for improvements. As a result of the towns having spent little or nothing on municipal improvements, the municipal indebtedness is lower than anywhere else in the civilized world. Furthermore, before a municipal loan is floated, the proposal must be submitted in full detail to the Minister of Finance at Petrograd. There the matter is carefully studied and worked out with due consideration of the existing tax rate; and when finally the loan is approved it is fully guaranteed by the government.'

"The extent to which the town and urban areas of Russia lack the public utilities that the whole people is now demanding may be judged from certain statistics of 1913. In respect to tramways, or street railway systems, the number of towns equipped is of course much smaller than those having some sort of general water supply. Electric lighting, on the contrary, has made considerable progress, having been adopted in a considerable number of small towns."

Attempt at Strike Fails

Employees at Bloomington Stand by the Company Against Outside Influence

The breaking of an agreement existing between the car men and the Bloomington & Normal Railway & Light Company, Bloomington, Ill., resulted in an incipient strike of about 15 per cent of the men employed by the company on May 18. Previous to this time the car men had been working under an agreement dated to expire on Sept. 1, but the company, realizing the increase in living costs, offered a new agreement to be effective from June 1, providing for an increase of approximately 10 per cent.

The proposed new agreement was signed by a majority of the men. Seven of the car men, under the leadership of outside organizers, refused to accept the agreement and five more were discharged for cause. These twelve employees then declared a "strike" against the company. Their places were immediately filled, as were those of fourteen additional men who left their posts.

The company continued to give full car service with the exception of a slightly curtailed night schedule during the early period of the trouble. Traffic has shown only a slight decrease from normal.

A campaign of intimidation and therats against working car men and their families made resort to the courts necessary, and on June 9 an injunction was issued by the court in favor of the company and its employees restraining the strikers from using violence against the company's employees and property, intimidating passengers or distributing literature designed to discourage riding upon the cars.

Previous to the granting of the injunction the men issued the following statement to the public:

"We, the undersigned employees of the Bloomington & Normal Railway & Light Company, being motormen and conductors, desire the public to know that we are satisfied with our employment, and that the wages and conditions are agreeable. Each of us is working under an unexpired contract of employment. All we ask is to be left alone so we can fulfill our duties."

This statement was signed by fifty of the working car men and had an appreciable effect upon public sentiment.

In sympathy with the striking car men a majority of the employees in the power house left employment with the company on June 12. Their places were filled promptly and power service continued without interruption.

An agreeable feature of the unpleasantness has been the demonstration of an excellent spirit of co-operation between the faithful employees and the company. This is commented upon editorially in the current issue of the *B. & N. Light*, the company's house organ. The title of the editorial is "Boys, We Thank You." It follows in part:

"The spirit shown by the employees of this company has been an exhibition of loyalty and bravery seldom equaled. It is a matter of deep gratification to know what loyal fearless fellow workers we have and we take this opportunity of assuring all of you of the deep sense of obligation which your splendid conduct has left in us.

"Your brave action in sticking to your posts has meant that we have been able to give to the citizens the service which it is our duty and obligation to give. To every man who has fulfilled the trust placed in him are due the thanks and the deep appreciation of the city.

"All we ask is that we be allowed to attend to our work without annoyance, molestation or interference. We obey the laws, we fulfill our obligations, not only as an industry but as citizens, and the activities of outside trouble makers and agitators seeking, for their own advantage, to stir up mischief, have not nor will they cause us to swerve from our work so necessary to the welfare of the city.

"Your welfare and interests are to us a matter of deep concern and we promise you that we shall leave nothing undone to lighten your added burdens. Your personal courage speaks for itself.

"If it has done nothing else but shown your loyalty and good will and brought out this spirit of fellowship and co-operation, the situation will have been worth all the annoyance it has caused."

Southern Pacific Electric Extension Opened.—The electric line extension of the Southern Pacific Railway from Whiteson to Corvallis, Ore., began operation on June 17. The extension is 40 miles long.

Employees Must Stand Through Congested Portions of Cities.—While street and interurban railways must furnish seats for conductors and motormen at other times, Attorney General McGhee of Ohio has ruled that the men in charge of cars must stand while passing through congested portions of cities.

I. C. C. Bill Before House.—The bill increasing the number of members of the Interstate Commerce Commission from seven to nine was brought up in the House on June 13 and was made unfinished business whenever that order of business is again reached, which may be in two or three weeks. The bill has already passed the Senate.

More Utilities Buy Coal Properties.—The Elmira Water, Light & Railroad Company, Elmira, N. Y., is reported to have purchased for $150,000 the properties of the Queenstown Coal Company at East Brady, Pa., with an annual output of 30,000 tons, while the American Light & Traction Company is reported to have bought certain properties of the White Star Coal Company in Harlan County, Ky.

Men at Alliance Get Demanded Increase.—The board of arbitration on June 15 decided in favor of the employees of the Stark Electric Railroad and the Cleveland, Alliance & Mahoning Valley Railway and awarded them the advance in wages demanded, 5 cents an hour. All other matters up for settlement between the company and the men were agreed to before the strike was declared. The split came over the question of wages.

Atlantic Coast Assessment Confirmed.—The Supreme Court of New Jersey has affirmed the assessment levied by the State Board of Taxes and Assessment upon the gross receipts of the Atlantic Coast Electric Railway, Asbury Park, N. J., amounting to $363,742. The company sought to have a reduction of $67,752 made for current delivered to the Atlantic Coast Electric Light Company, but the Supreme Court ruled that the company must pay its tax on this sum.

B. J. Arnold Engaged by Baltimore.—The Mayor of Baltimore, Md., has engaged Bion J. Arnold, Chicago, Ill., as consulting engineer to advise the city in connection with the plans for improvement which have been laid before the Mayor by the Pennsylvania Railroad. These plans include new tunnels through the city to convert the Philadelphia, Baltimore & Washington into a four-track railroad. The public meanwhile is urging the Mayor to require the railroad to install electricity as motive power on its tunnel lines.

Third Arbitrator to Be Called in East St. Louis.—The two arbitrators who have been considering the differences between the employees and the East St. Louis & Suburban Railway, East St. Louis, Ill., have been unable to agree on the wage question and have decided to name a third arbitrator to act with them under the terms of the arbitration agreement. Up to June 19 ten names had been submitted, but none of those proposed was acceptable to both sides. The situation remained unchanged on June 21 with respect to the selection of the third member.

Twin Peaks Tunnel Line at San Francisco Soon Ready.—The work of lining the Twin Peaks tunnel has been completed and the finishing touches are being put on the stations at Laguna Honda and the two portals. The Board of Public Works called for bids for June 20 on the construction of a double-track line from Market and Castro Streets through the tunnel to Sloat Boulevard beyond the west portal, a total distance of about 3 miles. It is expected that this work will be completed in time to allow cars to be operated through the tunnel before the first of next year.

Budget Plan for Bonds Advocated at Cincinnati.—Alfred Bettman, speaking before the New Charter Commission recently, advocated that bond issues for each year be made up on the budget plan by the Mayor and that all be acted upon at once. This would prevent the haggling and unsatisfactory results that sometimes arise out of bond legislation all through the year. Mr. Bettman also argued in favor of creating a municipal public utilities commission, which would have charge of all the utilities of the city. This would mean that the jurisdiction of the Rapid Transit Commission would be changed to include all other utilities in addition to the new loop that is to be constructed.

Wage Conferences in Ogden.—Representatives of the employees of the Ogden, Logan & Idaho Railway, Ogden, Utah, and the officials of the company are conferring over the matter of wages. Under the old scale the men received 25 cents an hour for the first two years, 27½ cents for the third and fourth years, and 30 cents an hour thereafter. The company offers to sign a new contract providing for the payment of 25 cents an hour for the first year, 27 cents an hour for the second year, 30 cents an hour for the third and fourth years and 32 cents thereafter. It is said that the men consider the offer of the company inadequate owing to the present era of high costs.

Frontier Case Again Before Commission.—Further objections were made on June 7 before the Public Service Commission for the Second District of New York by the New York Central Railroad against the project of the Pennsylvania Railroad and the Delaware, Lackawanna & Western Railway to use the tracks of the Frontier Electric Railway for a main connecting link for their freight traffic between Buffalo and Niagara Falls and Canada. It was indicated by the commission that it would require still further testimony before taking action on the revocation of the Frontier's certificate. This matter has been referred to previously in the Electric Railway Journal for Jan. 20, page 135; Feb. 10, page 262, and April 14, page 706.

Paving Claims Paid.—The Central Park, North & East River Railroad, New York, N. Y., has paid to the city $184,524, representing the first dividend of 75 per cent upon judgments obtained by the city and claims allowed by the referee. The actions upon which judgments were obtained and the claims established before the referee were, for the most part, predicated upon certain provisions of the railroad law, which obligated street railways to maintain the pavement between their tracks and for 2 ft. outside. Because of the refusal of the Central Park, North & East River Railroad to maintain the pavement areas when notified to do so, the city did the paving at its own expense and charged it to the company. The case was carried by the railroad through the Court of Appeals.

Injunction Against Abandonment of Unprofitable Line.—A public carrier will not be permitted to abandon a branch of its system because it is not profitable, states Judge Arthur M. Wallace, in the Jefferson Circuit Court at Louisville, who has granted a temporary restraining order against the Louisville (Ky.) Railway. The company, required by the Board of Park Commissioners to remove a double track on Forty-sixth street to the side of the street, has proposed abandoning the half mile of track, which leads from the terminus of the Broadway line to a summer amusement park, operated only in a small way and served by another line of the railway. Suit brought by the owner of the amusement resort led to the injunction. Cost of the changes to the railway would be $14,000, it was stated by the company, and patronage would not justify the outlay.

Seattle Mayor States His Attitude on Bridge Matter.—Although the City Council of Seattle, Wash., has passed two ordinances both intended to prevent street railway traffic by the Puget Sound Traction, Light & Power Company over the Fremont bridge, until the company agrees to pay $1,000 a month for the privilege of operating over the structure, or in lieu of that a lump sum of $60,917 and $333 a month thereafter, Mayor H. C. Gill has announced that cars are to operate over the structure. The Mayor, who has the power to prevent the operation of cars over the bridge, stated that he would not take any action to deprive the people of the north end of the city of car service. He regards the interests of the public to be paramount to any dispute between the city and the company and expresses the opinion that the question of rental is one that can be agreed upon by the parties interested, or be fixed by the courts.

St. Louis Loop Matter Up Again.—In addition to negotiating the compromise with the United Railways, St. Louis, Mo., the special committee appointed from the Board of Aldermen was instructed to investigate the question of a

municipal interurban loop, down town, to accommodate the electric railway lines that use the Free Bridge. The municipal loop question has been under consideration for more than a year by the Board of Public Service. Two routes have been suggested. The route which is favored by the board at present would be north on Seventh Street from the Papin Street terminus of the highway approach to a loop bounded by Walnut, Sixth, Chestnut and Seventh Streets. The other route under consideration would extend north on Fourth Street to Morgan, west to Eleventh Street, connecting with the Illinois Traction System tracks, and back to Seventh Street and Clark Avenue by way of streets that have not been determined.

Bonds Proposed for Tacoma Municipal Extension.—First action toward the building of the Eleventh Street municipal railway extension to the east side of the bay to connect with the big shipyards was taken by the City Council of Tacoma, Wash., recently when the ordinance was introduced authorizing the issuance of $180,000 of city utility bonds to provide funds to build, equip and place the line in operation. The line may be single or double track. C. D. Atkins, the commissioner of public works, is placed in charge of construction. While no arrangement has been made for the sale of the bonds, it has been officially agreed that the money is to be taken temporarily from the light and power reserve fund. To make this possible it was necessary to include in the ordinance a clause requiring that the car line be operated to produce sufficient revenue to pay off the principal and interest. Should the line fail to provide this amount, the deficit is to be paid by drawing upon such sources of revenue as come from corporation taxes. These requirements were included in the ordinance through the necessity of protecting the city in the purchase of the bonds.

Seattle Elevated Will Cost $937,000.—According to a report made to the City Council of Seattle, Wash., by A. H. Dimock, city engineer, the extension of the municipal street railway proposed by Councilman Oliver T. Erickson, by the construction of an elevated street railway on Washington Street, from Fourth Avenue South to Railroad Avenue, and on Railroad, Whatcom Avenue and West Spokane Street, to the West Waterway, and an extension with the Ballard lines, will cost $937,000. The report places the cost of the double-track elevated of steel on Washington, from Fourth Avenue South to Railroad Avenue, at $550,000; cost of a double-track wood-trestle railway on Railroad Avenue. Whatcom Avenue, and Spokane Street to the West Waterway at $300,000; sidewalk along one side of the wooden structure along Railroad and Whatcom Avenues, $12,000; extension of Division A of the municipal line from Thirteenth to Fifteenth Avenue West, and from north end of Fifteenth Avenue N. W., bridge on Leary Avenue, to Market Street, $75,000. Mr. Dimock estimates that by building a portion of the line on Railroad, Whatcom and Spokane, where there are no railway tracks to interfere at the present time, the cost may be reduced about $40,000.

Kentucky Franchise Tax Decision.—As noted briefly in the ELECTRIC RAILWAY JOURNAL for June 16, page 1111, the railways operating in Kentucky have gained an important victory in a recent decision of the Supreme Court of the United States in the matter of franchise taxation. The finding applies to the electric railways as well as to the steam railroads. The Louisville & Interurban Railway was a party to one of the group of cases. The court in effect holds that railroads and public utility corporations have the right to the same equalization of their property values for purposes of taxation as is enjoyed by the owners of other property. The question common to all of the cases at issue was as to the rights of the railroads to have their property assessed for taxation at no higher proportion of its actual value than other property throughout the State is assessed. In its decision the United States Supreme Court upheld the Federal Circuit Court for the Eastern District of Kentucky, holding that property in general throughout the State is assessed at not exceeding 60 per cent of its actual value, and that the railroads have the right to insist that their properties shall not be assessed at more than 60 per cent of their actual value.

Financial and Corporate

Annual Reports

Havana Electric Railway, Light & Power Company

The comparative income statement of the Havana Electric Railway, Light & Power Company, Havana, Cuba, for the calendar years 1915 and 1916 follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	$6,017,708	100.00	$5,541,302	100.00
Operating expenses and taxes	2,443,885	40.61	2,337,506	42.18
Net earnings	$3,573,823	59.39	$3,203,796	57.82
Other income	144,561	2.40	147,874	2.66
Gross income	$3,718,384	61.79	$3,351,672	60.48
Fixed charges	1,297,093	21.55	1,115,414	20.13
Net income	$2,421,291	40.24	$2,236,258	40.35

A summary of the operations of the various departments also follows:

Department	Gross Earnings from Operation	Operating Expenses and Taxes	Per Cent of Gross Earnings	Net Earnings from Operation	Per Cent of Gross Earnings
Electric railway	$3,122,362	$1,346,260	43.12	$1,776,102	56.88
Electric light	2,099,059	552,236	26.31	1,546,824	73.69
Gas	575,290	344,927	59.95	230,363	40.05
Stage lines	219,334	198,874	90.67	20,459	9.33
Electric omnibuses (one month)	1,662	1,558	95.54	74	4.46
Total	$6,017,708	$2,443,885	40.61	$3,573,823	59.39

The most notable developments of the last year were in the new business of the electrical and gas departments, although the results of railway operation were better than in any preceding year. The total number of passengers carried on the cars during 1916 was 59,698,791, an increase of 9.93 per cent over 1915. In the electrical department the gross earnings increased 13.09 per cent and the net earnings 13.68 per cent, while in the gas department the gross gained 12.2 per cent and the net 23.6 per cent.

Comparative statistics of operation for the railway department in 1916 and 1913 show the following results:

	1916	1913	Per Cent Change
Number of passengers carried	59,698,791	56,782,362	+ 5.14
Passenger car-miles	12,143,682	10,543,739	+15.17
Passenger earnings	$2,984,939	$2,839,118	+ 5.14
Passenger earnings per car-mile	$0.2458	$0.2693	— 8.73
Operating expenses	$1,307,928	$2,909,233	— 8.34
Operating expenses per car-mile	$0.1076	$0.1353	—20.47
Operating ratio (per cent)	41.89	49.05	—14.60
Net earnings from operation	$1,814,434	$1,482,260	+22.40

The foregoing comparison is made with 1913 because this was the last preceding year that showed a normal growth. During 1914 and 1915 traffic conditions in Havana were very much disturbed by the abnormal extent of unemployment.

The earnings of the stage lines continued to decrease, the loss in 1916 being $45,937 or 17.3 per cent. The falling-off was partly due to labor conditions, but mainly to the preference of the public for the street cars. It is expected that the electric motor omnibuses, twelve of which were placed on trial last December, will enable this service to be continued with profit.

Cleveland, Painesville & Eastern Railroad

The operating revenues of the Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio, for the calendar year 1916 totaled $441,139, an increase of $37,087, while the operating expenses rose $30,951 to $222,988, leaving net revenue from railway operations of $218,150, a gain of $6,136. Taxes at $27,280 showed a slight increase, so that the operating income of $190,870 represented a gain of $5,329. Non-operating income fell off a little, and the deductions from income, mostly owing to miscellaneous debts, increased $4,162 to a total of $137,414. The surplus of

$56,329 for the last year, therefore, was only $1,062 greater than that of 1915. The gain in operating revenues for 1916, amounting to 9.08 per cent, was in marked contrast to the result obtained in 1915, a loss of 0.36 per cent. The 1916 percentage gain was the best since 1910, while the numerical gain was the largest in the company's history.

The increased earnings per mile during 1916 are shown below: Operating revenues per mile, $11,512, an increase of $968; operating expenses per mile, $5,819, an increase of $807; net operating revenue per mile, $5,693, an increase of $160, and operating income per mile, $4,980, an increase of $139. The total expenditures for additions and improvements chargeable to capital account in 1916 were $68,340.

Electric Railway Statistics

Rising Costs Affect the East—Comparison of Returns for March, 1917, and for the Quarter, January-March, 1917, with Those for 1916

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

Data for the three months ended March 31, 1917, representing 9717 miles of line of companies scattered throughout the country, figured on the per mile of line basis, indicates an increase in operating revenues of but 6.25 per cent, while operating expenses increased 10.93 per cent and net earnings decreased 1.99 per cent. Data representing approximately 75 per cent of the above mileage indicate an increase in the amount of taxes paid of 7.65 per cent and a decrease in operating income of 8.13 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, returns for the Southern and the Western apparently indicate a slight degree of improvement over the corresponding period of the previous year, while returns for the Eastern are decidedly unsatisfactory. Data for the latter district, representing 6428 miles of line, indicate an increase in operating revenues of 6.25 per cent, in operating expenses of 12.85 per cent and a decrease in net earnings of 5.15

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS, MARCH, 1917 AND 1916

Account	United States				Eastern District				Southern District				Western District			
	Amount, March, 1917	Per Mile of Line			Amount, March, 1917	Per Mile of Line			Amount March, 1917	Per Mile of Line			Amount, March, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$20,947,801	$2,156	$2,016	6.94	$14,956,486	$2,327	$2,174	7.04	$1,384,733	$1,304	$1,224	6.54	$4,606,582	$2,069	$1,943	6.48
Operating expenses	13,751,218	1,415	1,281	10.46	9,927,049	1,544	1,380	11.88	782,016	736	718	2.51	3,042,153	1,366	1,264	8.07
Net earnings	7,196,583	741	735	0.82	5,029,437	783	794	†1.39	602,717	568	506	12.51	1,564,429	703	679	3.53
Operating ratio, per cent	1917, 65.65; 1916, 63.54				1917, 66.35; 1916, 63.47				1917, 56.44; 1916, 58.60				1917, 66.02; 1916, 65.05			
Average number of miles of line represented	1917, 9,717; 1916, 9,621				1917, 6,428; 1916, 6,359				1917, 1,062; 1916, 1,059				1917, 2,227; 1916, 2,203			
COMPANIES REPORTING TAXES																
Operating revenues	$15,925,326	$2,134	$2,030	5.12	$10,500,275	$2,262	$2,167	4.38	$847,613	$1,298	$1,214	6.92	$4,577,438	$2,113	$1,985	6.45
Operating expenses	10,797,358	1,447	1,328	8.96	7,306,655	1,574	1,438	9.46	470,065	720	682	5.57	3,020,638	1,395	1,289	8.22
Net earnings	5,127,968	687	702	†2.14	3,193,620	688	729	†5.62	377,548	578	532	8.65	1,556,809	718	696	3.16
Taxes	1,125,856	151	140	7.86	725,545	156	143	9.09	69,672	107	101	5 94	330,639	153	145	5.52
Operating income	4,002,112	536	562	†4.63	2,468,075	532	586	†9.22	307,876	471	431	9.28	1,226,161	565	551	2.54
Operating ratio, per cent	1917, 67.80; 1916, 65.41				1917, 69.58; 1916, 66.35				1917, 55.46; 1916, 56.18				1917, 66.01; 1916, 64.93			
Average number of miles of line represented	1917, 7,461; 1916, 7,369				1917, 4,642; 1916, 4,573				1917, 653; 1916, 653				1917, 2,166; 1916, 2,143			

†Decrease.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR QUARTER, JANUARY-MARCH, 1917 AND 1916

Account	United States				Eastern District				Southern District				Western District			
	Amount, January-March, 1917	Per Mile of Line			Amount, January-March, 1917	Per Mile of Line			Amount, January-March, 1917	Per Mile of Line			Amount, January-March, 1917	Per Mile of Line		
		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase		1917	1916	% Increase
Operating revenues	$60,005,005	$6,175	$5,812	6.25	$42,693,189	$6,642	$6,251	6.25	$3,955,892	$3,725	$3,550	4.93	$13,355,924	$5,937	$5,633	6.46
Operating expenses	39,930,526	4,109	3,704	10.93	28,734,534	4,470	3,961	12.85	2,300,032	2,166	2,073	4.49	8,895,960	3,995	3,748	6.59
Net earnings	20,074,479	2,066	2,108	†1.99	13,958,655	2,172	2,290	†5.15	1,655,860	1,559	1,477	5.55	4,459,964	2,002	1,885	6.21
Operating ratio, per cent	1917, 66.54; 1916, 63.73				1917, 67.30; 1916, 63.37				1917, 58.15; 1916, 58.39				1917, 66.62; 1916, 66.54			
Average number of miles of line represented	1917 9,717; 1916, 9,621				1917, 6,428; 1916, 6,359				1917, 1,062; 1916, 1,059				1917, 2,227; 1916, 2,203			
COMPANIES REPORTING TAXES																
Operating revenues	$45,726,718	$6,129	$5,862	4.55	$30,035,511	$6,470	$6,247	3.57	$2,421,209	$3,708	$3,515	5.49	$13,269,998	$6,126	$5,755	6.45
Operating expenses	31,435,899	4,213	3,846	9.54	21,241,282	4,576	4,125	10.93	1,363,515	2,088	1,975	5.72	8,831,102	4,077	3,821	6.70
Net earnings	14,290,819	1,916	2,016	†4.96	8,794,229	1,894	2,122	†10.74	1,057,694	1,620	1,540	5.19	4,438,896	2,049	1,934	5.95
Taxes	3,255,475	436	405	7.65	2,077,168	447	408	9.56	204,468	313	297	5.39	973,839	450	430	4.65
Operating income	11,035,344	1,480	1,611	†8.13	6,717,061	1,447	1,714	†15.58	853,226	1,307	1,243	5.15	3,465,057	1,599	1,504	6.32
Operating ratio, per cent	1917, 68.74; 1916, 65.61				1917, 70.73; 1916, 66.03				1917, 56.31; 1916, 56.19				1917, 66.55; 1916, 66.39			
Average number of miles of line represented	1917, 7,461; 1916, 7,369				1917 4,642; 1916, 4,573				1917, 653; 1916, 653				1917, 2,166; 1916, 2,143			

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

per cent. Returns representing approximately 75 per cent of the above mileage show an increase in the amount of taxes paid of 9.56 per cent and a decrease in operating income of 15.58 per cent. Returns for the Southern and Western groups indicate that expenses have increased at about the same percentage rate as the earnings. Both groups show, however, increases of approximately 6 per cent in net earnings and 5 per cent in operating income.

The operating ratio for the country as a whole has increased from 63.73 per cent in 1916 to 66.54 per cent in 1917. The operating ratio of the Eastern district has increased from 63.37 per cent in 1916 to 67.30 per cent in 1917. The operating ratios of the Southern and Western groups have changed very little.

Columbus, Delaware & Marion Sold

Ohio Road Disposed of at Foreclosure to R. H. Beaton—Reorganization Plan

Ralph H. Beaton,, 20 East Broad Street, Columbus, Ohio, representing Eastern capitalists, purchased the property of the Columbus, Delaware & Marion Railway at receiver's sale on June 11, for $417,494. The court had fixed a minimum price at $250,000. The company has underlying bonds amounting to $1,582,505 and some other obligations. Appraisers had fixed the total value of the property at $2,000,000. The sale was made subject to the mortgages and other claims.

The reorganization of the company under its new ownership has been approved by the Ohio Public Utilities Commission. The new company is authorized to issue $700,000 of common stock, $650,000 of 7 per cent preferred stock and $1,994,000 of 5 per cent twenty-year bonds, secured by mortgage on the entire property and franchises. Of the bonds $1,533,000 will be exchanged for underlying bonds of the old company and $100,000 will be sold to obtain funds for improvements during the present year.

Mr. Beaton has made no announcement of the personnel of the new owners, other than to say they are Eastern capitalists. It is understood that the name of the new company is the Columbus, Delaware & Marion Electric Company of Columbus. This company was incorporated recently by Samuel L. Finn, Daniel Blau, I. Webb, Ira Crawford and M. F. Sheeler.

Platform of Investors' Protective Association

Publicity, Proper Compensation for Service and Square Deal for Corporations Asked

The first regular meeting of the advisory council of the Investors' Protective Association of America, organized by N. L. Amster, was held recently. Those who attended were I. Reynolds Adriance, president of Merchants National Bank, Poughkeepsie; John A. Sleicher, editor *Leslie's Illustrated Weekly;* Oliver M. W. Sprague, professor of banking and finance, Harvard University; Peter G. Ten Eyck, former congressman from New York. Among the principal planks in the platform adopted were:

Vigorous opposition to wasteful and inefficient management of corporations.

All possible publicity respecting every corporate activity.

Waken, educate and enlighten the public to a realization that it is not only just, but to its interests, that railroads and public utility corporations receive proper compensation for their service.

Receivers shall not be appointed without first giving public notice to all parties in interest.

Reorganization committees to be chosen by a poll of security holders.

Readjust method and system of issue and sale of corporate securities so as to make corporations less dependent upon any single or collective group of banking and financial interests.

Mold public opinion as to the rights of minority stockholders and insist that they shall always have representation on the board of directors.

The slogan is "a square deal alike for corporations, security holders and the public."

Positive direct responsibility of directors and corporate managers. Severe penalties for misrepresentation of facts and for improper use of corporate funds or other corporate property.

Mr. Amster attracted nation-wide attention by his opposition to the receivership for the Chicago, Rock Island & Pacific Railway. Although he failed to prevent the appointment of a receiver he carried on his fight and subsequently was made chairman of the board of directors of the company. The road was rehabilitated out of current funds and Judge Carpenter only recently in the federal court terminated the receivership of the company without foreclosure.

R., S. & E. Bond Deposits Increase

The readjustment committee of the Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y., has turned over to the bondholders' protective committee of that road bonds amounting to $357,000 which had been deposited with it. This leaves the latter committee as the only one in the reorganization of the railway. The bondholders' protective committee had deposited with it previous to this $4,165,000 of the $4,986,000 of bonds outstanding. The total now held by the protective committee is therefore $4,522,000, leaving $374,000 yet to be deposited.

Alabama Traction, Light & Power Company, Ltd., New York, N. Y.—The total operating revenues of the Alabama Traction, Light & Power Company, Ltd., for the calendar year 1916 were $1,471,433, and the total earnings $1,515,953, a gain of $474,805, or 45 per cent. Of the operating revenues $110,758 came from the railway department as compared to $86,349 in 1915, an increase of $24,409, or 28 per cent. The railway operating expenses at $93,319 represented an increase of $21,644, or about 30 per cent for the year.

American Cities Company, New York, N. Y.—The American Cities Company has passed its usual semi-annual dividend of 1½ per cent. The company has paid the dividend since July 1, 1915. Lee Benoist, vice-president of the company, is reported to have said: "Notwithstanding the fact that the earnings of the American Cities Company are showing very satisfactory increases, the directors felt that in view of current market conditions for corporation securities the earnings of the company should be applied to the purchase of its subsidiary companies' securities, issued for their general development purposes and, therefore, decided that for the time being a distribution on the preferred stock should be deferred. This action is recognized as materially strengthening the financial situation of the shareholders of the American Cities Company."

Buffalo (N. Y.) Southern Railway.—The bondholders of the Buffalo Southern Railway, operating between the Buffalo city line and Hamburg and Orchard Park, have until July 1 to decide whether to improve the road or dispose of the property to interests that will rehabilitate it. The Public Service Commission has recommended improved service and the betterment of the condition of the equipment. Towns along the company's line have complained about the service and equipment. The railway is in the hands of a receiver. The cars operate over the tracks of the International Railway between the Buffalo city line at Seneca Street and the terminal at Main and Clinton Streets. At one time the International Railway made an effort to acquire the property.

Commonwealth Power, Railway & Light Company, Grand Rapids, Mich.—Harris Forbes & Company, New York, N. Y., announce an offering of $1,000,000 of first lien and refunding 5 per cent gold bonds of the Consumers' Power Company, a subsidiary of Commonwealth Power, Railway & Light Company. The issue has been authorized by the Michigan Railroad Commission, based on appraisals made of the company's property. The offering is at 95. The bonds are due on Jan. 1, 1936, and are callable at 105 and interest on any interest date.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—The stockholders of the Mahoning Valley Railway, Mahoning Valley Southeastern Railway, Youngstown Park & Falls Street Railway and the Youngstown & Sharon Street Railway have ratified an agreement for the merger of these companies with the Mahoning & Shenango Railway & Light Company. As stated previously in the ELECTRIC RAILWAY JOURNAL the merger is being carried out entirely in the interest of intercorporate simplicity.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—The New Jersey & Pennsylvania Traction Company has filed a certificate with the Secretary of State of New Jersey reducing the authorized capital stock from $3,000,000 to $500,000, divided into 5000 shares.

Norton, Taunton & Attleboro Street Railway, Norton, Mass.—The Norton, Taunton & Attleboro Street Railway, successor to the Norton & Taunton Street Railway, has applied to the Massachusetts Public Service Commission for authority to issue $120,000 of twenty-year 5 per cent bonds and 12,000 shares of stock of a par value of $100 for the purpose of financing the purchase of and operating the railway and part of the property, including franchises and locations formerly owned by the predecessor company.

Pennsylvania & Ohio Railway, Ashtabula, Ohio.—The Pennsylvania & Ohio Railway, which operates the local city lines in Ashtabula as well as the interurban line between Conneaut and Jefferson, has been placed in the hands of Palmer Wardman, superintendent of the company, as receiver by Judge Roberts of the Common Pleas Court as the result of action brought by the Citizens' Savings & Trust Company, Cleveland, Ohio. There are three issues of bonds outstanding, namely, $600,000 of first mortgage 5s of the Pennsylvania & Ohio Railway, $100,000 of first 5s of the Pennsylvania & Ohio Railway, Jefferson division, and $200,000 of general 5s secured on the entire property, but subject of course to the other two issues. The Citizens' Savings & Trust Company is trustee of all the issues.

Sacramento Valley Electric Railroad, Dixon, Cal.—The sale of the property of the Sacramento Valley Electric Railroad under foreclosure, set for May 26, has been postponed until June 23. The road as at present constructed is 12 miles long.

Standard Gas & Electric Company, Chicago, Ill.—The Philadelphia Trust Company, trustee, is advertising for tenders of Standard Gas & Electric Company convertible 6 per cent sinking fund gold bonds maturing Dec. 1, 1926, to absorb $67,510 now available in the sinking fund. Tenders will be received until July 6.

Waycross Street & Suburban Railway, Waycross, Ga.—The property of the Waycross Street & Suburban Railway was sold on June 5 at receiver's sale to L. J. Cooper, acting for the Waycross Savings & Trust Company, for $14,500.

Dividends Declared

Asheville Power & Light Company, Asheville, N. C., quarterly, 1¾ per cent, preferred.

Birmingham Railway, Light & Power Company, Birmingham, Ala., 3 per cent, preferred; 1 per cent, common.

Carolina Power & Light Company, Raleigh, N. C., quarterly, 1¾ per cent, preferred.

Columbus Railway, Power & Light Company, Columbus, Ohio, quarterly, 1½ per cent, preferred, Series A.

Elmira Water, Light & Railroad Company, Elmira, N. Y., quarterly, 1¾ per cent, first preferred; quarterly, 1¼ per cent, second preferred.

Hestonville, Mantua & Fairmont Passenger Railway, $1.50, preferred; $1, common.

Interstate Railways, Camden, N. J., 30 cents, preferred.

Louisville (Ky.) Traction Company, quarterly, 1 per cent, common.

Ottawa (Ont.) Traction Company, quarterly, 1 per cent.

Philadelphia Company, Pittsburgh, Pa., quarterly, 87½ cents, common.

Tri-City Railway & Light Company, Davenport, Iowa, quarterly, 1 per cent, common.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., quarterly, 1½ 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., Apr.,	'17		$70,632	*$41,137	$29,495	$18,841	$10,654
1 " "	'16		62,654	*35,266	27,388	17,697	9,691
12 " "	'17		860,144	*486,017	374,127	219,215	154,912
12 " "	'16		794,421	*420,172	374,249	212,875	161,374

BATON ROUGE (LA.) ELECTRIC COMPANY

1m., Apr.,	'17		$18,987	*$9,849	$9,138	$3,497	$5,641
1 " "	'16		15,746	*8,239	7,507	3,463	4,044
12 " "	'17		221,302	*104,042	117,260	42,246	75,014
12 " "	'16		198,865	*106,176	92,689	32,306	60,383

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

1m., Apr.,	'17		$8,783	*$9,768	†$985	$1,184	†$2,169
1 " "	'16		8,403	*8,258	145	1,096	†951
12 " "	'17		125,683	*115,708	9,975	13,533	†3,558
12 " "	'16		117,963	*98,444	19,519	13,370	6,149

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

1m., Apr.,	'17		$34,508	*$21,727	$12,781	$6,553	$6,228
1 " "	'16		28,234	*18,296	9,938	6,499	3,439
12 " "	'17		413,660	*240,547	173,113	78,606	94,507
12 " "	'16		374,920	*218,588	156,332	78,830	77,502

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., Apr.,	'17		$111,840	*$77,929	$33,911	$29,649	$4,262
1 " "	'16		99,983	*60,498	39,485	29,671	9,814
12 " "	'17		1,260,774	*875,961	384,813	358,215	26,598
12 " "	'16		1,154,663	*739,473	415,190	357,734	57,456

COLUMBUS (GA.) ELECTRIC COMPANY

1m., Apr.,	'17		$83,716	*$29,751	$53,965	$28,242	$25,723
1 " "	'16		64,878	*27,249	37,629	28,653	8,976
12 " "	'17		955,333	*365,122	590,211	342,377	247,834
12 " "	'16		760,864	*330,277	430,587	344,103	86,484

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

1m., Apr.,	'17		$304,819	*$222,485	$82,334	$44,938	$37,396
1 " "	'16		285,006	*170,754	114,252	42,875	71,377
12 " "	'17		3,677,280	*2,339,418	1,337,862	522,904	814,958
12 " "	'16		3,239,025	*1,910,247	1,328,778	493,146	835,632

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

1m., Apr.,	'17		$1,502,961	*$895,423	$607,538	$430,014	$177,524
1 " "	'16		1,313,207	*692,895	620,312	427,094	193,218
12 " "	'17		17,735,092	*10,142,214	7,592,878	5,087,199	2,505,679
12 " "	'16		15,411,384	*8,202,084	7,209,300	4,726,934	2,482,366

DALLAS (TEX.) ELECTRIC COMPANY

1m., Apr.,	'17		$172,927	*$108,683	$64,244	$40,680	$23,564
1 " "	'16		151,269	*96,674	54,595	36,597	‡19,998
12 " "	'17		2,083,501	*1,263,289	820,212	467,628	‡362,726
12 " "	'16		1,870,966	*1,152,216	718,750	417,656	‡310,294

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

1m., Apr.,	'17		$75,386	*$41,843	$33,543	$11,547	‡$23,493
1 " "	'16		62,995	*34,387	28,608	8,864	19,744
12 " "	'17		874,517	*469,944	404,573	113,185	‡292,884
12 " "	'16		773,901	*403,133	370,768	105,766	265,002

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

1m., Apr.,	'17		$298,279	*$185,584	$112,695	$64,945	$47,750
1 " "	'16		237,646	*141,270	96,376	62,648	33,728
12 " "	'17		3,247,423	*1,999,445	1,247,978	762,727	485,251
12 " "	'16		2,606,949	*1,553,933	1,053,016	755,424	297,592

EL PASO (TEX.) ELECTRIC COMPANY

1m., Apr.,	'17		$101,379	*$60,010	$41,369	$4,649	$36,720
1 " "	'16		85,799	*43,892	41,907	4,670	37,237
12 " "	'17		1,179,158	*729,649	449,509	60,573	388,936
12 " "	'16		1,023,938	*532,301	491,637	52,430	439,207

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

1m., Apr.,	'17		$150,698	*$106,371	$44,327	$37,295	$7,032
1 " "	'16		151,416	*102,096	49,320	36,579	12,741
12 " "	'17		1,952,355	*1,259,273	693,082	440,411	252,671
12 " "	'16		1,924,891	*1,224,641	700,250	435,388	264,862

GRAND RAPIDS (MICH.) RAILWAY

1m., Apr.,	'17		$103,025	*$72,419	$30,600	$18,187	$12,419
1 " "	'16		103,047	*67,256	35,791	13,700	22,091
12 " "	'17		1,310,473	*860,495	449,978	201,197	248,781
12 " "	'16		1,220,107	*829,735	390,372	167,166	223,206

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

1m., Apr.,	'17		$31,536	*$16,091	$15,445	$5,125	$10,320
1 " "	'16		27,765	*14,389	13,376	5,453	7,923
12 " "	'17		338,476	*196,272	142,204	62,621	79,583
12 " "	'16		298,288	*164,925	133,363	66,131	67,232

JACKSONVILLE (FLA.) TRACTION COMPANY

1m., Apr.,	'17		$58,675	*$38,495	$20,180	$15,754	$4,426
1 " "	'16		54,593	*34,645	19,948	15,439	4,509
12 " "	'17		647,964	*434,865	213,099	186,148	26,951
12 " "	'16		615,221	*424,264	190,957	179,363	11,594

KEOKUK (IOWA) ELECTRIC COMPANY

1m., Apr.,	'17		$19,403	*$13,374	$6,029	$2,162	$3,867
1 " "	'16		19,930	*12,780	7,150	1,944	5,206
12 " "	'17		239,430	*164,342	75,088	24,587	50,501
12 " "	'16		236,759	*149,756	87,003	22,365	64,638

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

Traffic and Transportation

I. C. C. Powers Questioned

Illinois Rate Dispute to Test Supremacy of Public Service or Interstate Commerce Commission Rulings

Neither President Wilson nor Attorney-General Gregory will interfere in the controversy between the United States and the State of Illinois in the rate dispute referred to in the ELECTRIC RAILWAY JOURNAL for June 16, page 1115. The dispute arose when the State refused to have its 2-cent passenger fare law disregarded in the Interstate Commerce Commission's order to the railroads to remove discrimination caused by the State rates. At a conference held recently in Washington the Attorney-General said he had nothing to do with the case. Chief Counsel Folk of the Interstate Commerce Commission, who is in charge of the litigation, was requested to ask the commission to postpone the effective date of the order as urged by Governor Lowden in a letter to the Illinois Senators in view of present national conditions. Inasmuch as the commission has previously considered the case in this light, it is doubtful whether the request will be granted.

The maximum passenger rate of 2 cents a mile in Illinois is fixed by a law which has been upheld in the State Supreme Court. The Interstate Commerce Commission ordered the discrimination caused by the difference in state and interstate rates removed, incidentally holding 2.4 cents a mile to be a reasonable passenger fare. The railroads chose to increase the State rates. Judge Landis of the Federal Court at Chicago dismissed the suit of the railroads to have the Illinois law set aside. Then action was taken in the Federal Court at St. Louis which resulted in an order to conform to the 2.4-cent rate. The Illinois authorities are fighting this order. Meanwhile the railroads are collecting the higher rate of fare which involves the violation of the ruling of the State Public Service Commission, which has held the 2.4-cent rate to be excessive. Individuals responsible for such violations are liable to imprisonment for not more than one year. State Attorney-General Brundage has begun proceedings to test the powers of the Interstate Commerce Commission, on the ground that it is exceeding its authority.

Kansas City Fare Hearing

Controversy Involves Fares to Suburban Districts—Zone System with 2-Cent Rate Is Suggested

The Public Service Commission of Missouri held hearings in Kansas City on June 11 and 12 on the subject of fares outside Kansas City on the lines of the Kansas City Railways. The case is so stated, because the property owners in the Maywood and Fairmount Park districts outside the city limits are contending that they are not suburban communities, that they do not receive suburban or interurban service and that the commission in considering the cost of service to their communities should not consider those lines separately but whether or not the system as a whole is paying. Almost the entire time of the hearings was consumed in determining the identity of conditions in the Maywood and Fairmount districts and other districts in Kansas City with reference to street car service. The company showed that it had lost $60,000 because of the commission's order that 5 cents should carry a passenger through Kansas City and to Maywood, a suburban station. The property owners responded that many other stretches of track of equal length within the city limits would show similar losses if their accounts were separated from the company's total business.

Under the commission's order the street railway has, since October, 1916, been carrying passengers to Maywood, 2 miles beyond the city limits, without extra fare. The order had been issued because the company was carrying passengers to Fairmount Park, the same distance as Maywood beyond the city limits, without extra fare. At the hearing it was expected that the railway company would urge the commission to adopt a basis of 2 cents a mile for fares outside the city limits. President Kealy, upon examination, said that the company would soon file an amendment to this proposal which, he intimated, would incorporate the zone idea.

An amusing phase of the hearing was the attempt of property owners outside the city to emphasize the obligation of the company to give suburban dwellers the same service and rates as obtain on the city lines in Kansas City, Mo., and Kansas City and Rosedale, Kan. The three cities are practically one. The suburban district involved in the controversy lies between Kansas City, Mo., and Independence, Mo. Under present conditions the company gives unlimited transfers and a 5-cent fare in the three cities, charges 5 cents extra on the Dodson line, a suburban line which was not represented by property owners at the hearing, and 5 cents extra to Independence, with round-trip tickets to Independence being sold for 15 cents including the city fare.

A complication depended upon by the contestants is that the State law prohibits a city of first class from expanding to within less than 3 miles of a county seat. Except for this law, they say, their district would long ago have been taken into Kansas City, Mo., since Independence, the county seat of Jackson County, is little more than 3 miles from the Kansas City limits. No decision was rendered by the board. Briefs will be filed and another hearing will be held at Jefferson City in thirty days.

Electric Lines Relieve Traffic

7,250,000 People In and Out of Indianapolis in 1916 Via Electric Interurban

In an address delivered before the Transportation Club of Indianapolis, Ind., recently, E. B. Peck, vice-president of the Indianapolis Traction & Terminal Company, emphasized the importance of the members of the club lending their influence toward the granting of a legitimate fare increase to compensate for the greatly increased operating costs, instead of opposing such increases before the regulatory commission. He pointed out that if such increases were successfully opposed and continuously, that it meant government ownership as an inevitable end, and that the shippers would then be forced to pay the increased cost through taxes, which would be augmented by inefficient operation.

The immense volume of traffic that is handled at the Indianapolis terminal was shown in tabular form in the ELECTRIC RAILWAY JOURNAL for Feb. 17, page 321. Speaking of the importance of Indianapolis as an electric railway center, Mr. Peck said that 254,029 passenger trains arrived and departed from the local passenger and freight terminal during 1916—an average of 694 trains daily. He stated that the electric railways had done much to relieve the local freight congestion and that this was best evidenced by the fact that 25,980 freight trains arrived and departed from the terminal in 1916, or an average of seventy-one a day. Speaking further on the relation of this traffic to the steam roads, he said:

"From the viewpoint of the steam road official this traffic is termed local, applying to both passenger and freight. What this local traffic has meant to the city of Indianapolis is best shown by the fact that in 1916 these electric railways delivered to this terminal and transported from it 7,250,000 people, an average of about 20,000 a day. Every four months this is an equivalent of the entire population of the State. These electric railways are handling through the Indianapolis terminal approximately 200,000 tons of freight annually. What would be the sintuation if the steam railways had this additional traffic to take care of under the present conditions? This traffic, both passenger and freight, has not been taken away from the steam roads entirely, and being what is termed 'local' has relieved the steam roads to that extent, giving them that much additional facilities for handling the heavy through traffic. Instead, the traffic handled by the electric railways has been very largely developed by them and not taken from the steam roads."

Mr. McCulloch Reviews Conditions

In a signed article which appears in the issue of the *United Railways Bulletin* for June 15, published by the United Railways, St. Louis, Mo., Richard McCulloch, president of the company, makes a plea for an increase in street car fares, which he says is absolutely necessary. He points out that expense of operation is from 40 to 135 per cent greater now than it was in 1912. He claims that street railways can no longer operate on a 5-cent fare and realize a profit. Mr. McCulloch's statement was, in part, as follows:

"The popularity of the cheaper varieties of automobiles has robbed us of much of the Saturday afternoon and Sunday business. The constantly increasing use of transfers produces a rapidly diminishing average rate of fare. Although the nominal fare is 5 cents, the actual fare per ride last year was 3.22 cents.

"On the present basis, if 5 cents was a reasonable fare in 1912, it should be 10 cents at the present time. The 5-cent fare was adopted in horse-car days, when the average haul was perhaps one-half what it is now, when the price of labor was one-half the present price, and when materials were much cheaper. The free transfer was adopted in the early days of the electric railway, when the promoters had rosy views as to the prosperous future of the business. These views, it is needless to say, have not materialized.

"It is difficult to see how the business continues to exist on a 5-cent fare. Unless the fares are adjusted, street railways cannot continue as private investments. If they should become municipal investments, the municipality must then make up the deficit."

Seattle Seeks Jitney Regulation

A bill has been submitted to the City Council of Seattle by Councilman C. B. Fitzgerald in an effort to bring the "donation buses" and "private carriers for hire" under the jurisdiction of the city. The ordinance provides that any donation bus or private carrier shall deposit an insurance policy for $2,500 issued by a company authorized to do business in the State. The policies, it is said, might be issued by the jitney men's mutual company, as it is licensed to sell liability but not surety bonds. It is not yet determined whether the bonds of the Mutual Union Insurance Company will be acceptable. The Supreme Court at Olympia on June 8 heard the case started by the jitney men to compel the State Insurance Commissioner to issue to the Mutual Insurance Company a certificate to write surety bonds. The case was taken under advisement. William R. Crawford, attorney for the jitney drivers, submitted his views on the subject of city regulation, and the bill as drafted meets with his approval.

Improvements Made in Buffalo

Upon the recommendation of the municipal traffic commission which has been studying street railway traffic problems in the downtown section of Buffalo, N. Y., the City Council has granted the International Railway permission to lay a single track around the Soldiers' Monument in Lafayette Square. The asphalt space between the monument and the safety zone at Main Street will be enlarged under the supervision of the department of public works and the park department. This work will be done at once but owing to the condition in the steel trade the tracks cannot be laid until fall. By routing the Broadway cars around Lafayette Square instead of down Washington Street between Broadway and South Division Street the commission believes that the present congestion in Washington Street can be relieved by at least 50 per cent.

Other recommendations which will be considered by officials of the International Railway are the construction of additional loading tracks in Shelton Square for the Niagara and Grant Street lines and the construction of a frame shelter house over the safety zone at that point. The city has already established its first safety zone at Main and Eagle Streets, in the heart of the downtown business district and lines have been painted upon the street to indicate where cars may stop to discharge and take on passengers.

The City Council has approved the recommendation of the traffic commission that the skip-stop system be tried on the Main Street and Elmwood Avenue lines. For some time President E. G. Connette and J. O. Weigel, general superintendent of transportation, have been considering the trial of the skip stop but the company has not announced officially what will be done. Thomas Penney, vice-president of the company, declared before the City Council at the time the company received permission to lay a single track around the Soldiers' Monument that the company is willing to co-operate with the commission and the city authorities in any way that will contribute toward better service.

Advertisements on Transfers in St. Louis.—After July 1 the United Railways, St. Louis, Mo., will have printed in two colors on the back of transfers for some of the lines attractive advertisements calling attention to points of interest to the visitor in the city.

Schenectady Fare Increase Again Suspended.—The Public Service Commission for the Second District of New York on June 14 again suspended the proposed increases in fares on the lines of the Schenectady (N. Y.) Railway. The new period of suspension is from June 15 to Aug. 15. The effective date of these changes was originally set for Feb. 16.

Buffalo Survey Finished.—Charles R. Barnes, electric railway inspector for the Public Service Commission of the Second District of New York, who has been making a survey of conditions on the local lines of the International Railway, Buffalo, N. Y., has completed his report. It is expected that the commission's recommendations will be made public within the next three or four weeks.

Texas Jitneys Abandon Service.—The increasing expense of operation has cut into the profits of the jitneys in Texas so that many are discontinuing their service. In Houston there are now twelve vacancies. The Houston jitney ordinance authorizes the City Commission to designate the number of jitneys that can operate on any street. In Dallas, where jitneys are now running without restriction, save such as is imposed by the traffic ordinances, there is even a greater decrease in the number of jitneys. There have been as many as 400 jitneys in operation at one time, whereas now, it is said, there are less than 250.

Railway Men Witness One-Man Car Operation.—Representatives of street car interests and citizens of Waterloo, Iowa, have been investigating the operation of one-man cars in Fort Worth, Tex., with a view to determining the feasibility of introducing such service at Waterloo. Mayor Low of Waterloo visited Fort Worth last January, and he was followed by a delegation of street railway representatives from the Iowa city. The one man car as operated in Fort Worth by the Northern Texas Traction Company, a Stone & Webster property, was carefully investigated. A delegation of citizens has just made another investigation and action at Waterloo will be taken on its recommendations.

Commission to Consider Fare Increase Jointly.—The New York & North Shore Traction Company, Roslyn, N. Y., noted in the Electric Railway Journal for June 16, page 1117, as wanting to increase its fares from 5 cents to 7 cents, has applied to the Public Service Commissions for the First and Second Districts of New York for permission to make such changes in its rates. The company operates trolley lines from Flushing to the New York City line at Little Neck, with an extension from Murray Hill, Flushing, to Whitestone, within the City of New York, and additional lines in Nassau County. The application to the First District Commission is being considered in connection with those of several other railway companies asking authority to charge 2 cents for transfers.

Louisville Proposes Traffic Rules.—The municipal committee of the Board of Trade of Louisville, Ky., has been directed by the board of directors to take up with the city authorities and with other organizations of the city the matter of passing an ordinance which will prohibit pedestrians from crossing the streets between crossings. This action resulted, in part, from numerous serious accidents during the last few weeks. It was taken on motion of J. B. Wathen, Jr., a prominent distiller of the city. He immediately began to carry out the instructions of the direc-

tors of the Board of Trade, which, in addition to the provision regarding crossing streets in the middle of blocks, would prohibit sprinkling downtown streets as well as the use of glaring headlights by motorists.

San Diego Line to Reduce Service.—The Los Angeles & San Diego Beach Railway, San Diego, Cal., has filed with the Railroad Commission of California an application for authority to reduce its train service and increase its rates so as to meet operating expense. The application states that the company has never made any profit nor paid any dividend and that it cannot pay expenses under its present tariff and give its extensive train service. The percentage of operating expense to gross revenue in 1916 was 83.66, and for the past six months the operating expense has exceeded the receipts. The company further states that it has tried in every way to increase its business, but has failed; that its train service is too large for the patronage and that it will continue to lose money unless the commission comes to its aid.

International Railway Opens Lake Ontario Resort.—The International Railway, Buffalo, N. Y., has opened its Lake Ontario summer resort for the season. The first excursion to Olcott Beach on the Lockport & Olcott division was run on Decoration Day and a special reduced fare of 75 cents from Buffalo has been made effective for the season. A few days before the opening W. J. Whiteside, traffic agent of the company, invited newspapermen of Buffalo, Niagara Falls and Lockport to visit the resort as guests of the company. The trip was made in one of the company's private cars and a dinner was served at the Olcott Beach Hotel on the company's grounds. The company has received much newspaper publicity on the opening of the park and many excursions have been booked for Olcott Beach during the coming season.

New York Commission to Consider Freight Advance.—As noted in the ELECTRIC RAILWAY JOURNAL for May 12, page 894, the railroads of New York within the jurisdiction of the Public Service Commission for the Second District filed with the commission tariffs providing a 15 per cent increase in intrastate freight rates parallel with the increases in interstate rates for which they had asked the Interstate Commerce Commission. The commission has set a hearing on these applications for June 25. The Interstate Commerce Commission has finished its hearings on the interstate rates and will probably announce its decision within a short time. While the various State Commissions are of course not bound to accept the conclusion of the Federal body as necessarily to be followed in intrastate rates, it seems to have been generally believed that such a result would obtain except in particular cases where local conditions require a different determination, and this because the whole structure of interstate and intrastate rates is closely interwoven.

Army Camp Calls for Service.—The Louisville (Ky.) Railway will, no doubt, benefit greatly from additional service made necessary by the location of the federal army camp for the Ninth District near Louisville. The site selected for the camp is about 6 miles south of the central part of the city and is divided by one of the lines of the Louisville & Interurban Railroad, which is controlled by the Louisville Railway. It lies almost directly east of the terminus of the Highland Park line and is also within a very short distance from the terminus of one of the extensions of the Fourth Street city line. As soon as the selection of the site was made known, officials of the company began preparations to extend such lines as might be desirable. Final decision will wait until the camp is platted by the engineers, which will probably be in a few days. Construction work will then be pushed to completion. A double-track line will be provided to serve the camp and city service will be given at a 5-cent rate with transfers from the camp line to and from the city lines of the company. The schedule will be arranged to suit the requirements of the camp. A special effort will be made, it is stated, to get the steel early so that the Louisville & Interurban can do some of the freight hauling. It is estimated that materials for camp construction will run to approximately 25,000 carloads. The camp will be served also by two steam roads. No difficult construction will be necessary on any route.

Personal Mention

B. W. Arnold has been appointed manager of the Eastern Wisconsin Electric Company at Oshkosh, Wis.

Charles E. Buchner has been appointed secretary to Chairman Oscar S. Straus of the Public Service Commission of the First District of New York to succeed Godfrey Goldmark.

George D. Baxter, local manager of the Exeter & Hampton Electric Company, Exeter, N. H., has been made successor to J. A. MacAdams, who is manager and purchasing agent of the Exeter, Hampton & Amesburg Street Railway, in addition to his former duties. Mr. MacAdams will enter the engineering office of C. H. Tenney & Company, Boston, Mass.

Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, is the subject of a very complimentary sketch in the June number of *The American Magazine*. The author of the article, Alfred Grunberg, has reviewed several instances in the life of Mr. Brush to portray his character which has made possible his rise from small beginnings and has placed him early in life at the head of one of the largest electric railways of the country.

A. G. Carson has been appointed manager of the Eastern Wisconsin Electric Company at Fond du Lac, Wis., in charge of the electric and gas departments there. Mr. Carson began his public service work with the Grand Rapids, Grand Haven & Muskegon Railway in the power and transportation departments. He later became chief engineer of the Winnebago Traction Company at Oshkosh, Wis., and when that company was consolidated with the Eastern Wisconsin Railway & Light Company he was sent to Fond du Lac as superintendent of the electric department. He has held that position for the last eight years, and a year ago was appointed superintendent of the gas department.

J. P. Pulliam has been appointed general manager of the Wisconsin Public Service Company, Green Bay, Wis. Vice-President C. R. Phenicie, who was also general manager until the appointment of Mr. Pulliam, will in the future give his entire time to his duties as vice-president, and will be engaged largely with construction and development work. Mr. Phenicie will retain his office in Green Bay and handle the affairs of the company in that vicinity jointly with Mr. Pulliam. The latter was formerly vice-president and general manager of the Wisconsin Electric Railway and general manager of the Eastern Wisconsin Railway & Light Company. A biographical sketch of Mr. Pulliam appeared in the ELECTRIC RAILWAY JOURNAL for March 17, page 524.

Godfrey Goldmark, secretary to Oscar S. Straus, chairman of the Public Service Commission for the First District of New York, has been appointed assistant counsel to the commission. Mr. Goldmark became Mr. Straus' private secretary in January, 1916, at which time he was a member of the firm of Steele, DeFriese & Steele. He was born in New York City thirty-five years ago. Upon his graduation from the Cornell Law School in 1902 he entered the office of Judge Steele and a year later became a junior partner. Since that time he has made a specialty of corporation law and has written works on this subject. He collaborated in the preparation of the seventh and eighth editions of "White on Corporations" and is one of the authors of "Non-Stock Corporations," by White and Goldmark.

William H. Wharton has been promoted to the position of superintendent of buildings of the Brooklyn (N. Y.) Rapid Transit Company, succeeding H. E. Funk. Mr. Wharton became identified with that company about nine years ago as time checker. After two and one-half years in that capacity he was made assistant supervisor of structure and has held that position until the present time. Mr. Wharton saw service in the Spanish-American War and subsequently was employed by the Westinghouse Agricultural Machine Works at Schenectady, N. Y. His work with that company involved considerable traveling and netted him much valuable experience. This together with unceasing efforts in the service of the Brooklyn Rapid Transit Company has fitted him eminently to take the position of his former chief.

George O. Nagle, who resigned in November, 1915, as second vice-president and general manager of the Wheeling (W. Va.) Traction Company, has been appointed city manager of Wheeling under the new city charter. Mr. Nagle was also formerly president and general manager of the Panhandle Traction Company and the Steubenville & Wheeling Traction Company, controlled by the Wheeling Traction Company. He was in charge of the city railway properties at Wheeling as general manager for twelve years. During that time the properties were extended and largely rebuilt. The appointment was unanimous and was made despite the fact that Mr. Nagle had announced that he would not accept the post. Later, however, he yielded to public opinion. Mr. Nagle has been engaged in railroad and electric railway work all his life, and the new work upon which he will enter will furnish him with an opportunity for studying the public utility question from a different viewpoint than he has had before. Upon his appointment to manage the railways at Wheeling Mr. Nagle promptly entered into all work for the community betterment, became an influential member of the Board of Trade, entered the Playground Association, and at the time of the Panama-Pacific Exposition was appointed by Governor Hatfield of West Virginia to represent the State as a member of the exposition commission. Mr. Nagle is at present president of the West Virginia Manufacturers' Association. A portrait and a biography of him were published in the Electric Railway Journal of Nov. 13, 1915.

H. E. Funk, heretofore superintendent of buildings of the Brooklyn (N. Y.) Rapid Transit Company, has been appointed engineer of rapid transit lines, a newly-created position. Mr. Funk has been in the service of that company for about twelve years. He is a native of Ohio and received part of his education at Oberlin College. Following a short connection as an engineer in the maintenance of way department of the Big Four Railroad at Galion, Ohio, he became employed by the Brooklyn Rapid Transit Company as track foreman in 1905. Two months later he was appointed assistant engineer in charge of construction and buildings and held that position until three years ago. At that time he was promoted to the position of superintendent of buildings, the office he has just relinquished. Mr. Funk has given unreservedly to the execution of his duties and as the demands upon the way and structure department require a special supervisor of the subway and elevated roads, he was very naturally chosen for the post.

H. E. FUNK

Obituary

W. O. Johnson, formerly receiver for the Chicago & Milwaukee Electric Railroad, died at his home in Chicago on June 10, at the age of sixty-one. Mr. Johnson was born at Fredonia, N. Y. He received his legal education at Hamilton College, and practiced law at Buffalo until 1882, when he went to Chicago as general counsel for the Erie Railroad. In 1906 he was elected president of the Security Life Insurance Company, and five years later was named receiver of the Chicago & Milwaukee Electric Railroad, now the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

Judson C. Clements, a member of the Interstate Commerce Commission for the last twenty-five years, died in Washington, D. C., on June 18, at the age of seventy-one Mr. Clements was a native of Georgia and a veteran of the Civil War. He was admitted to the bar in 1869 and immediately began to practice law in Lafayette, Ga. From 1872 to 1880 he served in the Georgia Legislature and was a member of Congress during the following eight years. In 1890 he was appointed special United States attorney to acquire titles for the government lands now occupied by Chickamauga Park and Chattanooga Military Park. Two years later President Harrison appointed him to membership on the Interstate Commerce Commission and on Jan. 13, 1911, he was elected chairman of that body.

Samuel J. Dill, vice-president of the United Gas & Electric Engineering Corporation, New York, died at his home in Jamaica, Long Island, on June 14. He was born in Wallkill, N. Y., Oct. 3, 1864. Mr. Dill had a remarkable career in public service work, and few men in the gas, electric and street railway fields have had a wider circle of friends. Early in life he was connected with the Pennsylvania, West Shore and the New York, New Haven & Hartford railroads, and later with the Staten Island Rapid Transit Company. Following a subsequent connection with the Metropolitan Street Railway, New York, he became superintendent of the Forty-second Street & Manhattanville Railroad. He held this position at the time the street railways of New York City abandoned the cable system and adopted electric traction. In 1901 Mr. Dill went to Ypsilanti, Mich., as general manager of the traction company there and later held similar positions in Kalamazoo, Mich., and Youngstown, Ohio. In 1908 he became associated with the Susquehanna Railway, Light & Power Company, entrusted with the management of the Elmira Water, Light & Railroad Company, one of its subsidiaries, and two years later he became vice-president and general manager of this property. From Elmira he was transferred to New York as assistant to the president of the Susquehanna Railway, Light & Power Company, and upon the consolidation of this company into the United Gas & Electric Corporation he was made vice-president, and also held the office of vice-president and a director of many of its subsidiary companies. Early in 1915 Mr. Dill went to New Orleans to assume charge of the work of the company in the South, and returned to New York about a year later. At the time of his death he held the position of vice-president of the United Gas & Electric Engineering Corporation, and during the past year he devoted all of his time to oil interests in Oklahoma.

John F. Calderwood, who resigned as vice-president and general manager of the Brooklyn (N. Y.) Rapid Transit Company on Jan. 1, 1914, owing to failing health, died at Long Lake, Minn., on June 14 at the age of fifty-eight. He had selected Minnesota for a residence after his retirement from railway service because for many years he had been a resident of that State, but he lived only three years to enjoy the life on the farm which he had purchased there. Mr. Calderwood entered the electric railway business from the accounting side and achieved his success as a manager largely through his ability to grasp quickly the lessons taught by accounting reports. He was born at Redford, near Detroit, Mich., on May 27, 1859, and soon after graduation at the University of Michigan became accountant and credit manager of a carpet concern in Minneapolis. In 1888 he was elected city comptroller, and at the close of the term accepted the office of comptroller of the Minneapolis Street Railway which, with the St. Paul City Railway, was afterward consolidated as the Twin City Rapid Transit Company. Previous to the purchase of the Third Avenue Railroad in New York by the Metropolitan Street Railway in 1900, Mr. Calderwood spent some time in the East at the request of the owners of the property with a view of its rehabilitation. The knowledge of electric railway finance and management displayed by him during this period, as well as his previous record, led to his appointment in 1902 with the Brooklyn Rapid Transit Company, first as assistant to the president and later as vice-president and general manager. When Mr. Calderwood went to Brooklyn he took charge of a system which was still loose jointed in many parts and operating with steam on the elevated lines and out-of-date cars on the surface lines. He left it as one of the most progressive electric railway organizations in the United States and paying dividends. Mr. Calderwood was one of the founders of the American Electric Railway Accountants' Association and one of its first presidents. During his connection with the Twin City Rapid Transit Company he was also a frequent contributor to the technical press on accounting topics, and at one time conducted a department in this paper on electric railway accounting, but he was compelled largely to discontinue this outside work after going to Brooklyn on account of the exactions of the work there.

Construction News

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

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

RECENT INCORPORATIONS

Delaware & Maryland Traction, Light & Power Securities Company, Wilmington, Del.—Incorporated in Delaware to acquire railway properties and operate same. Capital stock, $5,000,000. Incorporators: DeArmond Lindes, R. Edward Ives and Charles A. Donnelly, all of Philadelphia. [June 9, '17.]

***Shoshone & Clearwater Railway, Marble, Idaho.**—Incorporated under the laws of Idaho to construct and operate a 33-mile railway to connect with the Chicago, Milwaukee & St. Paul Railroad at Marble. Fred Herrick, St. Maries, president.

***Flint & Great Lakes Railway, Flint, Mich.**—Incorporated to construct an electric railway between Crago from the Detroit United Railway tracks to the Buick factories in Flint. Capital stock, $100,000.

FRANCHISES

Eagle Rock, Cal.—The Glendale & Montrose Railroad has received a franchise from the City Council for the construction of a single-track line in the vicinity of its proposed station.

Modesto, Cal.—The Tidewater Southern Railway has asked the City Council for a franchise to construct a line along Ninth Street, up Nellie Street and thence across the canal. It is proposed to remove the present tracks of the company on N Street and Virginia Avenue.

St. Louis, Mo.—The United Railways Company of St. Louis has asked the Public Service Commission for permission to extend its Sarah Street line east from Sarah and Chouteau Avenue to Tiffany Street and south on Tiffany Street to Park Avenue. The completion of the Chouteau Avenue viaduct will give a direct connection from Park Avenue on the south to Florissant Avenue on the north, with transfers to all east and west-going lines.

Buffalo, N. Y.—The International Railway has received permission from the Public Service Commission for the Second District of New York to extend its Elmwood Avenue line from Hertel Avenue to the city line and also to extend its Franklin Street line between Chippewa Street and Allen Street.

Cleveland, Ohio.—The Cleveland Railway has received a franchise from the Village Council of Cleveland Heights to construct a double-track line from the Cedar Avenue S. E. terminal near East Boulevard along Cedar Avenue to Lee Road.

Columbus, Ohio.—After a series of conferences the County Commissioners of Franklin County and officials of the Columbus Railway, Power & Light Company came to an agreement on the franchise for the Westerville line on June 12 which, with a few minor exceptions, is in accordance with the first proposal of the company. The franchise as accepted calls for a twenty-five-year grant. The conditions of the franchise are referred to on page 1156 of this issue.

Pawtucket, R. I.—The Pawtucket Street Railway, operated by the Rhode Island Company, has received a franchise from the Board of Aldermen to relocate and lay rails in Broadway, School and Main Streets, Pawtucket.

TRACK AND ROADWAY

Mobile & Pensacola Railway & Navigation Company, Volanta, Ala.—This company, which has taken over the Mobile, Volanta & Pensacola Railroad, reports that 10 miles of track have been laid and contracts have been practically closed for the construction of the remainder of 35 miles between Volanta and Pensacola and for the erection of bridges.

Pacific Electric Railway, Los Angeles, Cal.—It is reported that the Pacific Electric Railway will construct an extension of its line from Santa Ana to Tustin.

San Diego (Cal.) Electric Railway.—Work on this company's extension to Balboa Park is being rushed to completion at a cost of about $120,000, and it is expected that the line will be placed in operation this month. The extension is 1½ miles long, rock ballasted, with 75-lb. rail inside the park and 114-lb. rail outside the park. Three steel bridges were required in the extension.

San Diego & South Eastern Railway, San Diego, Cal.—Work will soon be begun by the San Diego & South Eastern Railway on the construction of an extension from Santee to Lakeside, about 2 miles.

Waycross Street & Suburban Railway, Waycross, Ga.—It is reported that efforts will be made to improve and operate the line of the Waycross Street & Suburban Railway recently sold at receiver's sale.

Danville, Crescent & Kankakee Traction Company, Danville, Ill.—Plans are being made to revive the project of the Danville, Crescent & Kankakee Traction Company to construct a line from Danville to Kankakee. Practically all of the right-of-way has been secured. It extends northwest from Danville, through Potomac, Ellis, Rankin, Cissna Park and Crescent City to Kankakee. W. R. Nightingale, Crescent City, is reported interested. [April 4, '14.]

Murphysboro & Southern Illinois Railway, Murphysboro, Ill.—This company's new interurban line between Carbondale and Murphysboro is rapidly nearing completion, and it is hoped to operate the first car between those two towns on July 4. The bridge over the Big Muddy River is completed and cars from Murphysboro are now operating beyond that point. A. B. Minton, Murphysboro, president. [April 7, '17.]

Springfield (Ill.) Consolidated Railway.—This company is relaying about ¾ mile of double track on Peoria Road between Black Avenue and the State fair grounds.

***Goshen, Ind.**—It is reported that an interurban line may be constructed from Goshen to Kendallville, connecting with the Chicago, South Bend & Northern Indiana Railway at Goshen and with the Fort Wayne & Northwestern Railway at Kendallville.

Tri-City Railway, Davenport, Iowa.—This company has awarded a contract to the Central Engineering Company, Davenport, for grading its proposed line on Rock Island arsenal island.

Keokuk (Iowa) Electric Company.—This company will reconstruct its trolley and power transmission line between Hamilton and Warsaw, 5 miles. New poles and equipment have been ordered for this work, which will begin as soon as the new transmission line to Montrose is completed. The old wires will be restrung on new poles.

***Lafflet Electric Railway, Pella, Iowa.**—It is reported that D. S. Umbenhauer, 932 Park Street, Pella, is interested in the construction of a proposed electric railway in connection with the Wabash Railroad.

***Treynor, Iowa.**—Plans are being made to construct an electric railway from Neoga to Treynor, using the old right-of-way of the Iowa & Omaha Short Line. The new line will be built along one side of the right-of-way, leaving the balance for use as a public highway by the county. It is stated that no work will be done on the line this year, owing to the unsettled conditions of the markets for railroad material. E. A. Wickham, Council Bluffs, is interested.

New Orleans, La.—Plans are being made by the Elysian Fields Avenue Commission to renew the campaign for an electric line from New Orleans to Milneburg. Louis H. Burns, New Orleans, is interested. [Feb. 17, '17.]

Boston (Mass.) Elevated Railway.—A contract has been awarded by the Boston Elevated Railway to the Union Switch & Signal Company for signal apparatus to be installed in the Dorchester subway extension of the East Boston subway. The apparatus will include double impedance bond layouts, track transformers, automatic train stops, style L three-lens light signals and U. S. & S. model 15, vane-type, two-position track relays.

United Railways & Electric Company, Baltimore, Md.—This company contemplates the construction of an extension from Stone House Cove to Wagner's Point, about 1 mile.

Duluth (Minn.) Street Railway.—D. H. Clough & Company, Duluth, has received the contract for grading this company's proposed extension on Farrell Road.

West Jersey & Seashore Railroad, Camden, N. J.—Work has been begun by this company elevating its tracks in Westville over Timber Creek.

Salem & Pennsgrove Traction Company, Pennsgrove, N. J.—The Salem County Board of Freeholders has decided to postpone indefinitely further consideration of joining with the Salem & Pennsgrove Traction Company in building a temporary bridge across Salem Creek at Salem, for use of the trolley line. The freeholders were asked to pay $8,000 of the total cost of the structure, but thought that the trolley corporation would receive the greatest benefit instead of the public. Passengers must now walk across the bridge to make connections on the line between Salem and Pennsgrove.

New York Municipal Railway, Brooklyn, N. Y.—The Public Service Commission for the First District of New York will receive bids on July 5 for the construction of Route No. 49, Section 3, the Culver Rapid Transit Railroad in Brooklyn, from a point near Avenue X to Sheepshead Bay Road. Bids are asked on three forms of contract, one calling for the furnishing of all steel and the erection of the same together with the incidental necessary construction. Of the remaining two forms one calls only for the furnishing of the necessary steel, about 3900 tons, and the other for the erection of steel and the furnishing of the necessary materials and labor. The Culver Rapid Transit Railroad is one of the so-called South Brooklyn lines which is being rebuilt as a city-owned elevated railroad.

International Railway, Buffalo, N. Y.—Completion of the new electric line being built between Buffalo and Niagara Falls by the International Railway may be delayed by a movement which has been started in North Tonawanda which may force the company to elevate its tracks all of the way through this city. One track has been laid between Buffalo and Niagara Falls and double tracks have been laid at many points along the line. The track elevation through Tonawanda and North Tonawanda begins about a half mile south of Tonawanda and continues to a point south of the Payne Avenue crossing of the present Buffalo-Niagara Falls line. Payne Avenue and other important streets and roads in North Tonawanda are crossed at grade. Residents of Gratwick in the north end of North Tonawanda have appealed to the municipal authorities to stop further construction of the line at grade through the city. An appeal will be made to the Public Service Commission. It is charged that the operation of high-speed steel cars through North Tonawanda at grade would be dangerous to traffic along the roads.

Western New York & Pennsylvania Traction Company, Olean, N. Y.—Work will soon be begun by this company on the construction of new track on West State Street.

Poughkeepsie City & Wappingers Falls Electric Railway, Poughkeepsie, N. Y.—A certificate filed with the Secretary of State sets forth that the corporate name of the Poughkeepsie City & Wappingers Falls Electric Railway has been changed to the Poughkeepsie & Wappingers Falls Railway Company.

Rhode Island Company, Providence, R. I.—Work will soon be begun by the Rhode Island Company on the reconstruction of its tracks in Wakefield.

Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.—Owing to franchise restrictions which the city of Berea tried to enforce, the Cleveland, Southwestern & Columbus Railway has built a 3-mile line around Berea and is now operating over the new line.

Port Jervis & Delaware Valley Railroad, Matamoras, Pa.—Although considerable money has been paid on stock, the project to build an electric railway from Milford, Pa., to Port Jervis, N. Y., has fallen through. The money will be paid back to the subscribers by the trustees with 3 per cent interest from Nov. 1, 1916, to May 1, 1917. The J. A. Vandergrift Company, Philadelphia, had the contract to build the road. [July 8, '16.]

Schenectady (N. Y.) Railway.—Work will be begun about July 1 by the Schenectady Railway on the double-tracking of its line on Rugby Road from Wendell Avenue to East Alley. The cost of the improvement is estimated at $17,000.

Dallas (Tex.) Southwestern Traction Company.—F. A. Kadane and George Kadane, president and superintendent, respectively of the Creek Construction Company, of Sapulpa, Okla., to which has been awarded the contract for the construction of the interurban line of the Dallas Southwestern Traction Company, between Dallas and Cleburne, have been elected directors of the Dallas Southwestern Traction Company. [June 16, '17.]

Texas Electric & Power Company, San Angelo, Tex.—Work will be begun immediately by the Texas Electric & Power Company on the construction of its proposed line from San Angelo to Winters, via Harriett, Miles, Rowena, Ballinger and Hatchell. Charles W. Hobbs, San Angelo, president. [April 28, '17.]

Saltair, Garfield & Western Railroad, Salt Lake City, Utah.—Work is in progress on the electrification of the Saltair, Garfield & Western Railroad, and it is stated that orders for considerable new material and equipment have been placed. H. A. Strauss, electrical engineer of Chicago, is in charge of the electrification. It is stated that electric cars will be operating to Saltair Beach within the next three months.

Petersburg & Appomattox Electric Railway, Petersburg, Va.—Work will be begun at once by this company double-tracking its line to the camp site at Lakemont.

Morgantown & Wheeling Railway, Morgantown, W. Va.—A report from this company states that it will construct 8 miles of new track.

SHOPS AND BUILDINGS

Boston & Worcester Street Railway, Boston, Mass.—This company has awarded a contract to Thomas P. Hurley for the construction of a freight station on Mechanic Street, Marlboro.

International Railway, Buffalo, N. Y.—This company has opened its new passenger terminal at Lockport, N. Y. The new building is of brick construction and replaces a frame terminal which has been in use for thirty-five years.

New York (N. Y.) Railways.—The rumor has been revived at this time that plans are being made for the construction of a new amusement building to occupy the site of the carhouse of the New York Railways on Eighth Avenue between Forty-eighth and Forty-ninth Streets. It is stated that the lease for the property has been drawn on a basis of twenty-one years' rental with renewal privileges.

Nipissing Central Railway, North Cobalt, Ont.—Bids are being asked by the Nipissing Central Railway for the reconstruction of its carhouse recently destroyed by fire.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—This company is erecting a storehouse 40 ft. x 110 ft., of brick and steel, on its property near the State fair park.

POWER HOUSES AND SUBSTATIONS

Norfolk & Bristol Street Railway, Foxboro, Mass.—This company reports that it expects to purchase one condenser pump.

Wilmington & Philadelphia Traction Company, Wilmington, Del.—Plans have been filed by the Wilmington & Philadelphia Traction Company for the construction of an addition to its power plant on the Brandywine River.

Georgia Railway & Power Company, Atlanta, Ga.—This company will construct a 38,000-volt transmission line from its Dunlap plant on the Chattahoochee River, 3 miles from Gainesville, to the Pacolet and Gainesville cotton mills and furnish about 6000 hp. for their operation.

Interstate Electric Company, San Angelo, Tex.—This company will construct an electric transmission line to Paint Rock.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—Work has been begun by the Milwaukee Electric Railway & Light Company on the construction of a $1,000,000 power house on the shore of Lake Michigan in the suburbs of Milwaukee.

Manufactures and Markets

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

Rolling Stock Purchases Market Quotations Business Announcements

Purchasing Agent Should Be Shock Absorbers for Department Heads

The Salesman Would Have Less Difficulty in Obtaining Information from Technical Men of Railways if He Were a Technical Man Himself

By Ernest E. Stigall
Purchasing Agent Kansas City Railways Company

It is difficult to say to what extent the general overhead cost chargeable to some particular article in manufacture would be reduced by showing 10, 25 or 50 per cent reduction in the expense of the sales force, as discussed by W. McK. White, in the issue of the ELECTRIC RAILWAY JOURNAL for June 2, page 1031. It is possible, however, to show very clearly the attitude of our company toward new material or equipment submitted for consideration and purchase.

We watch eagerly at all times for an opportunity to reduce our costs or to increase the safety or convenience of operation by new methods, new equipment, etc., which may be offered. On account of this policy, the company has for several years been represented by eight or ten officials at each annual convention, and has supplied each department with from one to a dozen copies of the ELECTRIC RAILWAY JOURNAL, which naturally stimulates interest and furnishes information relating to possible changes in equipment and supplies.

Many Tests Being Made on Equipment

In addition to this, we are of course constantly studying and experimenting in our own plant and are in a position to consider new material or equipment submitted by manufacturers' representatives. The policy prevailing here in connection with new material or equipment is simply to reject such of these as the technical men in the department concerned may decide would not improve our present conditions, even though the material tested out to be all that was claimed for it. On the other hand, if the service results claimed for such equipment or material would improve present conditions, and we have reason to believe the performance under test would come up to the claims set forth, arrangements are immediately made for a complete service test.

By following this plan, we escape loading down our system with the details of a testing laboratory when there is nothing to be gained, and we do not lose the opportunity for a constant improvement of our property because of rejecting material which might prove valuable if adopted as a new standard simply because of red tape or a stone wall between ourselves and the manufacturer. We naturally avoid the practice of buying new material merely for the purpose of changing our purchases from Smith to Brown, etc.

Again referring to the article mentioned, it is our suggestion that the representative of the manufacturer would not have difficulty in obtaining information from the technical man of a street railway company, if the representative were a technical man himself. Obviously, little can be accomplished if a salesman equipped only with superlatives and assurances of 50 or 100 per cent saving, etc., is in conference with a practical operating man who wants actual, definite and complete information based on actual service performance. The engineer or mechanic is of course busy with the operation of the railway system, and it could very easily be that more than one-half of his time would be taken up by salesmen if he should permit this to be done. In my judgment it is the duty of the purchasing department to act as a sort of shock absorber to protect the different department heads from too many callers, just the same as the secretary to the executive of an organization would protect him.

When the purchasing department is in doubt regarding the advisability of a salesman calling directly upon the department head concerned, a special inquiry is made. If this department head believes it would be advantageous for him to go into the details of the material or equipment to be considered, then this is arranged for, but if the department head is already sufficiently informed so that he knows the subject under consideration would not improve his conditions, then the time of both the department head and the salesman are saved by this means. We do not believe there are many instances in which a recommendation to the president for purchase of certain materials for test would be refused approval. In my judgment the subject resolves itself into the question of conscientious service to the company, and a desire to show constant progress combined with a co-ordination through the proper organization, which will permit the company morale to obtain the proper results.

No Great Increase in Business Expected with Prices Soaring

"Spasmodic" Must Characterize Buying with Material Prices Continuing to Rise—Manufacturers Should Co-operate with Railways for Fare Increase

By W. S. Hammond
Vice-President Consolidated Car Heating Company

Considering the conditions existing in the material market at the present time, the business offering is fully as good as can be expected. What the future prospects are is very difficult to prognosticate, on account of the constantly climbing prices in the material market. This naturally makes for higher prices right along, and with car equipment and supplies at the present prices, and with higher ones to come. it is difficult to see how there will be anything but spasmodic buying for immediate needs. Sales of buzzer equipments are good and thermostatic control and starting signal systems are in fair demand.

Recent articles in the JOURNAL have discussed the possibilities for fare increase on the electric railways. This is a most vital subject. The power which the manufacturers can exert in helping to secure increases in fares should be put into concrete form. My idea is that the Manufacturers' Association should outline a campaign which each member could push vigorously in his own community. It is highly important that the public should be educated to the difficulties confronting the railways, not only because of the increased cost of materials, but also because of the increased maintenance charges of both roadway and cars, increased platform expenses, taxes, etc. Such increases in operating cost cannot be offset entirely even by putting into effect the most rigid economies. The situation of electric railways in these respects is akin to that of the steam roads, but the former have even greater difficulties to surmount in attaining relief.

As far as better business prospects for the manufacturers are concerned, it is my idea that there will be no great increase in the volume of business as long as prices continue to increase, for managers cannot possibly feel justified in planning extensions and improvements under present conditions. There will of course be good orders here and there, placed because of sheer necessity, but our railway companies must be made more prosperous in order that they may extend and improve their systems, thus improving the outlook for themselves, for the manufacturers and for those whom they serve.

Electric Power Club Discusses Present Problems

Standardization, General Engineering Recommendations, Cost Accounting and Other Questions Affecting Service to the Nation Discussed

The eighth annual meeting of the Electric Power Club was held at the New Willard Hotel, Washington, D. C., on June 11 and 12. The program, which was given in the May 26 issue, was carried out practically as planned. In the absence of Howard E. Coffin, W. S. Gifford outlined the work of the Council of National Defense and Paymaster John M. Hancock, officer in charge of purchase division of the Bureau of Supplies and Accounts, Lieut. Alexander Sharp of the electrical division of the Bureau of Steam Engineering and Mr. Dean, electrical expert of the Bureau of Construction and Repair, spoke of the methods of these various navy departments in filling their electrical needs.

The chief topic of discussion of the whole meeting centered around the address of C. E. Patterson of the General Electric Company on uniform accounting. The accounting and cost system which is recommended for adoption by electrical manufacturers has the indorsement of the Electrical Manufacturers' Club, the Electric Power Club and the Associated Manufacturers of Electrical Supplies. It moreover bears the indorsement of the Federal Trade Commission. Another paper which proved very instructive was one read on the analysis of increased cost in manufacturing conditions during the past three years. This showed the upward trend of prices of all material used in the manufacture of motors. There was also an interesting discussion on the subject of national economy.

E. R. Harding, the president of the club, owing to the condition of his health tendered his resignation as president, and C. L. Collens, 2d, the vice-president, was elected in his stead. F. S. Hunting of Fort Wayne, Ind., was elected vice-president and T. E. Barnum of Milwaukee was elected to the board of governors. C. H. Roth of Chicago continues as secretary and treasurer. There were no other changes in the board of governors, which now consists of the president, vice-president, secretary and treasurer in addition to the following: James Burke, Burke Electric Company, Erie, Pa.; J. C. Hobart, Triumph Electric Company, Cincinnati, Ohio; J. R. Jeffrey, Allis-Chalmers Manufacturing Company, Milwaukee, Wis.; T. E. Barnum, Cutler-Hammer Manufacturing Company, Milwaukee, Wis.; W. A. Layman, Wagner Electric Manufacturing Company, St. Louis, Mo.; S. L. Nicholson, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.; H. C. Petty, Crocker-Wheeler Company, Ampere, N. J., and R. J. Russell, Century Electric Company, St. Louis, Mo.

Government Books on Statistics

Compilation for 1916 of Foreign Trade Statistics and a New Book of Business and Commercial Statistics

Two new official books of statistics that should be helpful to all manufacturers, and particularly to those whose products have foreign sale, have just been announced by the Bureau of Foreign and Domestic commerce, through E. E. Pratt, chief of the bureau. The title, "Commerce and Navigation of the United States, 1916," describes a regular annual publication of this department. This book is well known among those who study foreign trade. It is the original and only official source of yearly trade statistics. The 1916 number, according to Dr. Pratt, is one of the most important that have ever been issued, because that year stands out in the history of the foreign trade development of the United States. This book contains 950 pages of statistical tables, and forty-one pages of summary tables giving foreign trade data in a most convenient form by articles, by countries and by customs. The price of this book is $1.50.

The "Statistical Abstract" for 1916 contains 771 pages of the latest available American and foreign statistics. This is a reference book covering the subject of agriculture, forestry and fisheries; manufacturing and mines; internal communication and transportation; merchant marine and shipping; foreign commerce; consumption estimates; prices, money, banking and insurance. There are also commercial, financial and monetary sattistics of the principal countries in the world. Copies of this book are to be distributed at the price of 50 cents to cover the cost of printing. Both books are obtainable by addressing the superintendent of documents, Washington, D. C., or writing to the nearest district or co-operative office of the Bureau of Foreign and Domestic Commerce.

Copper Market Conditions

Government Contractors Hesitate to Place Orders—Plans Made to Pool All Purchases for Our Government and Its Allies

The *Wire Message*, published by the Habirshaw Electric Cable Company, Inc., and the Electric Cable Company, in reviewing the present market conditions, says: "'Waiting' would well describe the condition of the copper market during the past month. One feature of uncertainty as to the government's position has apparently been removed: On May 23 an announcement was made in Washington that plans were being devised to pool all purchases for our government and its allies. Assuming this will be done, there still remains three important points to be determined, viz., price, quantity, and periods of delivery. It is to be hoped that some definite information on these points will soon be forthcoming, and the uncertainty which now prevails in the copper market removed. During the latter part of May copper showed decided signs of improvement, which to our mind is fully justified: The present demand for copper is enormous, and the future requirements of our government and its allies must run into huge figures. Exports of copper during this year are breaking all previous records.

"Production and demand must determine prices. It is evident that if production exceeds demand prices must go down. At present there is no evidence that this is the case; in fact, all evidence is to the contrary. It should be noted that factories with government orders have been uncertain whether the government would supply the copper. Naturally they have hesitated to buy heavily. We read in the *American Metal Market* of May 28 that one large manufacturer having a contract to supply the government with articles requiring a large quantity of copper, applied for assistance. The government replied it could lend no aid, and the manufacturer was forced to go into the market and cover his requirements the best he could."

New Westinghouse Officers

At the organization meeting of the directors of the Westinghouse Electric & Manufacturing Company, officers were re-elected, with the addition of three new vice-presidents, as follows: H. D. Shute, who has been treasurer of the company; H. T. Herr, who has been vice-president of the Westinghouse Machine Company, now merged with the parent company; and Walter Cary, who has been vice-president of the Westinghouse Lamp Company. H. F. Baetz succeeds Mr. Shute as treasurer and assistant secretary.

G. E. Gets Order for Big Turbine

The Public Service Electric Company, Newark, N. J., has just placed an order with the General Electric Company for a 30,000-kw., 13,200-volt, 60-cycle, three-phase turbo-generator. As noted in the ELECTRIC RAILWAY JOURNAL of June 9, page 1040, the Essex plant contains at present two General Electric 25,000-kva. units. In addition a 35,000-kw. unit of the same type is in process of installation and a 50,000-kva. unit is on order. This last order for a 30,000-kw. unit will, when installed, give this plant more than three-fourths of its ultimate capacity, which is 200,000 kw.

ROLLING STOCK

London (Ont.) Street Railway is reported to have purchased five city cars.

Olympia (Wash.) Light & Power Company is reported to be considering the purchase of one-man cars.

Michigan Railways, Jackson, Mich., has specified the following details for five vestibuled pay-within cars which are being built for the company by the St. Louis Car Company:

Number	5
Builder	St. Louis Car
Type	pay-within
Seating capacity	40
Weight (total)	26,840 lb.
Truck centers	19 ft. 0 in.
Over bumpers	41 ft. 4 in.
Over vestibules	40 ft. 4 in.
Over posts	8 ft. 2 in.
Floor to ceiling	7 ft. 6 in.
Sill to trolley base	8 ft. 5¼ in.
Body	Steel sides with wooden superstructure
Interior trim	Honduras mahogany
Headlining	3/-16 in. Agasote
Roof	Turtle deck
Underframe	Steel
Air brakes	Westinghouse
Axles	St. Louis Car
Bumpers	Rico anti-climbers
Cables	St. Louis Car
Car trimmings	Bronze
Conduits	St. Louis Car
Curtain material	Pantasote No. 77
Curtain fixtures	Forsyth No. 88
Designation signs	Illuminated. E. S. S. Mechanism
Door mechanism	Hand-operated
Fenders	Ry. Co.'s design
Gongs	12 in. bronze pneumatic
Hand brakes	Ackley
Hand straps	Rico sanitary
Heaters	Peter Smith No. P-S
Headlights	Crouse-Hinds
Journal boxes	St. Louis Car
Paint	Murphy ABC
Registers	International R-5
Sand box	With Reliance trap valve
Sash fixtures	OMEdwards
Seats	St. Louis Car
Seating material	Rattan
Springs	Pittsburgh steel spring
Step treads	Mason
Trucks	St. Louis Car Co.'s 106-A max. traction
Ventilators	Automatic
Wheels	33-in. driver, 21-in. pony
Special devices	Faraday buzzers

Gary & Interurban Railroad, Gary, Ind., noted in the June 9 issue as having placed an order through Ford, Bacon & Davis for two motor and four trail cars, has specified the following details for this equipment.

Number	6
Date of order	May 28, 1917
Date of delivery	Oct. 1,1917
Builder	McGuire-Cummings
Type	Center-Entrance
Seating capacity	56
Weight (total)	38,000 lb.
Over bumpers	45 ft. 0 in.
Over vestibule	44 ft. 0 in.
Over all	8 ft. 6 in.
Rail- to trolley base	11 ft. 0 in.
Body	All-steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Axles	Carbon steel
Bumpers	Rico anti-climber
Car trimmings	Bronze
Conduits	West.
Control	H. L. D.
Couplers	Tomlinson No. 8
Curtain fixtures	Curtain Supply No. 88 with "Rex All Metal" Rollers
Curtain material	Pantasote
Designation signs	Hunter
Door mechanism,	Nat'l Pneumatic
Fare boxes	International
Fenders	H. B. Lifeguards
Gears and pinions	West.
Hand brakes,	"Horne" double-acting
Hand straps	Rico sanitary
Heaters	Gold Car Heating
Headlights	Crouse-Hinds L.L.A.
Journal boxes,	McGuire-Cummings
Lightning arresters	West.
Motors	4 West. 514-A inside hung
Registers	International
Sanders	Ohio Brass Pneumatic
Sash fixtures	O. M. Edwards
Seats	Hale & Kilburn No.400-A
Seating material	Rattan
Springs	Coil and elliptic, McGuire-Cummings
Step treads,	Universal "Anti-Slip Tread"
Trolley catchers	Knutson No. 5
Trolley base	U. S. No. 13-D.
Trolley wheels	West. groove
Trucks	Arch bar with equalizers
Ventilators	Railway Utility
Wheels	Griffin F.C.S. 26 in.
Special devices	Consolidated Car Heating buzzer system, Ellcon white enamel stanchions

Springfield (Ill.) Consolidated Street Railway has specified the details shown in the following table on seven pay-within cars which are being built for it by the St. Louis Car Company:

Number	7
Builder	St. Louis Car
Type	pay-within
Seating capacity	40
Weight (total)	26,840 lb.
Truck centers, length	19 ft. 0 in.
Length over vestibule	40 ft. 4 in.
Width over posts	8 ft. 2 in.
Floor to ceiling	7 ft. 6 in.
Sill to trolley base	8 ft. 5¼ in.
Body	Steel sides with wooden superstructure
Interior trim	Honduras mahogany
Headlining	3/16-in. Agasote
Roof	Turtle deck
Underframe	Steel
Air brakes	Westinghouse
Axles	St. Louis Car
Bumpers	Rico anti-climbers
Car trimmings	Bronze
Cables	St. Louis Car
Control	K-36-J
Couplers	St. Louis Car
Curtain fixtures	Forsyth No. 88
Curtain material	Pantasote No. 77
Designation signs	Ill. E. S. S. Mechanism
Door mechanism	Hand operated
Fenders	Ry. Co.'s design
Gears and pinions	Nuttall
Gongs	12 in. bronze pneumatic
Hand brakes	Ackley
Hand straps	Rico sanitary
Heaters	Peter Smith No. P-2
Headlights	Crouse-Hinds
Journal boxes	St. Louis Car
Lightning arresters	West.
Motors	Two West. 532-B. outside hung
Paint	Murphy ABC
Registers	International R-5
Sand box	With Reliance trap valve
Sash fixtures	OMEdwards
Seats	Hale & Kilburn
Seating material	Rattan
Springs	Pittsburgh steel spring
Step treads	Mason
Trolley catchers	Ohio Brass
Trolley base	Ohio Brass
Trucks, type	St. Louis Car 106-A max. traction
Ventilators	Automatic
Wheels	33 in. driver, 21 in. pony cast-iron
Special devices	Faraday buzzers

NEW YORK METAL MARKET PRICES

	June 16	June 21
Prime Lake, cents per lb	32½	32½
Electrolytic, cents per lb	32½	32½
Copper wire base, cents per lb	36	36
Lead, cents per lb	11⅞	11¾
Nickel, cents per lb	50	50
Spelter, cents per lb	9¾	9¾
Tin, Straits, cents per lb	60⅝	63½
Aluminum, 98 to 99 per cent, cents per lb	61	61

OLD METAL PRICES

	June 16	June 21
Heavy copper, cents per lb	28	28½
Light copper, cents per lb	25½	25½
Red brass, cents per lb	17½	17½
Yellow brass, cents per lb	18	18
Lead, heavy, cents per lb	8¾	8¾
Zinc, cents per lb	7	7¼
Steel car axles, Chicago, per net ton	$48.00	$53.00
Old car wheels, Chicago, per gross ton	$36.00	$43.00
Steel rail (scrap), Chicago, per gross ton	$39.50	$48.50
Steel rail (relaying), Chicago, per gross ton	$42.50	$54.50
Machine shop turnings, Chicago, per net ton	$18.00	$19.50

CURRENT PRICES FOR MATERIALS

	June 16	June 21
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	$40.00	$40.00
Wire nails, Pittsburgh, per 100 lb.	$3.50	$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	$4.00	$4.10
Steel bars, Pittsburgh, per 100 lb.	$4.40	$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	$7.35	$7.90
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	$9.05	$9.30
I-beams over 15-in., Pittsburgh, cents per lb.	10	10
Galvanized barbed wire, Pittsburgh, cents per lb.	$4.35	$4.65
Galvanized wire, ordinary, Pittsburgh, cents per lb.	$4.15	$4.85
Cement (carload lots), New York, per bbl.	$2.40	$2.40
Cement (carload lots), Chicago, per bbl.	$2.31	$2.31
Cement (carload lots), Seattle, per bbl.	$2.60	$2.60
Linseed oil (raw, 5 bbl. lots), New York, per gal.	$1.21	$1.18
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	$1.22	$1.19
White lead (100 lb. keg), New York, cents per lb.	12¼	12¾
Turpentine (bbl. lots), New York, cents per gal.	44	43

TRADE NOTES

Frankel Connector Company, Inc., New York, N. Y., has moved its salesrooms to 1140-1146 Broadway.

Lawrence Grant has been appointed managing director and treasurer of the Eugene F. Phillips Electrical Works, Ltd., Montreal.

A. Press, consulting engineer and patent attorney, has changed his address from Norman, Okla., to 1777 Broadway, New York City.

Lincoln Electric Company, Cleveland, Ohio, announces that it has appointed the Ross Power Equipment Company, 617 Merchants' Bank Building, as its Indianapolis representative.

Francis C. Shenahon, for the last eight years dean of the College of Engineering of the University of Minnesota, has opened offices in the new Metropolitan Bank Building, Minneapolis, and will give his entire attention to his practice as a consulting hydraulic engineer.

Le Carbone Company, Paris, France, maker of Le Carbone carbon brushes for railway, lighting and power purposes, has just established a selling agency for South America with headquarters at Buenos Aires. This action, in view of the war conditions in France, is significant as a proof of the indomitable spirit and enterprise of this corporation. The North American sales of Le Carbone carbon brushes are being handled by W. J. Jeandron, New York.

Railway Improvement Company, New York, N. Y., announces that it has received the following orders for Rico sanitary hand straps: Eighty cars being built by The J. G. Brill Company for the United Railways & Electric Company, Baltimore, Md.; 100 cars being built by the Cincinnati Car Company for the Cincinnati Traction Company; four cars being built for the Toledo, Bowling Green & Southern Railway; eight cars being built for the Eastern Pennsylvania Railway; and fifteen cars being built for the Northern Texas Traction Company. It has also received orders for anti-climbers to be used on the cars being built for the Lewiston, Augusta & Waterville Street Railway and also for those of the Worcester Street Railway.

Stanley Motor Carriage Company, Newton, Mass., manufacturer of steam automobiles and railway cars, has been taken over by a new Delaware corporation of the same name. The new officers are: Prescott Warren, president; Carleton F. W. Stanley and Frank Jay, vice-presidents, and Edward M. Hallett, treasurer. They have all been associated with the company for twelve years. F. E. Stanley and F. O. Stanley, who founded the company in 1898, are now retiring.

Economy Fuse & Manufacturing Company, Chicago, Ill., through its president, A. L. Eustice, announces that every member of the organization, from the officers and directors to the newest office boy, has purchased one or more Liberty bonds. The employees, numbering more than 200, have subscribed a total of $80,000 worth of bonds through the company's selling plan, which is based on weekly payments proportioned to the wage or salary of the individual. In some cases the payments are as low as 25 cents a week. In addition, the company will pay the last $5 to the employee who remains with the company the required length of time. If an employee leaves the company before his subscription is entirely paid for, the money paid in will be refunded, together with 6 per cent interest.

Miller Trolley Shoe Company, South Boston, Mass., announces that the number of orders being received indicates the rapidly increasing popularity of this equipment on widely scattered properties. About 300 electric railways are now using these shoes. The New York, New Haven & Hartford Railroad has ordered enough shoes to equip twelve trains on its Nantucket Beach branch, as the result of favorable experience with this apparatus on the Providence-Fall River line of the company. Fifty shoes have been ordered within a few days by the Chicago, North Shore & Milwaukee Street Railway, and inquiries have been received from as far south as Brazil. A number of these shoes are in use in Cuba. In New England, the roads using this equipment are the Union Street Railway, New Bedford, Mass., six cars; Pittsfield Street Railway, ninety shoes; Cumberland County Power & Light Company, Portland, Me., twelve cars; Bangor Railway & Electric Company, two cars; Hartford and Bridgeport divisions of the Connecticut Company, ninety cars. Trial installations are also in service on the New Bedford & Onset Street Railway and the Massachusetts Northern Street Railway. The company is now bringing out an improved design of sliding shoe in which there are but thirteen parts, against twenty-one in the previous standard, and in which all bolts and nuts have been eliminated. This equipment will weigh about 5.25 lb., or about 1 lb. less than the ordinary 5-in. trolley wheel and harp. The company has recently moved into new quarters at 15 Elkins Street, South Boston.

NEW ADVERTISING LITERATURE

Portland Cement Association, Chicago, Ill.—A bulletin, "Concrete Tile for Land Drainage," illustrative and descriptive of types of concrete drain tiling.

Westinghouse Church Kerr & Company, New York, N. Y. —A reproduced blueprint of their mammoth Stirling boilers for the Detroit Edison Company. A large superimposed Simplex automobile shows by comparison the enormous size of furnace.

Combustible Engineering Company, New York, N. Y.: Bulletin B.2 on its type E stoker. It gives a number of cross-sections and elevations, and explains the detail operation of the stoker. Sections on distribution of air, automatic regulation, forced and natural draft, and smokeless operation are emphasized.

Wagner Electric Manufacturing Company, St. Louis, Mo. —A large calendar hanger on which the Wagner boy is shown with a model of the original plant built in 1889 in his hand, and comparing it with the present plant shown at the right. The dates of the present, past and succeeding months are given on the three pads and run from May 1, 1917, to June 30, 1918. Complete calendars for 1917, 1918 and 1919 are given on the hanger under the pads.

Lorain Steel Company, Johnstown, Pa.: Catalog No. 20, 259 pages. Deals with girder and high T-rails, slot rails, girder guard rails and other electric railway shapes; also gives the latest design of the company in special track work, including the "tadpole" type of tongue switch in manganese steel and guarantee construction, also various types of mates, frogs, and crossings. There is also a section on electrically welded joints which says that the electrical welding process is being applied not only to track in paved streets but to standard T-rail on exposed track. In such construction an expansion joint is used. The catalog is illustrated with handsome halftone sections of rails and other products of the company similar to those used in previous Lorain catalogs but brought up to date and including the latest sections.

New Publication

Electric Railway Transportation.* By Henry W. Blake, Editor Electric Railway Journal, and Walter Jackson, Business Manager, formerly Associate Editor, Electric Railway Journal, New York, N. Y. McGraw-Hill Book Company, Inc., New York, N. Y. 487 pages. Cloth, $5 net.

As the title implies, this book deals with the transportation methods and practices of electric railways. Very little relating to the work of electric railway transportation departments has been published in book form, and the authors of this volume have attempted to fill a gap in the literature of the industry. They state in their preface that they have devoted their efforts to making the information relating to their subject, contained in the Proceedings of the American Electric Railway Association and in the columns of the electric railway press, more readily available in book form, and to adding such comments of their own as may be of possible help to the man in the operating department. While the authors make no claim that the book is a complete compilation of the practices of all companies, many valuable operating data have been collated.

The first chapter, which deals with the various types of operating department organization, serves largely as an introduction. While not so divided by the authors, the subjects treated in the remaining eighteen chapters may be grouped under four heads, namely, relations between service and traffic, collection of revenue, promotion of traffic, and management of the transportation forces. Under the first heading the chapter titles (adjustment of service to traffic, accelerating traffic movement along the line, accelerating traffic movement on the car, car types in relation to traffic, city time-tables—preliminaries, and interurban schedules and dispatching) deal with such topics as standards of service, traffic counts and their analysis, car-demand curves, the rush hour and the problem of ameliorating rush-hour conditions, economy of higher speeds, the skip-stop, duration of stop, methods of speeding up car loading, effect of size of operating unit on traffic acceleration, car types and their relation to schedules, time-tables and time-table construction, and car dispatching.

The second group of chapters discuss the vital questions of fares and fare-collecting devices and practices. Among the topics treated may be mentioned, riding habit as determined by fare, metal tickets, transfers, reduced class rates, owl-car service rates, free riding for employees and others, fare zones, mileage and commutation books, passenger movement in fare collection, prepayment devices, traffic recorders, and conductors' reports.

The important question of public relations, promotion of passenger traffic, traffic signs, competition, and the freight and express business are the chapter headings of the third group. Courtesy first, service improvement bureaus, making change, co-operation with vehicle owners, public referendums, safety equipment, relations with the press, company publications, the motor bus, the jitney, and the various methods of promoting new business are among the topics which form the contents of these chapters.

The practices, with comments thereon, of a number of companies relative to the selection and training of men, wages and wage agreements, welfare work, discipline of trainmen, and forms of extra pay are set forth in the chapters dealing with the management of the operating forces.

*Reviewed by D. D. Ewing, Associate Professor Electric Railway Engineering, Purdue University, Lafayette, Ind.