

Electric Railway Journal

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

Volume 50

NEW YORK, SATURDAY, OCTOBER 13, 1917

Number 15

High Spots in the Conference Discussion

TUESDAY'S conference of the American Electric Railway Association in New York will produce an immediate and far-reaching effect if the many excellent suggestions made by the speakers are carried out. The papers and discussion are given at length in this issue of the ELECTRIC RAILWAY JOURNAL in order that the industry as a whole may understand the tenor of the suggestions and that the contagion of the spirit of the meeting may spread as it ought to spread. We suggest that all other duties be laid aside until this report has been studied carefully and until the reader feels the virus at work in his system. "Do something and do it now" was the general sentiment. In fact, one speaker went so far as to claim that unless the virus "took" within twenty-four hours the expense involved in attending the meeting would have been incurred in vain. This hyperbole is perhaps over strong but at any rate it suggests vigorous action. Our industry confronts a condition, not a theory, and is entering upon an era which promises to test its ability to hold that public confidence which is the ultimate source of income and capital. The New York discussion showed a realization of the fact that the big job is the holding and augmentation of this confidence, everything else being secondary and incidental.

Information, Concentration, Co-operation Are Words to Conjure With

AT the conference the industry seemed to be shaking itself preparatory to a general advance as a whole, to a capitalizing of the study and discussion which has been going on for years. Just as we as a nation are in the great war primarily to preserve the independence won in 1776, so as an industry we are warring against popular misconception of the electric railway business. The struggle is not against the public, for the industry exists alone for and by this same public. The railway is an integral part of the public which owns its securities, taxes it liberally and pays what it must for transportation service. The task is so to bring about a general realization of the whole truth that the community will be as proud of a successful utility in its midst as it is of a prosperous soap factory or machine shop. To this end the railways must first have full information themselves, they must have this for the general good and, if necessary taking to heart the experience of other industries, present a solid front to misconception, ignorance and prejudiced opposition. While the attendance at the New York con-

ference was not large numerically compared with the total number at an Atlantic City convention, it was very representative and the attendance at the sessions compared very favorably with that at any meeting forming a part of a normal convention. The concentration of interest and purpose was of a high order. We believe that the conference will prove to have been a real benefit to the industry.

Publicity as a Means to Secure Higher Fares

PRESIDENT STORRS declared in the latter part of his presidential address at the conference that he is an optimist on the electric railway situation, that he believes that the public is awakening to an understanding of the present situation as regards the electric railways and that out of the present misunderstanding will arise relations which will establish electric railway investment on a basis of stability and soundness and will give to the public service commensurate with its needs. We believe he is right. It is inconceivable that the public through its representatives, the public service commissions, will not grant the needed relief, once the railways put their case properly before both the commissions and the public, but the railways must prove the need of increased fares to both.

The plea that the railways should tell their story to the public is not a new one. It has been urged at conventions and in this paper for many years past. Some work along this line has been done, but much more remains to be accomplished. The experience of the Bay State Street Railway as related by Mr. Sullivan shows its effectiveness and that the public is disposed to be fair when it has the facts.

It is our positive belief that if electric railway companies in general had been frankly telling their story to the public for the past ten years, they would not be in their present position. When they found they could not properly maintain their properties and pay a fair return on the investment, they should have said so publicly. But a number of companies have not done so until within the last year. A still larger number have done nothing as yet to explain their real condition. The situation now is such, however, that action cannot be delayed. The address of President Storrs shows that it is practically impossible now for railway companies to sell new issues of stock. Bonds can be disposed of only at ruinous rates. If action is not taken soon, it will be too late.

Another thought and a most important one brought

out at the conference was that the future of the industry depends not only on individual work but on cooperative effort. This means that the responsibility of the association for the improvement of present conditions is greater now than ever before. Publicity plans have been drafted previously by the association, but they have either not been carried out or have been directed along ineffective channels. The association now has an unexampled opportunity to prove its usefulness to the industry. It should forget its past mistaken efforts and set itself to the task of real publicity along approved lines.

Keep the Big Idea to the Front in Your Mind

WE are going to be like a college debater we once knew. We shall not waste time proving that the electric railway industry needs additional revenues. We admit it. Unlike our college friend, however, we are safe in our major premise, for electric railway managers know positively that the industry is today in a critical financial condition. Nor will they question our minor premise—*i.e.*, that additional revenues can be secured through a higher flat rate of fare, a charge for transfers or the installation of a zone system. But this premise involves alternatives, and we are not now prepared, nor do we think the industry is, to draw the conclusion that any one method is best for all conditions.

The speakers at the conference this week brought out interesting points in regard to the various methods of increasing fares. For example, the railways in New York State, outside of the metropolitan district, recently asked for a 6-cent fare because it was felt that the simple question of a 1-cent increase offered the easiest means of confirming the present plenary power of the commission to raise rates regardless of the old railroad law or franchise stipulations. As for the transfer charge, the New York Railways feel that this is justified by the additional service given to transfer passengers, by the unprofitable operation of crosstown lines to carry passengers to closely situated longitudinal lines, and by the effect of such a charge in further reducing transfer abuses. But the zone system, in Mr. Gruhl's opinion, offers particular attractions by reason of its indirect and therefore least unpopular characteristics, its recognition of the principle of paying operation for all classes of traffic, its lack of a diminishing effect upon short-haul traffic and its greater flexibility to meet future needs. Each of these three methods, it might be said, is in use and is practicable as regards collection and other possibly mooted points—on the Bay State Street Railway, in Cleveland and in Milwaukee respectively.

The discussion of the relative merits of the three plans raises questions that are vital to electric railway development, but in considering them electric railway managers should be careful not to lose to view the one big point involved in any method of increasing fares—that is, the getting rid of the idea of a rate fixed only

by tradition. Railway men are coming to realize that the nickel must be abandoned, but in bringing this about it is desirable for them to understand clearly that abandonment means the substitution of a rate based on the cost of service for a rate determined by custom. The nickel rate of the olden days was a combination of chance and the all-the-traffic-will-bear rule. The rate of the future will be one based on reason and determined in fairness to all parties.

This is a radical readjustment, and it is even more necessary for the public to understand it than the railway men themselves. At the present time the legal processes for securing increased fares are too slow, as we have remarked at other times. If the consent of the public to a speeding up of rate regulation is to be obtained, however, it must be made to see how the new rate-making fundamental is infinitely more in its interest, both in the way of a scientifically determined fare and in the latter's effect upon railway development and consequently upon community prosperity. Hence, no matter how many debates may be held as to the superiority of any method of increasing fares, let us never forget the all-important task of putting the big idea across to the public.

The Whole Fare Question Needs to Be Scientifically Studied

IN fact, the electric railway industry is not now ready, as we said above, to say that this or that method of increasing fares is to be preferred for general use. It is not inconceivable that in the fullness of time the idea of introducing the distance factor into rate-making may be widely adopted. But now the whole matter of fare increases is in an experimental stage. It is not to be expected that after the long years of stagnation with a fixed fare the best basis of charge for all circumstances can be immediately determined.

Local conditions vary, and the various methods of increasing fares will probably all be tried out by individual companies. All of the experiments will not be equally successful. But the failure of 6-cent fares, for example, to increase considerably the revenues of a single corporation should not lead to the condemnation of this method. Nor should a similar isolated experience with the zone system or charging for transfers lead to sweeping generalizations. It may be that each of these methods of increasing revenue will be found to have a definite place in the electric railway industry of the future.

The present task is very similar to that which has confronted the medical profession on many occasions. The reaction of each remedy must be carefully studied. Symptoms must be diagnosed and the condition of the patient closely analyzed. It is only in this fashion that science has been able to conquer disease. The electric railway industry needs to work similarly. There are certain principles which govern the results secured by each method of increasing revenue. Each case must be minutely studied to ascertain the reasons for the dissimilarity of results as between several properties

adopting the same remedy. In this fashion fundamental principles will be discovered, and the limitations of each method clearly defined. It will then be possible for a corporation entitled to larger revenues to determine accurately what method of fare revision should be adopted, after a careful analysis has been made of its local operating and traffic conditions.

The point of the whole matter is that the fare situation needs a careful, exhaustive and scientific investigation, and no more important suggestions have been made to the American Electric Railway Association than those by President Storrs and Mr. Choate for the use of committees and even a bureau in this work. The task should not be left to individual companies, voluntary investigators or the commissions. The problem now confronting the electric railway industry is very similar to that which some years ago confronted the electric lighting utilities. The introduction of a power load and the development of off-peak uses completely changed the technical and financial aspects of this industry. A careful research was undertaken by individual companies and the National Electric Light Association, with the result that a scientific basis of rate-making was evolved. In the same fashion, the solution of the electric railway fare question must be worked out in co-operation by the electric railway corporations, if a permanent solution is to be secured without delay.

This work can best be done by a central organization with the assistance of a trained expert, working under the direction of an energetic committee of executives. This is what was done in 1913-15 by the committee on cost of passenger transportation service. The association could do no better at this time than to revive the Bureau of Fare Research established by this committee and to extend the study begun by the bureau under Mr. Doolittle to cover this question of a proper basis for urban fares.

Women and "War Bonuses" in Electric Railway Service

TWO aspects of the labor situation were presented in the papers by Messrs. Brooks and Connette, the former discussing the possibility of the wider use of women in railway service and the latter the question of the so-called war bonus for employees. Briefly, Mr. Connette's views on the latter subject were, first, that labor would be scarce for a number of years after the war and, second, that with conditions as they are at present railways cannot afford to pay a war bonus. In these circumstances the two alternatives are the more extended use of female labor and the use of less platform labor, as with the one-man car.

Although, unfortunately, there was no formal discussion of Mr. Brooks's paper, the thought was expressed by several managers both before and after the meeting that women could serve in many more positions than they now do in electric railway operation. Indeed, most companies are employing them now to a far greater extent than ever before, although not on the cars themselves, as in car cleaning and in the shops.

Of course, women have long been extensively em-

ployed in electric railway shops in the manufacture of coils and in armature repair, but the experience abroad in ammunition work shows a much wider range of opportunity in the shops than this. Thus, in Europe, they have shown their ability to operate machine tools, and in such work their delicacy of touch and pride in their work gives them some advantages over men. All-in-all, there seems to be no reason why they could not be employed to a greater extent in electric railway repair shops than at present.

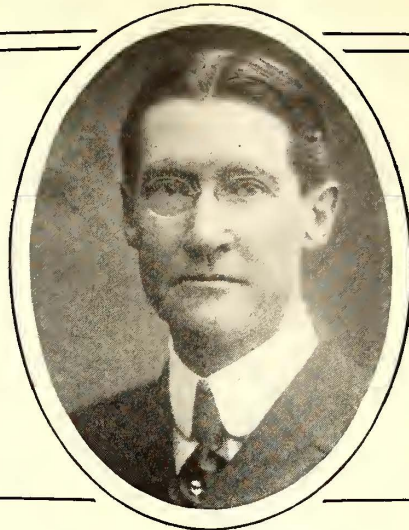
It is, however, on the platform that the largest field is open because of the large percentage which platform labor bears to all labor employed on an electric railway. Here, we believe, at least as far as conductors are concerned, much of the supposed prejudice on the part of the public in this sphere would be found not to exist on actual trial. It is only because the experiment has not been undertaken that it seems to offer serious difficulties. But with the draft on our man-power which the war demands, we believe that America could well follow the lead of the European warring nations in this regard.

If a beginning is made, it would be appropriate to give employment so far as that could be done to women in the family of those employees who have joined the military forces. These women probably would be more familiar with many of the rules than any selected at random, and would also probably be more acceptable to the other employees. The history of this war has shown that many women have taken up the work of their male relatives who have gone to the front, more examples being found, of course, abroad than in this country. There seems to be no reason why the same principle should not be extended to railway service.

Are They Beginning To Feel Their Responsibility?

COMING as it does from a man intimately concerned, the statement of Charles A. Prouty, quoted elsewhere this week, throws an interesting light upon the federal valuation system. It does not matter so much that the valuation act is now said not to require the fixing of ultimate values. To be sure, Congress and the public at large understood that final figures of value were to be the great result of the act, but legislative blunders have occurred before. The present deficiency, if the public so desires, can easily be made up by Congress without wasting much of its valuable time. But what does matter, and very much, is the fact that the division of valuation of the Interstate Commerce Commission is just beginning to appreciate the problem ahead of it. Mr. Prouty, as head of the division, while insisting that ultimate values should be ascertained, naïvely remarks that "it may be doubted that any such final value can be safely stated until the tribunal making it has before it a sufficient number and variety of properties so that the full effect of whatever rule is adopted can be clearly apprehended." Is not this an amusing commentary upon the legislators and the experts of a few years ago, who looked upon the federal valuation as mere child's play?

The Problems of the Electric Railways*



The Higher Cost of Labor and Materials Necessitates Higher Fares or Reduced Burdens of Taxation, or Both. It Is the Duty of Every Railway to Explain These Matters to the Public

By L. S. Storrs

President American Electric Railway Association, and President Connecticut Company, New Haven, Conn.

WE have met at a time when the structure of our government is being put to a test. As during the Civil War the principles laid down by our fathers in the Constitution were subjected to rack and strain from the stress of internal affairs, so now are they called upon to withstand a storm that menaces nearly all that there is of civilization in the world. Under our beneficent and easy-fitted code of law and manners, freedom of thought, of action and of conscience has been developed to a degree reached by no other nation. Of many types, of many ancestries, of many minds, of many tongues, of many inherited ideas of government, our citizens have sought to work out their own beliefs with little reference to those principles which earlier Americans regarded as necessary to a republican form of government. The consequence has been a maze of theories, as well as a freedom of thought and action which has amounted to virtual license and which has gone on unchecked because, in the main, the interest of the individual has seemingly been but little affected and because the business of counteracting the evil was every one's and consequently no one's business.

That condition has changed. The winning of this war, in which we are so justly engaged, touches intimately every citizen. We must show that this republic under the form of government bequeathed it by our fathers is as efficient in times of war as in times of peace, or for us there will be no times of peace; and to be efficient in either peace or war it must be prepared to face facts, to build its policy upon facts and to confront situations as they arise.

I have said this much because it has a direct bearing upon the very problems that you are gathered together to discuss. We are in point of magnitude the seventh industry of the country. The work that we do is a necessity to other industries and to practically every man, woman or child who resides within our borders. Without the system of transportation which we represent our present civic development would have been an impossibility. This industry has also a very important part to play in the winning of the war; I am not referring to the direct task that we are performing in the movement of men and supplies for the army, or to the possibilities of usefulness disclosed by the study of railway conditions made for the War Department by

the association, for which we are rapidly preparing. I am rather pointing to the task before us in properly serving those industries upon which our army, our navy and, indeed, our people as a whole depend.

The people of the United States, if they are properly to solve the problems which must be solved in order that their country shall emerge stronger, abler and better from the present crisis, must face facts in regard to *our* industry as they must face facts relating to their other affairs; they must recognize the call of necessity; they can no longer temporize with a situation that has become acute; they can no longer indulge in the luxury of speculation when action is a prime requisite.

It is hardly necessary to sketch the tremendous strides of urban transportation during the last score of years. In this period the demand upon transportation agencies has constantly increased for better and better facilities, a lengthening of the distance of the ride for a single fare, a more positively assured continuance of service and a safer transportation. All of these have been for the benefit of the community in lessening tene-ment congestion and the like, but all of them have been at the cost of the transportation agency and have been shown in constantly declining surplus earnings. At the same time the cost of performing street car service has been increasing, until with the alarming increase in the cost of all units comprising operation and upkeep of the properties the income of practically all transportation agencies is not sufficient to meet the needs and obligations of the companies and to supply sufficient funds to enable their officers to finance the growing requirements.

As has so clearly been stated by the Public Service Commission of Massachusetts in a rate case decision, "it should never be forgotten that our public utility companies are not finished. They are in progress, they are constantly calling for new capital and of recent years in increasing amounts."

COST OF LABOR INCREASING AND SUPPLY DECREASING

As has been shown in the proceedings of every wage arbitration within the past few years, the cost of living of all classes of operatives has been increasing rapidly. These increases have, as a natural sequence, resulted in a higher rate of wages, all to be paid from the 5-cent piece that had for so long been found to be the absolute minimum at which transportation could be sold. Nor

*Abstract of address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

is this the only labor problem with which the operators of our properties are confronted. In many localities it is now impossible to obtain a sufficient number of operatives properly to conduct the service which should be given. At the same time the draft is calling great numbers of our operatives for national service. Thus the depletion of our ranks is constantly accumulating and the shortage in the supply of efficient operatives calls for the greatest ingenuity on the part of the managers to keep even a moderate measure of service in operation. In many instances we are, at the present time, equipped with even less labor than under normal conditions, and this at a time when the needs of the community are for increased service.

SIMILAR CONDITION EXISTS WITH MATERIALS

The alarming increase in the cost of all material, fuel and supplies is so well known as to warrant but little discussion. With increases in cost of from 50 to 250 per cent there has been, in many cases, a decrease in the character of various materials supplied, and we are further confronted with a delivery of from one year to two years on materials that in normal times would be delivered within as many months. The absolute necessity for an adjustment of some of the prices has been recognized by the government in the appointment of a fuel administrator to supervise the production, distribution and cost of fuel and also by the attempt of other governmental agencies at so-called price-fixing of other materials which make up a large portion of the supplies required by the industry. With these facts so clearly patent it takes no prophet to indicate the ultimate outcome.

Every device that the most ingenious engineers, managers and executives can conceive has been adopted in the production of power, operation of service, maintenance of cars and type of equipment to stem the constantly increasing cost of performing service and, if possible, to keep this increased cost within the bounds of the increased revenue under the old basis of rates, but all to no effect. There has for a long time been this constant decrease in the margin between income and outgo with a gradual loss in the item of surplus available for interest and dividends, until in the case of many companies surplus applicable to a fair rate of return upon the value of the property devoted to the public service has so far sunk that the item "dividends" in the income statement is a thing of the past, to which managers could point with pride, but which even the most optimistic cannot anticipate for the future as we are now going.

When one of the largest transportation companies in the country, most ably officered, most efficiently operated and with a record of dividend payments running back over its entire history, is compelled to refinance an expiring issue of mortgage bonds with an issue bearing 7 per cent interest at a time when all other industrial concerns find a free market for their securities on a 5 per cent basis, it is clearly evident that there is not the money available to supply the absolute needs of this industry for additions and betterments of physical property, to say nothing of funds for new ventures. Investors have abandoned this formerly popular type of security and it is our affair to rehabilitate the industry in financial quarters.

The needs of a typical American city, one located in New England, clearly evidence the situation.

This city has always been known as one of the most prosperous industrial communities and had gradually grown to a population of 140,000, upon which basis all civic needs had been established—its agencies of transportation, its thoroughfares, its policing and all public utilities. With the constant increase in the demand for war supplies, its industrial population increased to a point that would represent a city of 200,000, and with this increase came a great congestion of all facilities, both those of the city itself and of the utilities serving the city, with the natural result of inadequacy of facilities and absolute requirements for large investments to meet the tremendous needs. These demands upon the part of the transportation utility are clearly shown and thoroughly known to all people in authority and to the great body of the public. By reason of the shortage of facilities the cost of performing service has so rapidly advanced that there is no longer a net revenue, no longer an ability to present a balance sheet sufficiently attractive to investment bankers to obtain funds for the necessary expansions, and there is but one solution—an increase in revenues. Near-bankrupt companies cannot give good service. Electric railways, after all, cannot sell transportation at less than cost and keep it up, and if the companies are hurt it is the public that suffers.

Increased fares are for the public's benefit. Increases are demanded, and it is the duty of those charged with the management of this great utility to present these needs to the public served, for without increases to enable the utility to meet its requirements comes ultimate disaster. There is no ripening of custom into the right on the part of the public to necessitate our operating under a specific rate regardless of its reasonableness. The public can demand a reasonable rate. The utility can exact no more.

THE REMEDY IS OUTLINED

We all realize that there is nothing mysterious, nothing unusual in the manufacture of transportation. It has been constantly brought home to us, and it is a recognized fact that we are quasi-public servants and that the public must be made fully cognizant of our needs through the medium of either constant publicity, or through the commissions and regulating bodies, for these authorities really embody in their decisions their interpretation of public sentiment.

An enlightened public opinion expressing itself through its legislative officers can be of incalculable assistance in the passage of laws relieving this industry of burdens placed upon it in the past, for it is not in increase in revenue alone that our salvation lies. In addition, the unjust and unreasonable requirements that call for an expenditure of that revenue must be changed, and the revenues of transportation corporations must be devoted solely to the business of transportation and be not subject to unfair assessment in the interest of a portion of the public in each community. I am referring to the requirement relative to pavements in city streets, the outgrowth of old horse-car days, which is to-day but an additional tax upon an already overburdened utility. It is subject to abuse and results in unequal enjoyment of the revenue by the

public. There are other matters of like nature that also require correction.

The industry is undoubtedly at the parting of the ways; there are fundamental problems to be dealt with which, unless handled in an enlightened way, will seriously undermine the whole foundation upon which the industry is based. That enlightened treatment can come only through the medium of an informed, intelligent public opinion. It is up to the railway industry to see to it that such expressions of opinion as are made are based upon facts rather than on suppositions and prejudice.

This is a work that can best be done by each company working in its own community, since the problems presented are in all cases tinged by local conditions, which require special treatment, but the association, representing the industry as a whole, can be of great assistance to us all by giving us the benefit of its facilities for the collection and compilation of information and by studying through its committees the questions presented. I believe that we should seriously consider the establishment, at once, within the association of a bureau so equipped as to afford to member companies the best possible aid along the lines I have indicated.

TIME FOR CONCERTED ACTION IS HERE

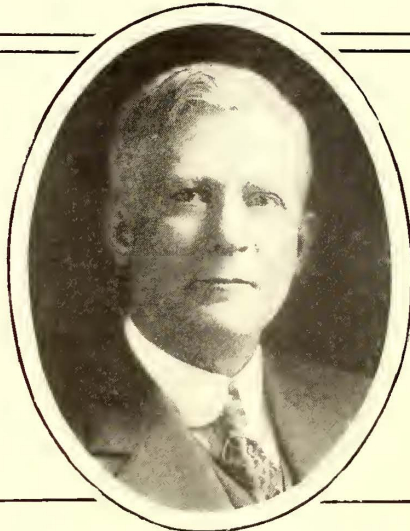
The time is here when concerted action is needed. We must all work together for a common end, and that end the rehabilitation of the industry in which we are

all interested. It is no easy task that is contemplated. It involves a long hard struggle against odds, but to my mind our duty is clearly indicated. We have gone as far as economy of operation and improvement of methods can take us. We must now seek relief from those within whose power it is to grant relief. With increased revenue and freedom from unjust and unreasonable burdens—an absolute essential if the electric railway industry is to continue to perform the service demanded by its patrons—it is our duty to lay our case before the representatives of the public authorized to remedy those conditions, be they public service commissions, municipal officers or legislatures, and before the public to whose will such representatives are responsive, and to demand of both that we be given a living wage for the services we perform.

In this way we shall be doing our duty to owners of the properties whose trustees we are, and at the same time placing the responsibility for such conditions as may in the future arise to the detriment of both public and owners where it rightfully belongs.

I am optimistic as to that future. I believe that better times are ahead of the railways; I believe that the public is awakening to an understanding of their situation and that out of the present misunderstanding will arise relations which will establish electric railway investment on a basis of stability and soundness and will give to the public service commensurate with its needs.

Female Substitutes for Male Employees*



Women Can Be Used Extensively as Electric Railway Employees. Testimony from Great Britain and Italy Quoted as to Their Value in Train Service. Conditions More Favorable in Many Respects in This Country Than Abroad.

By F. W. Brooks

President Detroit (Mich.) United Railways

IN our country it has never been the practice nor has it been deemed necessary to give to girls the same mental and physical training in schools that is given to boys. It is therefore necessary to establish a method of training that will overcome prejudices and customs to the end that women may have such confidence in the new field of endeavor as will enable them to perform satisfactorily the duties that may be assigned to them.

Certainly, women show as much aptitude in certain occupations as men and perhaps possess greater pride of accomplishment. The sex problem is of course present and will occasion serious concern on the part of everybody. But I believe such concern will result largely from misapprehension and that no insurmountable problem is thereby presented. The public environment of

women employed in electric railway service is in the nature of a guarantee that they may pursue their employment undisturbed by improper influences.

I shall endeavor to refer in their order to the subdivisions of the topic assigned to me and to have in mind the practice prevailing on the properties with which I am connected. In general, and for the purpose of this discussion, the work constituting electric railway operation may be classed and limited to the executive, transportation and maintenance divisions.

POSITIONS OUTSIDE THE TRAIN SERVICE

Under normal conditions, women have been employed in offices as secretaries, stenographers and clerks and, to a very limited extent, elsewhere. They have shown themselves to be apt students when intrusted with responsibility and, under proper training, are as efficient

*Address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

as young men clerks ordinarily are. Where our office men so employed are entering military service, we are filling their places with women, and in that branch of the service I know of no reason why they should not be employed, if necessary, in any position normally filled by men clerks. Thus, at the present time, we are employing women as cashiers in our carhouses, and they are rendering satisfactory service. We are also beginning the employment of women as car washers and station cleaners.

In the mechanical, power, and track departments, women are used extensively as clerks, and it is the opinion of our department heads that they may be satisfactorily employed in other occupations, as in coil winding, controller work, upholstering, painting and glazing, as drill hands, switchboard and dynamo attendants, oilers, wipers, and in many like occupations that do not involve heavy lifting or severe out-of-door employment. There are, of course, certain positions involving contact with the public that must be filled by men, but I think it safe to say that women may comprise one-half the transportation force.

WOMEN IN TRAIN SERVICE

The question is asked as to the physical and mental work required of motormen and conductors. It is now almost the universal practice to equip cars with simplified apparatus. In fact, it is the claim of the labor union that this has been accomplished to such an extent that skill in the operation of the car is no longer required, and a man with ten days' training is as capable and efficient as the man who has operated a car for many years. Of course I emphatically disagree with that claim and only mention it to emphasize the simplicity and efficiency of the electric car equipment. Our cars in the main are of the folding door, stepless type, electrically operated. The controlling device is simplified and handled with slight physical exertion. Gongs and fenders are manipulated easily by foot pressure. Perhaps the most difficult physical undertaking in the operation of a car is to turn a switch point which is not electrically controlled and to replace a trolley. When men are accepted for this employment, they are subjected to a medical examination to determine their physical condition and their ability to move about with promptness. Also, great care is exercised in this examination to determine the condition of their eyes and hearing. If these are normal, a man is accepted without further physical examination.

It is my opinion that women can perform the work of motormen and conductors satisfactorily. It is a current opinion that they may become excitable and lose control of their vehicle when contending with congested traffic conditions. I very much doubt the correctness of that view. It is to be understood, of course, that they must be especially trained with respect to that condition, and it is my observation that under such conditions women are driving taxicabs and other motor vehicles as successfully as men are doing like work. Both motormen and conductors are permitted to remain seated while on duty outside of restricted congested areas, and certainly the employment is not more severe than that performed by women in factories and probably as clerks in stores.

I doubt if it would be practicable or profitable to undertake the employment of women for rush-hour periods

only. Such an arrangement, it seems to me, would entirely unbalance the organization and would lead to unreasonable expectations. Persons employed but a few hours each day would have a limited earning capacity, and almost immediately the question would arise as to how their earnings should be supplemented so that they might have an income necessary for their support. Also, it is in the nature of the undertaking to maintain a large force of nearly idle employees. I would advise a very earnest consideration of such a plan before its adoption. In the employment of females in any considerable number, it doubtless would be necessary to make extensive and expensive dormitory arrangements for their accommodation, and such arrangements should be ample and well thought out.

The question is asked as to wage schedules and the probable attitude of labor toward the change. It is my opinion that the same wage must be paid women for like service as to men. Of course, there will be exceptions, but I take it that the problem which may confront us is to increase the available supply of labor, and if women may be made as efficient as men, they should receive the same consideration. We have been informed of the opposition of the labor union and that it will resist the employment of females for platform work unless the United States government shall have declared such employment necessary. I cannot say that I have formed a definite conclusion respecting this topic. Conditions in our country, however, may bring us squarely face to face with the problem at no distant date, and I therefore am glad to take part in any discussion that will afford us light.

BRITISH TESTIMONY FAVORABLE TO CONDUCTORS

In concluding, it may be interesting to refer to the experiences of European tramway managers. They generally unite in claiming the entire success of women as conductresses, but disagree in so far as motresses are concerned. In Great Britain they hold that on the front end of the cars women have done very good work, but doubt the advisability of the permanency of such employment in ordinary times, while in Italy entire success is claimed for women as motresses—and they are said to be equally efficient as collectors.

The clearest expression of the British view is given by James Dalrymple, Glasgow, who writes us:

"So far as conducting is concerned there is no difficulty whatever. Driving, however, is rather different and although the women manage it all right, I think that possibly the physical and mental strain would become rather too much for them. In fact, generally speaking, I do not think women are suited for this work. In driving a car they are quite cool, but when an accident occurs many of them collapse and are of no use for the remainder of the day. In conducting, however, they can manage the passengers just as well as the men could do. I think in normal times that there will be no difficulty at all in keeping women as conductors."

Pointing out the simplified method of American fare collection, Mr. Dalrymple says:

"So far as conducting is concerned, I have often thought how simple it would be for women to do this work in your country as compared with what it is here. The duties of a conductor with you would suit women admirably."



BRITISH PRACTICE—WOMAN SWITCHBOARD ATTENDANT

Mr. Dalrymple points out that American car operation with air brakes would give our companies a decided advantage with motresses, as against the prevailing hand brakes of the Glasgow and other British systems.

The Tramway & Railway World of London, however, is extremely conservative in its views on the success of women in the street railway business, stating that:

"When earlier in the war the necessity arose for employing women in the place of men as conductors we expressed the view that such a course could only be justified if it was absolutely unavoidable. Experience has

confirmed that opinion. It is probably not too much to say that there is not a tramway manager in the country who will not feel a sense of relief when, on the return of peace, it becomes practicable to release every woman conductor in his employ."

The adaptability of women as drivers was discussed some two months ago before the military tribunal of Hull, England, in a hearing on the claim for exemption of three motormen. The army officials contended that women were entirely a success and cited Glasgow, Doncaster and Cardiff as proof, while the manager of the Hull Tramways pointed out that women were not used on the London Tramways as drivers; that Paisley, a neighboring city of Glasgow, strongly opposed them, and that Newcastle and Leicester had tried them, finally placing them in the discard. The secretary of the men's union testified that in his experience women could not stand the strain in cases of emergency and added that in Manchester two cases were recorded of women conductors fainting, following collisions with passing vehicles. Exemptions were granted.

TESTIMONY FROM ITALY

The tramways in Italy give every indication of approval of women both as motresses and conductresses. Marquis Cusani of Milan has furnished us very extensive views, the results of close study of the problem of female help.

"This only," he says, "is certain and sure, that in almost every Italian city, the traction concerns and the public do not desire to revert, if avoidable, to male service, as the women have shown themselves to be much more honest and kind with the public as conductors and much more attentive and safe as drivers. Our Italian trainwomen seem to manage passengers much better than their male colleagues do. Italian tram managers and the public of Rome, Florence, Pisa, Viareggio, Livorno, Palermo, Turin, Padua, Verona and many other cities lay much more stress on the fact that



BRITISH PRACTICE—WOMEN CAR CLEANERS

they doubt if it would be advisable after the war is over to go back to man labor for electric car driving, the motorwoman having performed generally so much better than the motorman."

The marquis points out that with women there has been a decrease in accidents and quotes the manager of the Municipal Tramways of Rome (one of five companies operating there) that the accidents in the first six months in 1917 as compared with the first six months of 1916 show a decrease of 17.3 per cent, about one-third of the drivers being women at the date of writing. The population of Rome is 550,000. There are many steep grades, some as steep as 160 ft. to the 1000, with single-track car lines on streets as narrow as 18 ft. from wall to wall, and double tracks on 27-ft. streets. Rome began the employment of women both as motresses and conductresses at about the same time as Glasgow.

Other opinions from Italian general managers are as follows:

Florence—"Our company has a female personnel very well drilled and well answering to the exceptional demands of the street car service. It has been proved that women are practically fit for tramway work, and it has also been sufficiently proved that the public prefers them to men, if for nothing else, for their greater kindness and courtesy."

Palermo—"Our car service is actually filled in a large part by feminine crews, women conductors and motorwomen, who are giving us very satisfactory results."

Livorno—"Seeing the good results which are forthcoming, we have been well satisfied with the service rendered on our cars; we really advise the employment of women for street car work."

Bologna—"The employment of women conductors has given very good results, especially owing to the greater politeness shown toward passengers."

Viareggio—"We are glad to state that our company



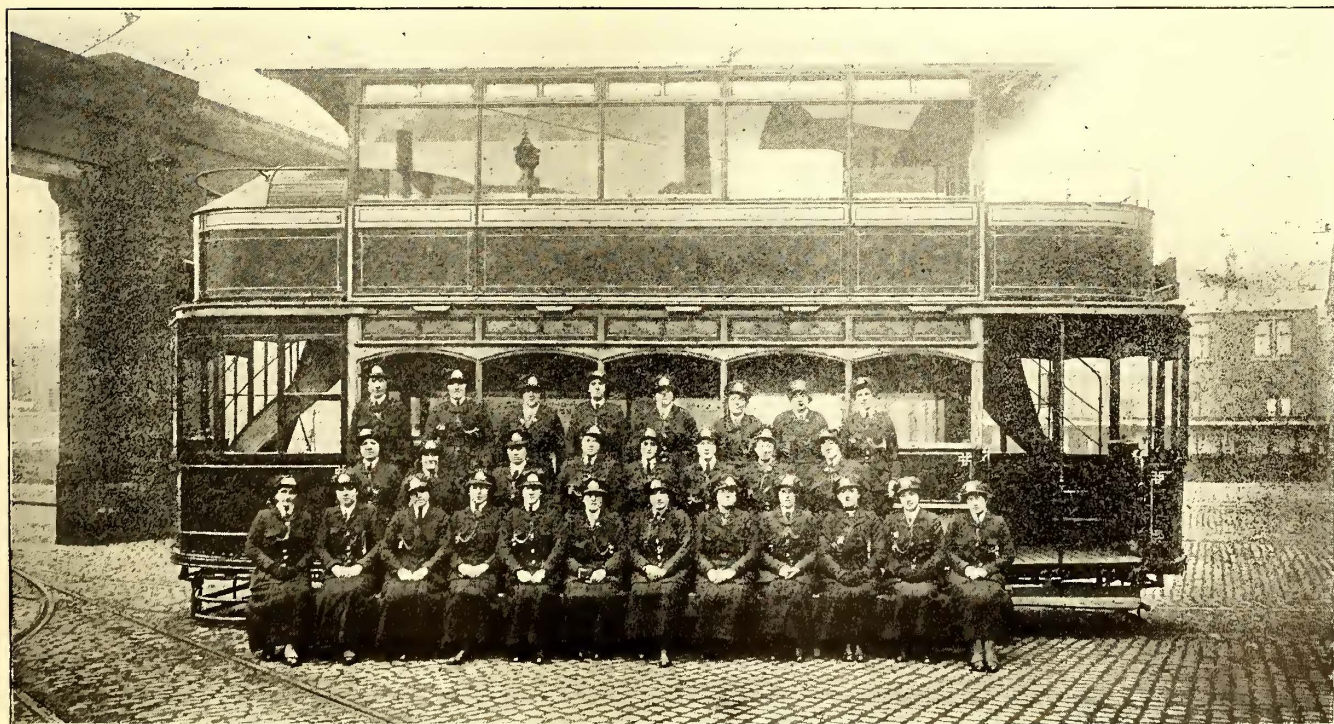
BRITISH PRACTICE—WOMEN DRIVER AND CONDUCTOR

has employed women both as conductors and motorwomen with really excellent results."

OTHER INFORMATION FROM EUROPE

Our information as to France, as in the other European countries, is that women are employed in large numbers on both ends of the car, but their use on the front end is of only comparatively recent date owing to the strong opposition of the authorities. The results have generally been satisfactory.

Wages paid women in the great majority of Euro-

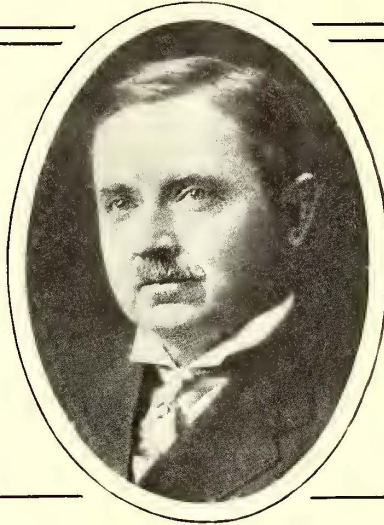


BRITISH PRACTICE—GROUP OF MOTOIRESSES

pean municipalities are the same as men, though in Great Britain the war bonuses granted women are less than those given the men. In Rome they obtain the same pay and work the same hours on both night and day shifts. On the other hand, Sheffield reports that while the pay is the same, women are more expensive by a matter of \$50,000 a year, as fourteen women conductors have been necessary to accomplish the same work as eleven men.

Operation in Europe is much more complex than in this country. Hand brake operation is the rule, the power brakes being generally reserved for use on steep grades and for emergency stops. The zone collections and double-deck construction add heavily to the conductor's work when compared with the simple pay-enter system being gradually adopted on this side of the water. For instance, one company in Rome uses eighteen different kinds of tickets.

War Bonus for Electric Railways*



Prices Are Likely to Remain High for Some Time After the War, so that Railways Must Make Permanent Provision for Greater Net Income. This Might Well Be Secured by Relief from Paving, Franchise and Other Taxes.

By E. G. Connette

President United Gas & Electric Corporation, New York, N. Y.

IN considering briefly what has been done in granting a war bonus to electric railway employees, it is well to look full in the face some of the pressing financial troubles of the electric railways. It is also well to understand how our troubles arose. From one end of the country to the other come the reports of the electric street railways whose employees are asking for relief to meet the high cost of living. Everywhere the story is the same—the story of fixed fares and rising costs. True, there's a revolution in progress against the nickel, enthroned years ago as the czar of the trolley world. But the revolution against his rule is spreading, and I think his deposition is certain.

The difficulties of the electric railways were brought, in part, to a critical state by world causes. While the great increase in the prices of commodities of all kinds and of labor began long before the war, it is in the period since the war opened that these increases have become the greatest. But just as prices were going up in a period long before we entered the war, so I believe the return to the levels prevailing at that time will not be a matter of days, weeks or even months after the signing of the peace treaty. The tide of prices rose gradually over a long period, and the ebbing of the tide will carry well on beyond the termination of strife on the battlefield. The wealth of all sorts destroyed to the value of billions of dollars cannot be replaced in a brief time. The absolute removal by death and injury from the world's productive lists of many millions of workers cannot be compensated except by a filling of the ranks from the rising generation.

The lessons of history are unmistakable in this respect. 'Twas so after the Civil War; 'twas so after the Napoleonic wars. It has been so after all the great historic wars; that is to say, wars extensive enough to af-

fect appreciably the problems of supply and demand for goods and the supply and demand for men. The English economist, Thorold Rogers, tells in "Work and Wages" of the economic effects of not only great wars, but even great plagues, as they affected European countries in the Middle Ages. The invariable phenomenon accompanying either a great war or a great plague has been a rise in wages, due to the demand for labor. He describes the sixteenth century in England as a "golden age of labor." The dearth of working men, due to plagues and war, and a consequent rise of wages were not offset by gains in population for the better part of a century. Measured in terms of the cost of living, wages were higher in that century than in any other down to the present day.

THE INFLEXIBLE FARE A MISTAKE

Interesting as these things are to the historian and to the economist, to the electric railway man they are very serious in their import. They mean a long period of high costs and high wages. The present situation all grows out of the mistake made in the days of street railway infancy, of setting a fixed fare, the nickel, to remain through all times to cling about the electric railway man's neck and choke him as a veritable Little Old Man of the Sea.

When many of the long-term or perpetual franchises under which modern electric railways are operating were adopted, the electric railway, it has been pointed out, was no further developed, if indeed so far, as the aeroplane is to-day. Would the United States government to-day make a contract for aeroplane mail carrying, for instance, at a fixed rate to cover all future time or even for twenty-five years? Would any aeroplane company do it either? Even if such a contract were fair when made, it could not always remain equitable to both.

*Address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

But the fact that the mistake of the fixed fare was made should not be allowed to hamper the future of our communities. For that, after all, is what insistence on a fixed fare would mean. Individuals come and go, and their fortunes are of little moment. But modern cities to be prosperous must have efficient public utilities. And without prosperity public utilities cannot be efficient. Anything done to the damage of the public utility damages the community by the harm it does to the public service.

This is the big lesson to communities of the struggle of the electric railways to get out of the web of a fixed fare. Whether the 6-cent fare is the remedy for present troubles, or the zone system or a new form of public control for electric railways, such, for instance, as the Tayler ordinance in Cleveland, or the conditions governing railways in Milwaukee or in Kansas City, or whether it be municipal or near-municipal ownership, need not be debated now. I'm not inclined to find a panacea in any one of these measures.

One of the immediate problems coming in the train of perplexities brought on by the fixed fare is that of meeting the almost universal demand for more and more wages and still more wages caused by the rising costs of living, due to the war. The company is rare indeed that has not made at least one raise in wages since, say, 1912, and many of the companies have made several. Nor have they all been forced by strikes. Numerous raises have come through direct negotiations with the men through arbitration, and many have been made by the companies voluntarily, notwithstanding the fact that the earnings of very few, if any, of the companies warranted any increase in the cost of operation, especially if proper provision had been made for taking care of maintenance and renewals.

But as the tide of living costs continues to rise, and with it the need of higher wages, the same rising tide of costs finds the poor employers—and the interests of their employees as well—chained to the stake of the fixed nickel fare. The waters even now are rising about their necks, and some indeed have been utterly submerged, while others are in the hands of the life saving crew—the receivers.

How can the demand for increase of wages or wage bonuses be met with income already too small? Some companies have endeavored to meet the emergency by a war-time bonus, holding, as seems true, that as the emergency is one of war time, it is too much to ask that a permanent wage scale be set now, that a war-time bonus, to endure only while war conditions last, is the fairer solution. Labor unions generally are opposed to a wage bonus of any kind, as the wage earner is naturally inclined to secure the highest possible wage in permanent form and not one that cannot be automatically reduced. Therefore, the question of wage bonus is a difficult one to solve. The theory of it is doubtless correct from an economic point of view, provided the company has the earnings to warrant it.

WAR BONUSES IN PRACTICE

In England the government committee on production decreed that all employees on the electric tramways more than eighteen years of age should receive an increase of 2s. 6d. (about 60 cents) a week as a bonus on the war wage now being paid, while all employees under eighteen are to get a bonus of 1s. 3d. (about 30

cents). These bonuses are regarded solely as war bonuses.

Numerous companies in Canada have announced war bonuses in a desire to meet the increased cost of living. In Vancouver, B. C., the men refused the bonus, but the arbitration board granted the increased wage demands of the men, stipulating, however, that the increase was only for the duration of the war, making it in effect a war bonus.

In America steps along this line, varying in details, I have been informed, have been taken by companies in Athens, Lexington, Topeka, Richmond, Joliet, Louisville, Duluth, Cumberland, Harrisburg, Los Angeles, Seattle, Washington, Mobile, Grand Rapids, East St. Louis, Colorado Springs, Chicago and elsewhere. But the bonus is an emergency measure, the emergency brought about by the war. It is not a cure, it is a palliative. It does not remove the cause of the disease, it treats only the symptoms. Even if a company wishes to pay a war bonus the great question still remains with most of them, "Where is the money to come from?" "Who is to pay the companies a war bonus?"

HOW CAN THE COMPANIES BE COMPENSATED?

Not one-half the companies in the State of New York are making even their fixed charges; some are not making even their operating expenses.

Electric railway men believe in the American policy of high wages and prosperous workmen, for this makes prosperous communities. But electric railway companies must pay the wages and their war bonuses out of the fares. Clearly, then, income must be more or charges against the railways, such as paving taxes, franchise taxes, etc., must be eliminated or reduced.

If indirect taxes, such as paving taxes, franchise taxes, a percentage of gross income paid to cities, etc., were eliminated with urban companies generally, it would doubtless increase the income to such an extent as to preclude the necessity for raising fares and, in some cases, would put the companies in a financial position where they would be able to provide for increase in wages or wage bonuses. It is believed that communities generally would prefer to have the indirect taxes removed from the public utility companies rather than have the rates raised.

Frankly, I am of the opinion that the 6-cent fare will by no means settle the problems that press not only upon us and our employees, but upon our communities and our public service commissions. Our legal processes of getting increased fares are at present too slow. Only a few weeks ago the Hornell Traction Company applied to the Public Service Commission for the Second District of New York for an increased fare. The commission hasn't answered that application yet, and, under the present law in New York State, cannot settle it until the opposing Mayor's conference has had its chance to cross-examine witnesses, etc., and take other steps, all of which take time. Meantime the Hornell company has gone into the hands of a receiver.

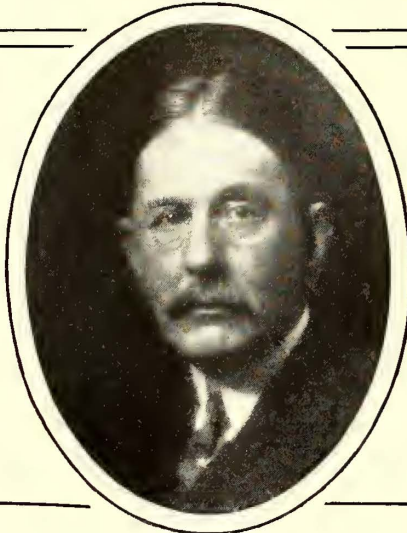
I may point out that there is a psychological factor which must be considered which goes to prevent the success of the plan of merely raising fares. The people do not want to pay higher fares even if they are warranted and necessary in order to provide efficient service and give the investor a reasonable return upon his investment, and, as I have stated hereinbefore, in some

cases with urban companies the necessary earnings to take care of operating expenses, maintenance and renewals and return on investment can be obtained by the elimination of indirect taxes. The people must be educated to see that every charge against a public utility company is paid by the patrons and charges like paving taxes, franchise taxes, etc., come out of the street car rider's pocket instead of the taxpayer who now escapes it, and the riding public would much prefer to have the companies relieved of their tax burdens and retain the present unit of fare. The public must be educated along these lines.

The public must perceive, too, the inequity—or at least the impolicy—of laying on its public utilities

charges that are both inequitable and unsound. Private capital has learned its lesson and has gone on a strike. It cannot be lured back to the electric railway field until it is granted full protection of its investment. Capital cannot be coerced, it must be convinced. It is certainly convinced at this time that the average electric railway is in no condition financially to increase wages or grant war bonuses to employees, unless in some manner they are able to increase their income to meet the charge. The electric railway industry does not enjoy war profits. Its rates are fixed by law. The expense of operating is constantly increasing by the increase in the price of labor and material, and the industry is not in a position to pay war bonuses.

Pending Applications for New York Fare Increases*



A Résumé of the Moves Thus Far Made to Impress the Needs of the Industry Upon the People of the Empire State. The Problem Involved Is National. Association Committee Should Investigate Fare Question.

By Joseph K. Choate

Vice-President J. G. White
Management Corporation, New
York, N. Y.

THE pending applications for fare increases in New York State are of interest because the issues presented are of national importance, and because an unique procedure is being followed in presenting the cases both to the commissions and to the public.

I hope to make clear below these vital points:

1. The problem is national.
2. The situation imperils the very existence of the industry.
3. While relief must be had, it is as much for the benefit of the communities involved as for the companies. Their interests are single.
4. The present crisis is, in truth, a test of the system of commission regulation of public utilities.

APPLICATIONS MADE IN NEW YORK STATE

Because of the fact that there are two commissions in New York, each having a separate and distinct territory, the move for higher fares in this State may, for purposes of discussion, be considered with regard to the geographical subdivisions.

The surface railways operating in New York City are subject to the jurisdiction of the First District Commission. These companies propose to continue the 5-cent fare but ask permission to charge 2 cents for transfers. This course is necessary because the subway is owned by the city and leased with a stipulation for a 5-cent fare. To raise the surface fares to 6 cents would drive the traffic to the subway, whose facilities are already taxed to the limit. There is no city in the

country, moreover, where the use of transfers is proportionately as great as in New York, the average fare being less than in Cleveland.

Thirty-three companies of the seventy-two which are subject to the jurisdiction of the Second District Commission, outside the metropolitan section, have filed petitions for increased fares. These companies operate under a wide variety of conditions. In the number are included several interurban systems, but most of the properties involved are situated in cities and towns. The petitions filed are, in the main, identical. A majority of these petitions ask permission to charge a flat 6-cent fare. No change is to be made in present conditions as regards transfers. In one or two cases the petitioners have asked for 7-cent fares.

The effort of all these companies is of peculiar interest by reason of the fact that, for the first time in the history of the electric railway industry, a large number of companies have united to present their common case to the public and the commissions. A special committee on ways and means to obtain additional revenue was created to conduct the case, and that committee has co-operated with each individual company in the presentation of its particular situation. The result has been to focus public attention upon those facts and tendencies common to all companies and to place the experience of each company in preparing the individual case at the disposal of all the companies. We have been absolutely assured from the outset of the strength and correctness of our position, and our only problem has been to see to it that we made the facts clear to the public and regulative bodies.

*Abstract of address presented at conference of American Electric Railway Association, New York, N. Y., Oct. 9, 1917.

The First District Commission (in New York City) has so far heard only the case of the Third Avenue Railway. By reason of the concentration of interests in this city and the long experience of the officers of the local companies, there has been no occasion for special effort by the committee on ways and means.

Before the Second District Commission, however, the committee secured permission to present, at the outset, comprehensive facts and considerations applying to the industry as a whole and to each of the companies individually. The constantly increasing cost of operation, especially within the last few months, was brought out through the testimony of witnesses possessing expert knowledge of the several phases of this subject. The declining credit of the electric railways and the reason for the disfavor into which their securities have fallen with investors, as a result of the decreasing profitableness of the business, were proved on the basis of careful, scientific and impartial investigation.

One of the knotty questions involved in many of the New York cases concerns provisions in the franchises fixing the maximum rate of fare at 5 cents. These franchises constitute contracts which were entered into in good faith by the companies and the cities. The corporations in accepting them intended, as far as possible, faithfully to observe their covenants, but the time has now come when it is impossible to operate with a 5-cent fare. We are advised by counsel that the courts of New York State have held that attempts by municipalities to fix rates of fare through franchise stipulations are *ultra vires* because the Legislature specifically reserved the right to fix rates of fares and later conferred this right upon the Public Service Commissions.

POINTS THAT HAVE BEEN PRESENTED

In presenting our case, we have attempted to look facts as squarely in the face as we have known how to do. We have been fully aware of the multitude of misconceptions and prejudices with which the public mind is obsessed concerning our industry. A large number of people believe that the street railways are prosperous. Certainly no relief for the companies can be obtained so long as that misconception prevails. We have sought in our presentation therefore to go into the fundamentals of the industry. The main points presented have been as follows:

1. Commission regulation of electric railways has now been in force in the State of New York for more than ten years. In that time security issues have been closely regulated, and therefore the assumption that the progressively less favorable showing was due to the issuance of new securities without value behind them is untenable. The financial position of the companies has become steadily worse.

2. Although operating revenues of the electric railways situated in the Second District have considerably increased in the last five years, the net income, remaining after paying operating expenses and fixed charges, has decreased from \$4,231,000 to \$744,000. To state the matter another way, 15 cents out of every \$1 of revenue remained for the stockholders in 1911 while in 1916 only 4.7 cents out of such amount was so available.

3. The situation has been aggravated by the fact

that states and municipalities have been very busy adding new burdens of taxation and paving requirements. The taxes paid by the electric railways in the Second District in New York have increased 124 per cent in the last ten years. Paving has become constantly more expensive. This requirement which was inaugurated in the horse-car days has now become an arbitrary and indefensible exaction from the electric railway, whose cars never touch the pavement and hence cause no wear on it.

SHORT-SIGHTED VIEW OF MUNICIPALITIES

One of the most discouraging features we have encountered in New York has been the insincere or short-sighted view which representatives of many of the municipalities have taken. Certain officials have opposed us, not because they believe that we are not entitled to relief, but because they believe such opposition to be politically expedient. They argue that they must make a show of opposing us.

So long as our adversaries fight fairly, we have no objection to opposition. We do, however, deplore the studied misrepresentation and clever half-truths which have emanated from certain quarters. Instead of acknowledging that the prosperity of electric railways is a matter of as great concern to the citizens as it is to the corporations, attempts have been made to create a feeling of unfair partisanship against the railways. The average municipal official, in his public utterances, takes the position that the public is on one side and the railway on the other; that their interests are irreconcilable, and that any advantage given to the corporation must be at the expense of the people.

But we have insisted that the prosperity of the electric railway is a matter of selfish interest to every individual in the community. He is benefited by good service and is inconvenienced by inefficient service. Service involves the ability to command facilities, and facilities can only be provided in case a corporation can secure capital. The community and its transportation facilities, therefore, have a common and single interest. The success, growth and prosperity of a city are dependent upon the co-ordinate development of its utilities. The investor and the public prosper or suffer together. Each, therefore, has a common interest in promoting the prosperity of the other. The fundamental question is the ability of the utility to give first-class service; to extend its lines as communities develop and as traffic increases; to provide new equipment and to keep abreast of improvements in the art. The first and paramount consideration is the standard of service, and the all-important test is whether the electric railways, on a 5-cent fare, can continue to give first-class service.

We have adduced official records to show what has happened to the electric railway industry in New York State in the last six or seven years. The figures are startling in their significance, in their menace to public convenience and prosperity. In 1909 150 miles of new electric railway line were put into operation in the State; in 1910, 64 miles; in 1911, 37 miles; in 1914 there was no increase, and in 1916 not only was no new mileage built but 10 miles of line were actually torn up. Just how unhealthy the situation has become will be indicated by the fact that all new financing of electric railway development in this State has been

through bond issues. No one was willing to take chances in providing new money for stock in such enterprises; every new investor demanded a lien upon the property.

PEOPLE HAVE BEEN SET TO THINKING

We have believed that the people wanted to know the facts and that they were intelligent enough to realize that their electric railways must be reasonably prosperous if a high standard of service was to be provided. We are doing our best to give them these facts, and we have been gratified to observe the responsiveness of public opinion to the conditions disclosed by the testimony before the commissions. In order that the press and public might be fully acquainted with the actual conditions, as brought out in the testimony, the committee retained Ivy L. Lee to handle the dissemination of this information, presenting the story of our necessities in a straight-forward, business-like fashion, always using data taken from the official reports of the commissions or from sworn testimony.

I believe that we have succeeded in convincing the thoughtful people of New York that the expenses of electric railways have increased enormously within the last five years and that the profits in the industry have shrunk to a dangerously low point. We have induced people to think about the business problems which underlie the industry, so that as the cases of the individual companies are tried we can confidently expect a careful, business-like weighing of the evidence without prejudice and with the full realization of the handicaps under which all electric railways have been operating in recent years.

The New York cases are still being presented, and much valuable experience is still to be had; but the great advantage of co-operative action by a group of companies is already clear. The opportunity is thus presented to bring out the general economic conditions surrounding the industry, an opportunity which would not arise if each company prosecuted its action independently. In proceedings by individual corporations it is so easy for the opposition to obscure the real issue by raking up alleged ancient scandals and by filling the case so full of personalities that the broad, economic questions are lost to view.

INDUSTRY NEEDS RADICAL READJUSTMENT

It needs no argument to prove that all that has been said on behalf of the electric railways of New York can be properly said with regard to the industry throughout the nation. The accumulating burdens of regulation and legislation, added to the steady increase in operating expenses, have reduced the electric railway business to the point where a radical readjustment is necessary if the industry is to perform the service the public interests require.

The fundamental difficulty with the industry concerns the system of charges. The rate of fare is a relic from horse-car days. The electric railway industry is the only business which, to my knowledge, has the price of its service fixed by tradition, without any reference to the present cost of rendering the service. The fight in New York and throughout the country is essentially a struggle to break the bond which binds the electric railway business within the nickel. It is a fight to establish the principle that rates of fare shall be fixed

with reference to the cost of good service, including such a fair return upon the capital already invested as will attract new capital when it is required to provide for necessary expansion in development.

The test of commission government of public utilities is undoubtedly at hand. It was very easy for the public service commissions to reduce utility charges in the days of decreasing costs, for such decisions brought popular satisfaction. It is quite another matter, however, to raise rates in the days of increasing costs, for rate increases are never popular. Yet commissions the country over are face to face with the necessity of making the choice between a so-called popular decision and exact justice. If they refuse to give relief to the electric railways, they practically sign the death warrant of the industry. The owners of electric railway properties will be found urging municipal ownership as the only escape from an intolerable situation. The fight for higher fares, therefore, involves essentially the fate of the experiment of public regulation of privately owned and operated utilities.

PROBLEM IS ONE OF PUBLIC EDUCATION

In my opinion, after long study and deliberation, the problem now confronting the electric railway industry is one of public education. It is a problem of informing the people of the straits into which the industry has fallen, and of convincing the public that rates of fare must be fixed as in any other business, with due regard to all the costs of providing good service.

The electric railways must demonstrate that the best policy, from the standpoint of the people, is one of liberality towards those who have honestly and in good faith invested capital in public utility enterprises. The public must be shown that their interest is best served when capital receives a fair return in good years and in bad, and when their utilities are protected from short-sighted, dishonest and unscrupulous attacks. In return the community may expect and demand efficient, adequate and satisfactory service.

The railways must make the public see clearly that the increases in operating expenses have been caused by economic conditions over which they have had no control. Wages and the cost of materials of all kinds have steadily mounted. They must show that these unfavorable conditions arose at a time when the electric railway was subjected to most severe competition.

ASSOCIATION SHOULD STUDY WHOLE FARE PROBLEM

The industry has come to the point where the nickel as the standard fare generally must be abandoned. Its abandonment may involve radical readjustments in the whole structure of urban rates. Is a flat increase from 5 to 6 cents the most desirable method? Under what conditions may a street railway equitably charge for transfers? Under what circumstances, if any, does the zone system furnish the best solution?

These are questions which go to the foundation of the business. They are questions which must be solved by the public utilities and not allowed to become political footballs or matters of commission caprice. Doubtless all of these methods will be tried.

The number of companies which have advanced rates is nearly 100. The results which will follow these increases will doubtless be quite dissimilar. Of those

charging a 6-cent fare some will have an increase in operating revenue approaching the theoretical maximum of 20 per cent, because the volume of traffic will show little decrease. In other cases the decrease in travel may largely neutralize the higher rate of fare.

It is the duty of the industry to study carefully all of these cases to ascertain why some companies fare better than others. We must be able accurately to forecast, through such a study, what results a company operating under given conditions can expect from a 6-cent fare. We must work out standards by which an intelligent decision can be made as to whether in a given case the wisest plan for increasing revenues involves a flat increase in the rate of fare, a charge for transfers or the introduction of the zone system.

It is the duty of the industry to make such a careful, scientific and complete study of the results secured, that the fundamental principles may be clearly and unmistakably developed, and the limitations of each

method of relief accurately measured. Such a task is not one which can be left to voluntary investigators who can afford merely to skim the surface of the problem. It is a subject which requires thoughtful, painstaking study by the leaders of the industry, reinforced by careful, scientific research. No problem of equal importance has been presented to the industry since the electrification of the horse-car lines.

It seems to me the best method of studying the questions is through the creation of a committee of the American Electric Railway Association to be charged with the duty of making a careful, exhaustive and scientific analysis of the entire fare problem. Such work will save many false steps. It will furnish a basis of indisputable fact which no commission can afford to ignore. It will serve as the medium of educating the public concerning the true situation of the industry. It will blaze the trail leading to the financial rehabilitation of the electric railway.

Why a Charge for Transfers Is Justified*



An Efficiently Managed Property Should Be Allowed to Earn 8 Per Cent. The Form of a Revenue Increase Is a Matter Which Must Be Determined Largely by Local Conditions.

By Frank Hedley

Vice-President and General Manager, Interborough Rapid Transit Company and New York Railways, New York, N. Y.

THE conditions under which the electric railways in this country have been operated for the last twenty years have gradually resulted in a reduction of the margin between income and outgo. Not a few corporations have been sailing perilously close to the wind. The change in motive power from horse to electricity, the increase in size and the improved character of the rolling stock, the length of ride for the nickel and the demand that liberal and universal transfer systems be adopted, have all had their effect in bringing about this result. The increase in taxes of all sorts and the regulation necessary and proper on the part of public service commissions have also added to the financial burden. As far as the situation in New York City is concerned, we have practically reached the point on the surface lines where we must do something to increase our income or go into insolvency, with all that that means to the public in the way of breaking up of the systems, abolition of transfers and the cutting-off of through routes.

As a general proposition I think the whole matter is subject to the following analysis:

1. Do the surface car lines perform a useful and necessary function in the economic life of the cities which they serve?

2. Are the companies now earning an adequate return on the fair valuation of their properties?

3. Are the companies efficiently managed and operated?

4. Is there a prospect of reducing the taxes?

5. Can the companies reasonably expect to increase their net revenues by an increase of business?

6. Should fares be increased as the only possible means of relief?

ELECTRIC RAILWAYS ARE INDISPENSABLE

It will scarcely be denied that adequate urban transportation facilities constitute an indispensable function in the commercial and industrial life of every municipality. Each city must decide for itself whether its facilities are meager, adequate or superfluous. With regard to New York, in Manhattan Island alone, the surface car lines are carrying in round figures about 550,000,000 passengers annually. Notwithstanding the introduction of additional facilities in the past, in the shape of rapid transit lines, the experience has been that the surface lines of Manhattan Island are needed to meet transportation requirements. Undoubtedly with the opening of the new rapid transit lines now in process of construction, there will be a radical readjustment of travel which will divert some traffic from the surface lines. If the experience of

*Abstract of address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

the past is any guide, in time the existence of those rapid transit lines will tend to increase the amount of business to be handled by the surface lines. There will, however, undoubtedly be a lean period during which the surface lines will suffer a loss of revenue. How serious that will be no one can prophesy with accuracy.

ADEQUATE RETURN IS EIGHT PER CENT

For sixty years the railroad law of the State of New York provided that fares could not be so reduced as to produce less than 10 per cent upon the capital actually expended. I do not intend here to enter into a long discussion as to what constitutes a reasonable average return. I will only say that it is my understanding that the Supreme Court of the United States has held that to take property for public use for less than 6 per cent is confiscation. Since the European war began the great nations of the world have paid more than 6 per cent for the money borrowed upon the best of credit. I do not think that anything less than 7 per cent is a reasonable average return on a street railway property, and we should set aside at least one-half of 1 per cent for surplus and at least one-half of 1 per cent for contingencies. This makes a total of 8 per cent as the least average return which a public utility ought to be expected to receive, if it is to give satisfactory service.

The question of an adequate return is of course contingent upon the efficient management of a property. Everything that can be done in reason to eliminate waste, reduce costs and secure economies which do not impair the service or involve unjust treatment of employees, should obviously be accomplished before any company can reasonably maintain that it is efficiently managed. This is a requirement which the public has a right to expect and demand.

TAXES ARE A HEAVY BURDEN

The New York Railways has been paying to the city, State and nation approximately 11 per cent of its gross revenue in the form of taxes or in the carrying of burdens which are in the nature of a tax, including such obligations as the maintenance of paving and the removal of snow and ice, etc. This total is out of all proportion to the return which the company has been permitted to earn, which has been approximately only 4 per cent on the value of the property.

All railways realize that the automobile industry has produced a radical increase in the cost of maintaining pavement and has served to add to the congestion of the streets, reducing the speed with which the cars can be operated. This has tended to render the service less attractive to the public, has increased operating expenses in the running of cars and has added enormously to the cost of keeping in repair the pavements in the railway area, which are now much more rapidly worn out than formerly because of the heavy automobile traffic. In 1911 the number of registrations of commercial automobiles run in Greater New York was in round figures 3900, as compared to approximately 19,000 in 1916, or fivefold that of 1911. When one considers that in addition to the commercial automobiles there are the pleasure cars and the jitneys and buses in some cities which not only wear out the pavement for the railways but reduce the revenue of

the latter, it is manifest that the time has come for a readjustment of these tax burdens.

GENERAL INCREASE OF BUSINESS NOT TO BE EXPECTED

In some sections of the country the operating companies may have a reasonable expectation that the development for the next few years through the extension of their systems or the growth of the territory traversed will increase their revenues and enable them to earn a fair return on invested capital. I think, however, that in the majority of instances this is not reasonably possible. In certain cases an increase in fare is the only solution of the problem. The justice of this has been recognized in a number of cases, notably in Massachusetts and Connecticut.

METHOD OF REVENUE INCREASE DETERMINED BY LOCAL CONDITIONS

The question as to whether the fare should be increased depends primarily upon the establishment of the facts that with efficient management the company is not earning an adequate return, that there seems no reasonable prospect of an early reduction of its taxes, and that without relief of some sort it cannot maintain and operate its properties and at the same time earn an adequate return on its investment. Whether the increase of fare should take the form of an increase in the initial fare or in a charge for transfers, is a matter which must be determined largely by local conditions.

WHY TRANSFER CHARGE IS ASKED IN NEW YORK CITY

In New York we are taking the position that we would like to try the plan of charging for transfers because that may bring the necessary relief, and we are not seeking to be unreasonable or to mulct the public. We are frank to say we do not know exactly what such relief will mean to us in dollars and cents, but we are willing to make a trial, reserving to ourselves the right to seek further relief in the event that the measure proposed is not efficacious in producing the desired result.

Of course, it must be borne in mind that up to this time we have been operating under the general flat-fare system which is characteristic of most American urban operation. Under such a system the man who rides a short distance pays for a part of the expense of transporting another man who rides a long distance and whose nickel does not adequately recompense for the service rendered. There is undoubtedly an injustice in such a system as far as certain individuals may be concerned, but in the long run it has proved to be in the interest of the welfare of the greatest number.

It may be argued that the passenger who pays his nickel on one car and rides two blocks, transfers to a second car and rides five blocks at an additional charge of 2 cents is unduly discriminated against as compared with the passenger who pays a nickel on a car and rides seven blocks thereon. There is something to be said on both sides of this question. It is obviously difficult to reduce to terms of dollars and cents what the additional cost is due to the stopping and starting of the cars involved, with additional power consumption, wear and tear on brakeshoes, accident possibilities, etc., in the case of the transfer passenger as

compared with the cash passenger. There is some additional cost. Measured in terms of the possibilities, however, the transfer passenger has the opportunity of riding, and in many cases actually does ride, a much longer distance from his starting point to his final destination, changing as he does several times from one car to another, than does the passenger who rides on one line without change. As the transfer passengers are relatively in the minority and as their individual privileges are relatively greater, it seems only just that they should contribute their part toward the cost of giving the greater service. In a city like New York, where the longitudinal lines are so close together, it is unjust and uneconomical to expect the railways to operate extra crosstown cars which would not be necessary if it were not for the fact that people will board a crosstown car and ride for a very short distance in order to reach the first longitudinal line. The operation of much unprofitable mileage on either side of the point of heaviest riding is obviously a source of unjustifiable expense, unless the persons availing themselves of the transfer privilege are willing to pay for it.

It is impossible from a practical operating standpoint

to eliminate entirely the abuse created by stop-overs on transfers to make calls, shop or transact other business in the vicinity of transfer points. We have greatly reduced that possibility in New York by the type of transfer used, but we well recognize that we have not entirely stamped out the abuse. The charge for transfers will in all probability tend to cause persons to travel over direct routes and without transferring if practicable, where at present they resort to the transfer privilege because of the ability to stop over. A change of this character cannot be reasonably construed as a hardship to the individuals concerned, and from the broad standpoint of efficient handling of transportation facilities it is urgently desired. Such a scheme of directing travel certainly would tend to promote the welfare of the public as a whole, for it would decrease the number of cars that it is necessary to operate, thereby reducing the congestion in the streets. A reduction in congestion would mean a reduction in the possibility of accidents. Moreover, the speeding up of all traffic would mean a financial economy, because slow movement is costly in time and money to the operators of all vehicles involved.

Increases in Flat Rates for Present Zones*



How the Bay State Street Railway Has Tackled the Fare-Increase Problem in the Light of Its Peculiar Conditions. A Uniform Method Is Not Deemed Advisable in This Case.

By P. F. Sullivan

President Bay State Street
Railway, Boston, Mass.

I SHALL tell you something about, first, our conditions in Massachusetts; second, our campaign for increased fares, and, third, the result of our campaign—touching upon the latter in regard to zones and rates of fare in zones.

In Massachusetts we are operating under the most peculiar and onerous conditions in this country. We are working under a mongrel public service act, an act that gives mandatory powers to the commission. All railways, however, were built under conditions that were related to recommendatory powers. We cannot take land for the abolition of grade crossings, or for the acquisition of sites for power stations or carhouses. We are compelled to operate on the public ways, and these are narrow, hilly and crooked. That is why our average speed is low, and platform wages and other elements of operating cost high. We realized about four years ago that intensive railroading had its limits in Massachusetts, and that the only relief in sight was an increase in the rates.

Our company is peculiar in many ways. A consoli-

ation of seventy-odd companies, we operate substantially one-third of the mileage of the whole State. Our lines run through twenty cities and seventy towns in a stretch of territory in eastern Massachusetts 110 miles long. The cities are usually small ones, in most of which the industries are mainly textile, and in some shoe manufacturing. The population in such cities contributes less per capita to railway operation than any other population in the United States or Canada.

Many people look upon us as a company with an income of more than \$10,000,000—one that can be compared with others of similar income. It is not possible to make such a comparison. The largest city in which we operate has a population of about 120,000. A portion of our income is derived from that city, but the very much greater part of our income is derived from the large number of small cities and towns above mentioned.

Four years ago we began our movement for higher fares, basing our case on investment value. The commission found an investment value substantially 7 per cent below our value, but theirs was a value for rate-making purposes which did not include all the property

*Abstract of address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

of the company. On that point they were entirely right. For example, there was about \$1,000,000 worth of our property leased to another company, and properly that should not have been included.

On the investment value found the commission ruled that we were entitled to earn 6 per cent. They also said that after making proper allowance for the modern theory of depreciation, which involved an amount of nearly \$700,000, we ought to do several things in the matter of intensive operation. The irony of that situation was largely this—almost everything they said we ought to do was something they and their predecessor commission had prevented us from doing. All in all, they made several good rulings, and several bad ones, and I do not think I am telling any tales out of school when I say that they wish they had not written some of the things they did write.

In that readjustment we did not get enough. Our application was for a uniform increase from a 5-cent rate to a 6-cent rate. The commission refused all increases except in what might be called interurban territory, although this is not comparable at all to what in other parts of the country is understood as such territory. Our interurban trackage is simply lines on which the cars are operated with ordinary speed between cities and towns on public ways. The commission allowed an increase covering 375 miles of such territory. Our total mileage is about 900 miles.

Right there, however, we found a great deal of comfort, for the practice of our commissions in the past has been to follow the principle of the same rate of fare in each city and each town and between centers, no matter whether the territory was paying or non-paying.

GETTING THE FARE CASE REOPENED

The decision rendered in July, 1916, was to remain in effect until Aug. 31, 1917. During the winter the era of greatly increased prices for materials and cost of operation came in. We found we were up against it and could not sell securities, and we decided on another plan of campaign. Having broken down that barrier of a uniform rate of fare, for our whole territory, we proceeded on the theory that we would endeavor to make a still further change in our rates. We would seek to have our territory subdivided into three classes—urban, suburban and interurban—the last being the territory where an increase in fare had already been allowed.

The first obstacle was to get the commission to reopen the case. Under its rulings the burden of proof would be upon the petitioner. We said that we wanted quick action and asked how the commission would feel if we went directly to the Legislature. There we could obtain quick action with the burden of proof on the other side.

Just previous to this, however, we had started on a campaign of publicity. I sent a letter to the Mayor and the city solicitor of each city, representatives of boards of trade and others, inviting them to come into Boston without telling them why. Substantially ninety men came to attend a luncheon. I told them that a great deal had been said about getting together and laying the cards on the table, and that I had asked them to come so that I might do that very thing. And the cards showed that either we must have an increased

income or the public must take and operate the railway if it wanted service. The city representatives said that they had no legal right to take over the railway, but that they would join us in a request for increased income if we would join them in going before the Legislature for the general right to take over the lines.

At that meeting they appointed a committee which reported back that we ought to go to the different communities and tell them what I had said. They asked if I would not undertake the campaign of publicity, and this was arranged. I went around to about fourteen different places, and told the story in the most elementary manner, dealing with the fundamentals. I think that was the very best thing that we did. The newspapers in the local communities gave us from two to three columns of space, and thus publicity was secured just where it was needed.

We went in good faith to the Governor with two propositions, namely, increased fares or public ownership, and said that we were ready to do exactly what I said we would do. He balked on the proposition of public ownership, but said he would recommend the other. We then petitioned the Legislature, knowing that we had only one chance in five. The Senate accepted the petition and referred the matter to a committee, but we fell short four votes in the House.

Under these circumstances, therefore, we presented a petition to the commission to reopen the case. Some communities that had been previously actively hostile went before the commission and favored our petition. Others were not very enthusiastic in favor of it, but the next morning the commission decided to reopen the case. In thirty days from that time we got a favorable decision, allowing a basic 6-cent fare in all our territory, and a compromise in the form of twenty tickets for \$1 in book form, the cover to accompany any ticket and the tickets not to be used on Sundays, holidays or Saturday afternoons. We are to try this plan for six months, until Jan. 15, 1918. This period applies only to the matter under consideration in the reopened case. The company is just now announcing a mileage system for the rest of the territory, 375 miles, where the rate increase was approved in 1916. The new rate will be 3 cents a mile instead of 2 cents, which means substantially a 30 per cent increase on top of the preceding 20 per cent increase. [See Traffic and Transportation Department in this issue.—EDS.]

The tickets represent 21 per cent of the income in the territory affected, *i. e.*, in cities where transfers are used. Such territory produces 13 per cent of the company's gross income. The fares now average 5.7 cents. The difference between that and 6 cents is due to two things—namely, the tickets mentioned above, which are substantially 2.5 per cent of our gross, and the use of commutation and workmen's tickets.

The company has sixteen traffic centers. The results have been as different as if some of them were 1000 miles apart. We showed in one center a loss of 2.4 per cent in income in two months and a half. We showed in another center an increase of 19.7 per cent in income, the other centers varying all the way between these two figures. Anyone who did not look below the surface could take either one of these situations and prove a case that was not true. The falling off in income in the first center was not due to the increase in fares but to local industrial conditions

The great increase in income in the other center was not due to increased fares, because there were none in that district—the city of Newport, R. I. This has to-day a floating population, due to the influx of sailors, or substantially the same number as its permanent population.

We are at present weighing every factor, giving due weight to weather conditions and other vicissitudes. Our increase in fares for the two months and a half after July 15 was greater than the increase in the preceding six months and a half, but, inasmuch as we cannot yet attach the proper weight to each factor, we cannot now give a more definite figure. We shall have something better about the first week of November, and all the data will be at the service of any electric railway man who cares to send for them.

I do not believe in a horizontal increase on existing zones. As to whether another can apply that principle in his territory, it is for him to say. I know that it does not fit our conditions.

The rate of fare, as General Hancock said years ago about the tariff, is purely a local question. I do not believe there is any rule that can be scientifically applied in one place that will produce the same results in another place, for all the elements that enter into that problem will not be the same.

We have a traffic loss, and this shows three stages. It is least in the interurban territory, more in the suburban territory, and greatest in the urban territory. I would suggest caution in applying a horizontal increase with the expectation of getting a corresponding numerical increase in income.

Shortening Present Single-Fare Zones*



Fifteen Reasons, Based in Part on the Experience in Milwaukee, Are Given in Favor of the Fare-Zone System of Increasing Fares Rather than Increasing the Unit Fare or Charging for Transfers

By Edwin Gruhl

Assistant to President The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

THE desirable solution of the fare problem is the one which provokes least public disfavor, yields the greatest increase in net earnings and is economically sound—and is still possible of permanent application. It is believed that in many cases the shortened zone has these advantages over suggestions to increase flat-rate fares or charge for transfers.

The baker when confronted by higher cost of manufacture does not increase the customary price of the loaf. He cuts down the size. The politician when facing the higher cost of government does not increase the tax rate. He raises the assessment. Indirection is the least unpopular method. In applying the shortened zone plan only a minority of the patrons will be affected, and it requires no involved technical discussion to convince the public that if added earnings are necessary those who ride farthest should pay the increase. It is not a square deal to ask the center to carry the fringe indefinitely.

The revenue possibilities of the shortened zone plan are substantial. Speakers have on two previous occasions before this association explained the operation of the zone system as applied to Milwaukee's suburbs. The single-fare zone extends from 3½ to 4½ miles from the center of population and traffic. Beyond this center zone, or metropolitan district, we charge 2 cents cash or 1 2/3 cents ticket fare for each mile zone. The average fare within the single-fare zone is 4.23

cents. Studies indicate that the creation of another zone about 1 mile in width in the present single-fare area with the same zone fare would yield added annual revenues of \$844,000. A 5-cent straight fare in the present single-fare area would yield only \$790,000, under the assumption of no decrease in riding habit, and a 1-cent charge for transfer, provided passengers paid for as many as they now require, would yield only \$446,000. The transfer ratio in Milwaukee is high. About 41½ per cent of our revenue passengers ride on transfers, and it may be expected, in line with experience elsewhere, that the demand for transfers would be materially reduced if charged for. We could not expect that a charge of 1 cent for a transfer would yield more than \$300,000.

We have for several years made what Doolittle calls functional income accounts of the business. These separately show expenses varying with the car-mile, car-hour, passengers, miles of single track and other operating units. By ascertaining the units of any part of the business it is possible to construct an income account showing the revenues, expenses and net income or deficit of any cross-section of the business. We have done this in the case of the proposed mile zone at the outer edge of the present single-fare area. It is unnecessary here to make detailed reference to the figures, but some of the results concretely illustrate the result of tendencies responsible for our present difficulties and likely to be responsible for even greater difficulties in the future.

*Address presented at conference of American Electric Railway Association, New York, Oct. 9, 1917.

We found that 23.3 per cent of the car-miles and 20.2 per cent of the car-hours of the present single-fare area were required to supply service in the contemplated zone. The number of fares lifted was a scant 20 per cent of the total. The miles of single track required for the service was 33.9 per cent, and the percentage of the total valuation apportionable to the service was 31.9 per cent. It is not surprising, therefore, that the income account of the new zone disclosed that it now fails to pay operating expenses including depreciation and taxes. The present single-fare area yielded just over 4 per cent on the Wisconsin Railroad Commission's low valuation of physical property. With the new zone eliminated, which it is proposed to have stand on its own feet, the new single-fare area under present rates of fare and with present transfer privileges would yield a return of 7.43 per cent on the physical value of the property as found by the Railroad Commission.

The cost of street railway service is controlled by the distance passengers are carried and the service provided therefor. While transportation costs are made up of items which are independent of the length of haul as well as items which vary directly with the haul, the latter predominate. Our average haul per passenger in the single-fare area in 1911 was about 2.73 miles. Recent studies indicate that it is now more nearly 3.3 miles. An increase in the passenger haul is inevitable with the growth of residence districts in outlying territory. As this occurs the average single-fare haul within unrestricted single-fare areas becomes more and more unremunerative.

Because of the operation of these cost factors every street railway has a geographic limit beyond which it cannot haul passengers for a single fare without loss. It is probable that in most cities, as in the case of Milwaukee, this economical limit has not only been reached but long since been exceeded.

Just how rapidly this extension or spread of population over wider areas is taking place is evident from population studies made in Milwaukee. We have made forecasts of population to 1930 based upon past rate of increase, studies in changes of character of real estate, industrial factors, etc. These studies indicate that where in 1910 there was 93.3 per cent of the population in a 6½-mile area located within the central 3½-mile area, this might be expected to decrease to 76.5 per cent of the total population within the same area in 1930. These conclusions were corroborated by independent studies made by the Bell Telephone Company. There is no question but that the relatively greater increase in population in the outskirts will result, as cities grow, in a greater proportion of long-haul business.

Besides this evident economic justification, the zone basis of street railway fares is more in keeping with the principle of public utility law which prohibits discrimination. Only such a system of charges is reasonable in which each person or class pays in accordance with the cost of service occasioned by each class. This principle has been responsible for the condemnation by commissions of the flat rate electric and water service and the insistence in railroad cases that the losses on the long haul shall not be offset by profits on the short-haul business.

The zone basis of fares, moreover, conforms more closely than any other system with the ability of the customer to pay. Living expenses, generally speaking, are less, and living advantages greater at the outskirts than in the center of the city. This we regard as a very important point. The value of real estate is a fair index of the comparative importance of the major item—ground rent. In Milwaukee, the tax assessments have for years been maintained closely to within 100 per cent of the sales value, and the assessments of land and improvements are carefully separated. Within the proposed restricted single-fare area we find an average assessed value of \$260 per front foot on streets upon which the car lines operate, and an average value of \$100 per front foot on adjacent residence streets. In the proposed new mile zone we find an average value of \$37 per front foot on streets on which the street railway operates, and \$30 on adjacent streets. In other words, realty values in the proposed zone are only 14 to 30 per cent of realty values in the proposed single-fare area. There can be no question but that the outskirts have offsetting economic advantages which enable its inhabitants to pay the full cost of street railway service occasioned by the longer haul.

The factor of competing forms of transportation is also an important one. It is significant that the jitneys, when the price of gasoline permitted us to have more of them, operated almost wholly within this proposed new inner single-fare area. In any permanent system of fares, the possibility of motor bus competition for short-haul business is important. The zone system is the only rational way of successfully meeting this competition.

The effect of any change in the system of fares upon riding habit must also be considered. It is probable, judging from the experience with 6-cent fares in Massachusetts, that increases in the single or flat-rate fares result in decreased riding. This decrease occurs in the more profitable short haul or convenience traffic. Some reduction in riding habit is also to be expected with the charge for transfer. It is difficult to forecast the net result of changes in riding habit with increasing prices. It is apparent, however, that under the zone system such as here discussed fewer passengers will be affected than by the two alternative plans; the opposition from patrons will be less, and the riding habit will be least affected because most of the traffic upon which the increased charge will be laid is of a long haul and necessary, rather than of a short haul and convenience nature.

Finally the most important advantage of the shortened zone plan over plans to increase single fares or charge for transfers may be referred to. This is its flexibility for future adjustment. New zones may be established or old zones eliminated as net earnings fall or rise without change in the methods of collection, etc. Or charges within the zone may be increased or decreased. The justification for such increases or decreases may be readily ascertained from the studies of traffic and cost. On the other hand, with a charge for a transfer once introduced and fixed, increases would be difficult and other forms of relief would necessarily have to be resorted to. It is not probable that any street railway will eventually obtain all the relief from losses which the economic facts justify. Commissions

are at times lacking in courage, and adjustments will likely be made in installments.

Among the objections it is claimed that the zone plan is un-American. But in the present crisis it has been found expedient to adopt many innovations which are not sanctioned by American practice. In fact, the "one city-one fare" idea was sponsored by electric railway promoters who feared that the zone system would reduce prospective profits of the projected business. The same free and easy American plan of a flat rate for lodging and food and eat what you please is surviving only in our smaller hotels. If the zone plan has merit, now is the opportune time to adopt it as an American institution.

It is urged that it leads to congestion of population. But the truth is, as Doolittle has pointed out, that congestion is nowhere greater than in our large American cities. It is actually decreasing in some European cities where the zone system is almost universally applied, but there are probably other factors contributing to this decrease. The street railway fare is so small a part of the citizen's budget that it cannot influence living habits. What is true is that the American city is surrounded with a succession of new and more fashionable residence sections, the older ones falling into decay and disrepute. If the older sections were taxed, regulated and inspected the way our street railways are kept up to standard, our cities would have no slum problem and realty values would have greater stability.

The difficulties and inconvenience of fare collection are also frequently referred to as an objection of great practical weight. These administrative problems are not nearly as serious as imagined. They have been effectively met in the plan of fare collection of the Hudson tubes, and they have occasioned no difficulty in other places in which the system is operated.

Cost of Health Supervision

The conference board of physicians in industrial practice has issued a compilation for 1916 of health-supervision costs as reported by ninety-nine industrial plants located in fifteen states. The total average number of employees supervised during the year was 495,544. The total cases of all kinds were 3,165,114, at a total medical and surgical cost of \$1,238,485, or an average of \$2.50. The average annual cost per employee, excluding four plants for which the cost includes sickness treatment of employees and their families at home, was \$2.21.

For five establishments in the transportation industry the supervised employees totaled 35,795. The cases numbered 81,591 and cost \$69,633, an average annual cost per employee of \$1.95. In the case of seven plants in the light and power industry, the employees numbered 24,921. Their cases totaled 49,046 and cost \$92,601, an average of \$3.72.

The data contained in the compilation were secured from plants engaged in many industries; in light, medium and heavy work; in comparatively safe as well as hazardous operations, and in shops of various size and character, located in different parts of the United States. Some are situated in cities where hospitals and specialists are available, and some are not.

I

What if the Street Cars Go Broke?

THE street car business in this State is not sharing the prosperity of the times. Faced by a rising tide of costs of materials and labor and a fixed nickel fare, it is in real danger.

If the street car companies go broke the public will suffer, for poorer service must inevitably follow. Such a result can be avoided if the business is made attractive enough so that investors will provide the funds to keep it growing and make the service better.

WHAT IF—

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Why the nickel shrinks to three cents

The Boston News Bureau recently published the result of its investigation into the increased cost of the more important classes of street railroad supplies most largely used. The increase in prices for 1917 over 1915 follows:

Article	Increase Per Cent.
Asiles	162
Asles, Car and Engine	272
Bolts, Machine and Carriage	146
Brass, Bar, Sheet and Spring	300
Car Forging	216
Castings, Malleable	198

What If Street Cars Go Broke?

New York Association Puts Out Publicity Pamphlet with This Title

THE latest publicity material issued by the New York Electric Railway Association in its campaign for higher fares in New York State bears the title "What If The Street Cars Go Broke"? It is a sixteen-page pamphlet with cover and carries on its front cover a quotation from the decision of the Public Service Commission in the case of the Schenectady Railway Company as follows: "Driving private capital from the work of extending and improving the transit facilities our people now enjoy * * * would be deplorable."

The first section of the pamphlet contains abstracts of some testimony presented at the recent hearing in Albany, including that by Dr. Conway that not half of the up-State trolley companies in New York are earning even their fixed charges, and twice as many are failing to earn fixed charges in 1916 as in 1908. The second section shows that the railway companies have to pay more than ever before for their supplies. The third section shows how the public is demanding better cars, faster trips, smoother tracks, transfers, longer rides, etc., but there is no increase in fare. The fourth section shows how the electric car has made the growth of big cities possible; the fifth, the foolishness of competition as a street car regulator, and the final section, that investors are fighting shy of putting any money into the electric railway business.

Four pages of the pamphlet are reproduced.

WHAT IF—

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Improvements followed so rapidly, and the public was so insistent in its demands for the latest that a peculiar thing happened. *New types of cars were put in before the old ones were worn out.* The old ones, notwithstanding they had years of wear left in them, went to the scrap heap before they could pay a return on the money they cost. In Denver, for instance, an entire new cable car system was scrapped before it had been in use a year.

The scrap heap is full of cars not worn out but out of fashion.

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THE STREET CARS GO BROKE?

Public: "Here's what I want—Here's what I give"

years the companies have not been able to earn even the legal "fair return" and they have brought these facts squarely before the Public-Service Commission. The companies must have a greater income.

This is not a sudden condition, it has been bad and growing worse steadily for many years.

It is so bad now that investors will no longer put capital into street railways. New building has stopped. Companies can-

New York Conference Proceedings

The American Electric Railway Association on October 9 Held a Conference in Place of the Usual Convention—The Discussion Centered on Higher Fares and Labor Conditions.—J. J. Stanley Elected President Attendance Three Hundred to Three Hundred and Fifty.

AN informal conference this year took the place of what would have been the thirty-sixth annual convention of the American Electric Railway Association. Morning and afternoon sessions were held on Tuesday, Oct. 9, at the United Engineering Societies' building in New York City, the former headquarters of the association. The morning session was opened by President L. S. Storrs with an explanation that the reasons for the holding of an informal conference instead of the usual convention were the disturbed conditions of the country and the necessity for the presence of most railway men on their own properties. He also announced the election by the executive committee of the following officers and executive committee members for the year 1917-1918; President J. J. Stanley, Cleveland (Ohio) Railway; first vice-president, J. H. Pardee, J. G. White Management Corporation, New York, N. Y.; second vice-president Richard McCulloch, United Railways of St. Louis, Mo.; third vice-president M. C. Brush, Boston (Mass.) Elevated Railway; fourth vice-president T. S. Williams, Brooklyn (N. Y.) Rapid Transit Company; manufacturers' representatives on executive committee: Thomas Finigan, American Brake Shoe & Foundry Company, Chicago, Ill.; James H. McGraw, McGraw-Hill Publishing Company, Inc., New York, N. Y.; S. M. Curwen, J. G. Brill Company, Philadelphia, Pa.; E. W. Rice, Jr., General Electric Company, Schenectady, N. Y., and Guy E. Tripp, Westinghouse Electric & Mfg. Company, New York, N. Y.

After stating that the report of the secretary-treasurer, E. B. Burritt, would be received by title, Mr. Storrs read his presidential address, an abstract of which forms the leading article in this issue.

REPORT OF THE SECRETARY-TREASURER

On account of the entrance of this country into the great war the association, for the first time in its history, omits its annual convention and holds instead a one-day conference for the discussion of immediate

problems. The action leading to this result was taken by the executive committee in April of this year.

Practically all committee work has likewise been suspended. These steps were taken in the belief that the unusual and difficult conditions facing the industry would leave officials of member companies little time

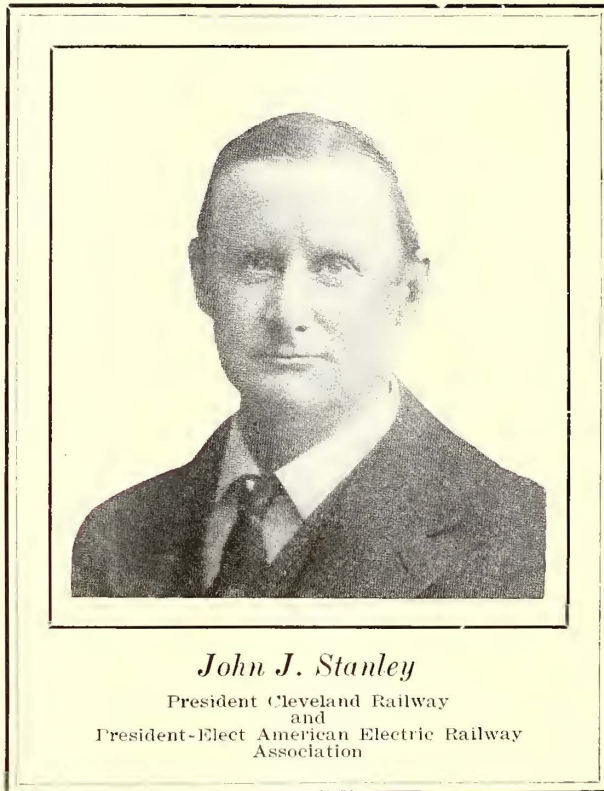
to devote to matters not concerned with the direct operation of their properties. Other activities of the association, however, have not been slowed up. On the contrary, efforts have been redoubled to the end that the association may serve the industry through other channels with increased efficiency.

An important work was undertaken the early part of this year by the association's committee on national defense. Steps were taken in January, 1916, to organize this committee and later the committee met in Washington with a conference of steam railroad officials called by the Secretary of War at the instance of Daniel Willard, chairman advisory commission Council of National Defense. As a result a plan to supply the government with information con-

cerning the electric railways was worked out and is now approaching completion.

In addition the committee has from time to time issued bulletins of information concerning issues arising as a result of the war. To date nine of these bulletins have been distributed to all electric railways, whether or not they were members of the association. They related to general suggestions, food conservation, first Liberty Loan, registration of employees under the draft law, coal supply (two bulletins), military tariffs, freight car loading and second Liberty Loan. The committee will issue further bulletins as the occasion requires. The association magazine *Aera* has assisted in this work through the publication of additional information of value in the present situation.

Through the suspension of many of the association's activities, the magazine assumes a more and more important place in the organization's affairs. It is the medium by which the interest of members, both indi-



John J. Stanley

President Cleveland Railway
and
President-Elect American Electric Railway
Association

vidual and company, must be kept alive and its support is more than ever a matter of necessity.

The work of the committees of the affiliated technical associations having been suspended, the question box maintained in the magazine is one of the best means afforded to the active men of the various engineering and operating departments for the discussion of the problems that arise in their affairs. *Aera* is also paying much attention to the pressing and vital problems which confront the industry in connection with increased revenue and the war. It is necessary that there be presented to the executives of our properties every available piece of information in connection with these subjects and in this way and by the publication of discussions which present the railways' case, our magazine is exerting a distinct influence. The advertising receipts have increased during the year, in spite of business conditions which militate against larger advertising appropriations on the part of business concerns in the electric railway field.

The mid-year meeting and dinner of the association was held in Boston on Feb. 16, 1917. The attendance at the meeting was about 650. A comprehensive program arranged by the committee on subjects was carried out.

During the year those sections of the Engineering Manual which were revised during 1916 were reprinted and issued to company members and those individuals allied with the Engineering Association.

The work of soliciting new company members has been carried on actively through the means of circulars and special letters from the office of the secretary. Unfavorable business conditions, however, have militated against the acquisition of any considerable number of new members.

During the year the association has lost nine railway companies and nine manufacturer companies through resignation and one railway and two manufacturer companies through consolidation. It has gained seven new railway and seven new manufacturer companies. The resignation of the nine railway companies was due in each case to unfavorable business conditions. The same reason caused the withdrawal of some of the manufacturer companies. Others gave the abandonment of the annual convention as the cause for severing connection with the association.

The committee on company sections and individual membership reports the organization on Feb. 15, 1917, of Section No. 11, on the property of the Toledo Railways & Light Company. This is a joint section with the National Electric Light Association, the American Gas Association and the National District Heating Association. It started with 132 railway members. Several other sections were in prospect but with the entrance of the United States into the war the companies contemplating their organization advised the committee on company sections that plans would be abandoned for the present. The company section membership shows a satisfactory increase, the total membership now being 1741, a gain for the year of 267.

Efforts were made during the year to increase the enrollment of individual members, sixty-four new members being secured. Notwithstanding these efforts this class of membership shows a net loss during the year of thirty-three. Almost all of these were manufacturers

INCOME AND EXPENSE STATEMENT
Ten Months Ended Aug. 31, 1917

Revenues			
Admission fees:			
Railway companies	\$70.00		
Manufacturing companies	70.00	\$140.00	
Annual dues:			
Railway companies	\$45,648.50		
Manufacturing companies	9,225.50		
Individuals	3,133.67	\$58,007.67	
Miscellaneous income:			
Contribution from Hotel Men's Assn....	\$32.02		
Interest on deposits	452.08		
Sale of advance papers, year book, etc..	369.76		
Sale of "Engineering Manual" and binder	174.43		
Sale of "Studies in the Cost of Urban Transportation Service"	158.40		
Sale of "Bibliography on Valuation"	20.75		
Sale of other pamphlets	235.51		
Sale of dinner tickets	5,230.00	\$6,672.95	
<i>Aera</i> :			
Advertising	\$14,083.16		
Subscriptions:			
Railway companies	3,764.00		
Manufacturing companies	1,329.00		
Individuals	2,086.00		
Company section members	1,739.01		
Non-members	114.50		
Sale of extra copies	42.43		
Sale of binders	17.00	\$23,175.10	
			\$87,995.72
Expenses			
American Association	\$43,591.48		
Accountants' Association	1,321.85		
Engineering Association	4,848.26		
Claims Association	1,768.25		
Transportation & Traffic Association	2,334.31		
<i>Aera</i>	21,492.36	\$75,356.51	

STATEMENT OF MEMBERSHIP
Sept. 30, 1917

	Company-		Total	Individual
	Rail-	Manufac-		
	way	turing		
Number of members, Feb. 1, 1917....	355	211	566	1,289
Number of members reinstated	1	9	10	5
Number of new members	5	6	11	27
Resignations since Feb. 1, 1917	4	7	11	629
Consolidations	2	2	...
Net total	357	217	574	1,256
Company section members				1,741

who dropped their individual membership because the membership of their companies carried with it the same privileges for which they were formerly required to take individual membership.

The bureau of information maintained at association headquarters has been active throughout the year in meeting requests for information from many sources. The demands for this service are constantly increasing. Data on a great variety of subjects were furnished in response to 546 requests during the twelve months ending Sept. 30, 1917.

In addition to the supplying of information on request the bureau compiled and issued in July a comprehensive bulletin on wages and working conditions of trainmen. This bulletin comprised thirty-four pages, the information having been secured from 674 companies.

The association has continued its subscription to the Hooper-Holmes Bureau for 1917. Thirty-three companies made 17,234 reports, the bureau returning reports on 942 names.

The association has been represented in Washington this year by S. S. Perry. Mr. Perry under the direction of the committee on federal relations has kept the association informed in matters of interest before Congress and the Interstate Commerce Commission.

During the pendency of the war revenue bill a committee representing several classes of public utilities made its headquarters in Washington, and the entire time of its members was devoted to matters connected with this legislation. The association was represented on this committee by the chairman P. H. Gadsden, president Charleston Consolidated Railway & Lighting Com-

pany, Charleston, S. C., and E. W. Wakelee, vice-president Public Service Railway, Newark, N. J.

The association has maintained its membership in the Chamber of Commerce of the United States during the year and was represented by delegates at the annual convention held in Washington, and at the special war convention of American business held at Atlantic City.

LABOR MATTERS AND HIGHER FARES

The remainder of the morning session was occupied with the reading of three papers and a part of the discussion on higher fares. The papers, which are all abstracted earlier in this issue, were as follows: "Is the War Bonus Practicable as a Means of Wage Adjustment in the Electric Railway Industry?" by E. G. Connette, president United Gas & Electric Engineering Corporation, New York, N. Y.; "Female Substitutes for Male Employees," by F. W. Brooks, president Detroit (Mich.) United Railways, and "The Pending Applications for Fare Increases in New York State," by J. K. Choate, vice-president J. G. White Management Corporation, New York, N. Y.

C. L. S. Tingley, American Railways Company, Philadelphia, Pa., opened the discussion on increases in fares. He said that while the matter is as pressing in Pennsylvania as in New York the association there has not yet succeeded in getting the companies to act together. The Scranton Railway has filed a tariff calling for a 6-cent fare over its entire system. This company was selected because it was considered a prosperous one and because in part of the city there was an old legislative grant in place of a local franchise, making the system fairly directly subject to legislative control. In preparation for the campaign much publicity work was done in explaining the reasons for the increase. As a result the Board of Trade of Scranton appointed a committee to consider the matter and the company supplied full data. On the whole the committee supported the company's contentions, but the board has so far failed to take action. The city council has instructed its legal department to file a protest on the basis that the legal fare limit is 5 cents. Other protests have been filed along the same line, only one alleging that the 5-cent fare is ample.

CENTRALIZATION OF INFORMATION IS A NECESSITY

J. S. Drum, San Francisco-Oakland Terminal Railways, Oakland, Cal., said that this road ceased paying dividends in 1912. Since that time it has encountered all sorts of difficulties, paving, financing, labor, etc. It is at present paying the highest rate for electric railway labor in the United States. The bonus system which has been in operation has cost the company \$1,300,000 extra during the last few years, but the men want still higher wages. The cost of living is no higher in this railway's territory than elsewhere, but the men insist on exorbitant wages regardless of this fact.

Mr. Drum pointed out that the papers presented at the meeting had outlined clearly the problems before the industry. The question remaining is to find the solution. In labor circles centralization is the feature of the movement for higher wages. Mr. Choate's suggestion, therefore, for the formation of a central committee on higher fares for the association is timely. The association should realize that this is a problem of necessity, and one that must be solved by the industry.

Referring to Mr. Choate's paper Mr. Drum pointed out that municipal ownership cannot be counted upon as a remedy because cities will not buy properties that seem to be losing money. They will not make bad business bargains. Again, reduction of service is impossible under present conditions. The direction in which the problem must be solved is in educating the public, public bodies, employees and others as to the real conditions. To this end practical assistance from the association is needed. Employees have made demands partly because they do not understand the distinction between labor conditions in this and other industries. The desired information is not easy to get but it is necessary. It should show comparisons of wages and living expenses in different parts of the country.

Mr. Drum showed that public education is needed partly because politics must be combatted, and because it is always difficult to secure an increase in price of something for which the people must pay directly. Newspaper arguments not based upon sound economics must also be refuted. The burden of spreading the facts rests upon the individual companies. Each must spread exact information in the community from which it derives its income and to a large extent its capital. The association committee should have broad powers to enable it to assist in this work, and it should assume its proper responsibility. The problems are staring us in the face. The thing to do is to take off our coats and get to work.

In commenting upon the remarks of Mr. Drum, President Storrs stated that a committee on increases in fares has just been appointed, under the chairmanship of Mr. Choate, and already has held a meeting. He then called upon A. W. Brady, Union Traction Company of Indiana, Anderson, Ind. Mr. Brady confined his remarks to interurban fares, although, he said, the Indiana urban railways have the same problems as those elsewhere. In Indiana the interurban fares are on a copper-zone basis with a basic rate of 2 cents per mile. The steam railroads in the State are held by statute to a 2-cent rate in 5-cent zones. The question which troubles the electric railway managers is as to the effect upon their traffic of a raise in rate of fare to, say, 2¼ cents per mile in competition with the steam roads restricted as the latter are by statute.

In Ohio, Mr. Brady said, some roads have undertaken to increase the rate to 2½ cents and one of these, the Western Ohio Railway, has done so with satisfactory results so far.

MR. BRUSH RECOMMENDED SPEEDY ACTION

M. C. Brush, Boston Elevated Railway, advocated vigorous action by those present at the meeting. In his opinion if the members present did not immediately do something different from what they had previously done, as a result of their attendance at the meeting, the time and expense incurred in attending it had largely been wasted. Committees to investigate and report are excellent but at the same time this matter of increased revenue is pressing, and cases are under way even while the meeting is in progress. In Massachusetts, for example, there is a continuing investigation of electric railway matters. A recess committee of the Legislature has been studying the situation and will very shortly resume sittings. Later the committee of eleven men will visit a number of cities in the

course of their investigation. One way in which the other companies can help those in Massachusetts, and indirectly help the industry, will be by giving this committee full information if their respective localities are visited.

In Mr. Brush's opinion the 6-cent fare is not the solution of the fare problem. What is needed is to provide permanent relief. Bankers will not invest money in electric railways unless they are convinced that there is provision for automatic adjustment of fares as conditions change. As an example of the right sort of thing in this connection Mr. Brush referred to the recent decision of the Massachusetts commission permitting the charging of a rate of 2 cents per mile by the Boston & Worcester Street Railway.

Continuing, Mr. Brush said that in no other industry than the public utility is the burden upon the producer to show that increased income is necessary. In other lines prices are raised as required, and it is up to those affected to show that the rates are too high. In other words, prices of products are changed as conditions change, and it is the duty of legislatures to provide the same possibility for the electric railways. Unless they do so there will be no money available for the purchase of cars and rails.

SOME THINGS THAT CAN BE DONE

Coming to the practical application of his suggestions, Mr. Brush said better team work is needed in the industry. The companies must pull together and they could do this partly through the bureau advocated by Mr. Drum. The manufacturer members should also be called upon to assist as they reach a large section of the public. The co-operation of employees must be enlisted, too, as they come in touch with many people directly and can convince them that a living wage for the railway employee means reasonable fares. One plan which the Boston Elevated Railway is just inaugurating is the distribution of "transfer story" slips, similar in size to the transfers but of a different color. These are to be handed out with the transfers. A car sign campaign will be conducted at the same time, the signs being changed every three days. The first card shown will be blank, the next will carry an interrogation mark, and the following ones will contain convincing data in striking form. Advertising matter of this and other kinds could be syndicated so that all roads could have the benefit at moderate cost. Mr. Brush said further that the association of holders of electric railway securities which had been formed in Massachusetts was doing excellent work in appearing at hearings where increases of fare were in question. A national association of this kind would be effective.

Mr. Brush then gave a résumé of the statement which he made recently before the recess committee in regard to the fundamental difficulty of securing justice under present conditions. The difficulty, he said, is political; we cannot expect commissioners to commit political suicide. The law must render easy, by making mandatory, the provision of proper fares for the electric railways. Legislators must be made to understand that the problem under consideration is the future of the industry. The topic of future transportation facilities is one which must interest the public no matter how little it cares about the interests of the present

stockholders. Destruction of credit of electric railways by the assimilation of incorrect ideas by investors will make future transportation expensive. In the case of the Providence & Fall River Street Railway, recently sold at auction, the residents of the district served did not realize what they were losing in the dismantling of the railway until the actual wrecking of the property began. Then they waked up and hastily raised enough money to buy it, paying a handsome profit to the contractor.

In conclusion Mr. Brush urged that the fare matter be gone into thoroughly. Relief from excessive taxation is not enough. In Boston entire remission of taxes would provide only a small measure of the relief required, as would freedom from subway rentals also. Small detailed relief will not avail. As one way of impressing the lessons of the meeting upon the country promptly he suggested that the members present telegraph home urging the companies through the local representatives of the Associated Press to editors to give all possible space to reports of the proceedings of the meeting.

R. E. DANFORTH AWARDED COMPANY SECTION MEDAL

During the progress of the morning session a number of matters not directly connected with the general discussion were taken up. For the committee on award of a bronze medal for the best paper presented before a company section during the year, C. S. Sergeant, Boston Elevated Railway, read a report. This recited the titles of papers presented in the competition and stated that the medal had been awarded to R. E. Danforth, Public Service Railway, Newark, N. J., for his paper on "Economy." Honorable mention was also accorded to Eugene Wagor, Manila Electric Railroad & Light Company, for his paper on "Duties of Trainmen." After the report had been presented President Storrs invited Mr. Danforth to come forward, and Mr. Sergeant presented the medal to him with a brief expression of his pleasure in doing this on behalf of the committee.

On motion of J. J. Stanley the following resolution regarding the second Liberty Loan was unanimously passed:

Resolved, That the American Electric Railway Association pledges its support and urges its members to support the government in the flotation of the second Liberty Loan of 1917, and that the co-operation of its members be given to the local Liberty Loan committees."

M. R. Boylan, Public Service Railway, Newark, N. J., explained to the conference that the United States Bureau of the Census will shortly commence the work of collecting statistics relating to the electrical industries for the calendar year ending Dec. 31, 1917. The association, he said, has been requested by the bureau to urge upon the companies that they give their co-operation in this important work. As in the case of the census of 1912 the Accountants' Association will appoint a committee to work with the bureau in the matter of the form of the schedules and the inquiries that they contain. The association has been assured by the chief statistician for manufactures, under whose direction this work will be carried out, that it will be the desire of his office to simplify the schedules as much

as practicable and to have them conform with respect to their "Revenue and Income" account and "Operating Expenses" to the system of accounting adopted by the Interstate Commerce Commission and by the American Electric Railway Association. In his letter the chief statistician stated that he will be glad to receive suggestions or criticisms from electric railways with respect to the schedules. Copies of the last census report on electrical industries and of the schedules issued in connection with its compilation will be sent to any companies which desire them.

PROCEEDINGS AT AFTERNOON SESSION

The afternoon session of the conference was devoted to a topical discussion of various methods of increasing fares. Addresses along this line were made as follows: "Increases in Flat Rates for Present Zones," by P. F. Sullivan, president Bay State Street Railway, Boston, Mass.; "Charges for Transfers," by Frank Hedley, vice-president and general manager Interborough Rapid Transit Company and New York Railways, New York, N. Y., and "Shortening Present Single-Fare Zones," by Edwin Gruhl, assistant to president North American Company, New York, N. Y. In Mr. Hedley's absence, his paper was read by his assistant, F. T. Wood. All the speeches are abstracted elsewhere in this issue.

In opening the discussion President Storrs said that the problem of securing financial relief is general and that every railway man should realize the urgency of the situation. He suggested that employees might well be educated in regard to the situation through company-session meetings.

Charles L. Henry commented upon the valuable information presented to the conference. He said that he would not place too great dependence upon educating the public, for education of the individual is very often restricted by the latter's selfishness.

Clarence P. King, president Washington Railway & Electric Company, described the regulatory conditions in the District of Columbia. He stated that now it seems impossible to get any governing body to consent to anything but one general fare in the company's 7-mile by 10-mile territory. At present there are universal transfers and six tickets for a quarter. Some time, Mr. King thought, the company might in some way secure relief in a flat 5-cent fare.

C. C. Peirce, manager railway department General Electric Company, Boston, Mass., mentioned the fact that it is a serious task to raise fares without making the product too costly for sale. He said that the Providence & Fall River Street Railway, Swansea Center, Mass., of which he had been vice-president, had raised its rates, but each time the gross fell off. In other words, the company had reached the absolute maximum of traffic receipts to be expected. In conclusion, Mr. Peirce strongly urged the railways to extend their publicity work, promising the support of the manufacturers.

Mr. Choate then explained the reason why railways in New York State outside of the metropolitan district had applied for a 6-cent fare. He said that the companies, on the basis of the Ulster & Delaware and New York & North Shore Traction court decisions, were trying to get the commission to override the old 5-cent maximum railroad law and local franchises, and that the question of a 1-cent increase seemed the simplest

means for securing a decision from the commission in confirmation of its present complete power to raise rates. If the 6-cent fare should not give the desired relief, the door would be open for the companies to try to secure zone rates. Without doubt, he said, the ultimate goal is the distance tariff.

Mr. Choate added that he is daily receiving many letters from bankers and investors for copies of the publicity pamphlet, "What if the Street Cars Go Broke?" that has been prepared by the New York Electric Railway Association. The inquiries have shown the increasing interest taken in the conditions confronting electric railways. Mr. Choate also told how he had furnished a high-school pupil with exhaustive material for the affirmative side of a debate on the question of 6-cent fares for electric railways. This closed the discussion and the conference was adjourned.

Meeting of Executive Committee

THE American Association executive committee met in New York on Oct. 8, devoting most of the day to a consideration of the subject of higher fares. J. K. Choate, J. G. White Management Corporation, New York, N. Y., explained the plans which are under way in this connection. Mr. Choate is chairman of a committee on increased revenue for electric railways, the appointment of which was authorized at an earlier meeting of the executive committee. The other members of the committee are M. C. Brush, Boston Elevated Railway; J. D. Mortimer, North American Company, New York, N. Y.; J. H. Alexander, Cleveland Railway, and C. Loomis Allen, Allen & Peck, Syracuse, N. Y.

By resolution the following telegram was ordered sent to Brig.-Gen. George H. Harries at Camp Cody, New Mexico:

"The executive committee of the American Electric Railway Association in session here to-day (Oct. 8, 1917) extends to you as past-president of the association and as a personal friend of its members their heartiest congratulations upon your appointment as brigadier-general in the United States Army, and its best wishes for your welfare. The committee feels that the same qualities which have made you so valuable a member and officer of the association will be of great service to your country in this its hour of need.

L. S. STORRS, President."

The committee also elected officers and executive committee members as announced elsewhere in the report of the proceedings of the conference, the only changes being the advancement of each vice-president, bringing J. J. Stanley, Cleveland Railway, into the presidency, and adding as the new vice-president, T. S. Williams, Brooklyn Rapid Transit Company.

Among other routine items of business the formation of a public utility section by the American Bar Association was noted, and it was decided to urge the company members of the association to be represented in this through their legal departments.

Those in attendance at the meeting were L. S. Storrs, J. J. Stanley, J. H. Pardee, Richard McCulloch, Guy M. Tripp, S. M. Curwen, Thomas Finigan, M. C. Brush, R. E. McDougall, M. R. Boylan, F. R. Phillips, C. S. Sergeant, H. H. Vreeland, A. W. Brady, C. L. Henry, J. D. Mortimer, J. K. Choate and E. B. Burritt.

Saving an Electric Railway from Destruction

How a Massachusetts Road Was Rescued from Dismantling After Being Sold at Auction, with the Scrap Pile as Its Destination—
Public Sentiment Aroused at Prospect of Losing Facilities

THE Providence & Fall River Street Railway was sold at auction on Sept. 12, 1917, to Karl Andrén of Boston, Mass., formerly purchasing agent for Stone & Webster and now well known as a dealer in second-hand machinery. The sale, which received brief comment in last week's issue of this paper, resulted from the inability of the road to pay its bond interest and was held by the Industrial Trust Company of Providence, R. I., as trustee for the bondholders, under a decree of the United States Court at Boston. The road is 12.5 miles long, and as the map reproduced herewith shows extends from the Rhode Island Company's line at East Providence to the Bay State Street Railway's line at Swansea. It formed part of a through route between Providence and Fall River, and on account of its irregular alignment was known throughout southeastern Massachusetts as the "Snake Line." Mr. Andrén purchased the road for \$68,000 and intended to dismantle it and sell the entire property; but when the local public, particularly in the Swansea district, came to realize that the road was to be torn up a vigorously conducted campaign was at once inaugurated by representative citizens and business interests with the object of saving the property and resuming service, the cars having stopped running on Sept. 22. The purchaser on Oct. 6 granted a reprieve subject to the payment of a guarantee fund of \$20,000, and subscriptions were at once collected to insure the road's remaining on the Massachusetts street railway map. It now seems probable that the road will be purchased from Mr. Andrén at a price of \$90,000 and service restored within a few days.

The road was built in 1901 and for five years competed with some measure of success with other means of transportation in its district. Since 1906, however, earnings have decreased seriously, and an important factor in this situation has been the greatly improved service given by the New York, New Haven & Hartford Railroad on its electrified Providence, Warren & Bristol branch. The running time between Fall River and Providence over the Providence & Fall River road was one hour and twenty-five minutes, as compared with forty-eight minutes on the New Haven line. The fare from Providence to Fall River was formerly 25 cents on the New Haven line and 15 cents on the Providence & Fall River road, but some years ago the 15-cent fare was increased to 27 cents by the establishment of a 6-cent fare unit on the so-called "Middle Road." On the New Haven branch, however, the fare is still 25 cents, an extra charge being made, however, for baggage. The Providence & Fall River road has also been used for freight traffic between New Bedford, Fall River and Providence, but it appears that the company did not receive any substantial share of the revenue from this source, earning mainly mileage charges from the passage of foreign express cars over its rails.

In the fiscal year 1916 the gross earnings of the road were \$50,734, operating expenses being \$42,099, leaving a balance of \$8,635. Fixed charges totaled \$14,017, leaving a deficit of \$5,382.

The road was originally capitalized at \$300,000. Its late capital stock was \$165,000, with an equal amount of bonds, and a floating debt of about \$140,000. For some years the note holders had been paying the bond interest to save foreclosure. The bonds were due on July 1, 1921. Finally action in the United States Court at Boston was brought by a committee of bondholders representing \$157,000 out of the total \$165,000.

The prospect of the road's being torn up aroused public sentiment to the necessity for prompt action, and under the leadership of various prominent citizens, selectmen of Swansea and the Fall River Chamber of Commerce, public meetings were held for the purpose of securing subscriptions to purchase the property from the Andrén company. The accompanying statement by the Chamber of Commerce emphasizes the community's realization of the value of the road's service, once that service was threatened with permanent withdrawal.

FALL RIVER CHAMBER OF COMMERCE FALL RIVER, MASSACHUSETTS

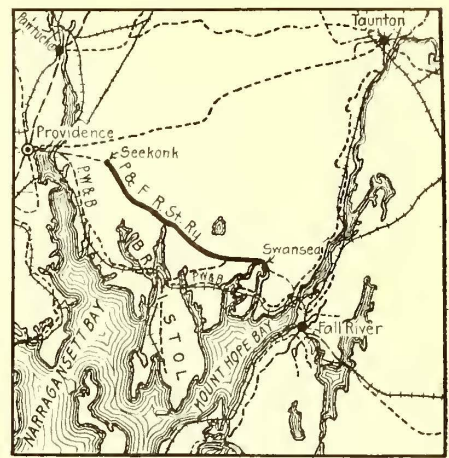
To the Business Men of Fall River, Mass.

Gentlemen: An opportunity is offered to purchase and save from destruction the Providence & Fall River Street Railway. The property, originally capitalized at \$300,000, can be had for \$90,000. We have, moreover, evidence to prove, which we shall shortly give you in detail, that the earnings of the road have hitherto been amply sufficient to pay a good dividend on this smaller investment.

We wish to present for your consideration the advantage which the rehabilitation of this line will be to you both directly in your business and indirectly through its benefit to Fall River in general.

The towns across the river form a large and rapidly growing community in which capital is being increasingly invested, in which many Fall River workers have their homes and from which the residents come to Fall River to trade, either because they have always traded here and prefer if possible to continue doing so, or because Fall River is the nearest market. Our own merchants in farm produce also secure at a small transportation cost a large portion of their stocks here. This interchanging trade is large and valuable and is bound to grow more so if the east transportation of the trolley is continued; and just as surely bound to be lost if it is discontinued.

This trolley line has also been used by the electric express for transportation between Fall River and Providence, to the great advantage and service of Fall River manufacturers and merchants. Discontinuance of the line means a longer and more costly route. Its continuance means a saving and a convenience to Fall River shippers. The exigency of the steam railroad which has recently made



MAP SHOWING LOCATION OF
"SNAKE LINE"

necessary an extreme reduction in the acceptance of less-carload freight, renders the value of the trolley express all the greater and the more essential.

There is also the general consideration of the loss in momentum and growth which will come from the stoppage of all systematic transportation between the city and a large suburban district. So inter-related are the various communities affected that one cannot suffer without the other sharing the effects.

For these reasons we submit to you that it will be a good business policy in itself, irrespective of any direct dividends, for the business men of Fall River to invest in the rehabilitation of the Providence & Fall River Street Railway. It would require but a dollar's worth of trade a week from the district traversed by the road to repay good dividends on an investment of \$1,000 in stock to continue the road.

A preliminary investigation of the road's earnings the past year, which we will make more thorough as time allows, indicates that the road earned approximately 11 per cent upon the proposed new capitalization of \$100,000. There is good assurance of at least equal earning the coming year. The Chamber of Commerce is convinced that it is urging upon your attention an investment which is at once a benefit to yourself, to your business and to the community.

That you may see that judicial men have already been convinced of the wisdom and desirability of such investment as we suggest, a memorandum of stock placed in Fall River on Sept. 25 is given herewith. The par value of the stock is \$50 a share. Subscribers of the above date, the first day the stock was offered in Fall River, number ten, and the total number of shares subscribed for exceeded 200.

We trust to have this matter presented to your attention within a day or two personally by a representative of the Chamber of Commerce. In the meantime we shall greatly appreciate it if you will indicate your desire to subscribe by communicating with the secretary of the Chamber, with Acting President Thomas E. Lahey, or with Louis S. Gray of Swansea.

THE FALL RIVER CHAMBER OF COMMERCE,
WILLIAM A. HART, Secretary.

On Sept. 24 an enthusiastic meeting was held at the Town Hall, Swansea, attended by fully 300 persons, at which practical assurance was given that the road would be purchased from the Boston house. Mr. Andrén offered to give the citizens sixty days in which to complete the transaction and it was announced that an initial payment of \$20,000 by Sept. 29 would be accepted as binding the bargain. Later Mr. Andrén agreed to postpone the date to Oct. 6, and on that day the initial instalment was paid as required, thus assuring the continuance of the road. The cessation of service on Sept. 22 resulted in much inconvenience to residents of the Swansea district, some of whom were obliged to rise at 3 a. m. and walk several miles to the nearest electric railway in order to obtain transportation into Fall River, also walking home at night from the terminus of the Bay State system in Swansea.

At the Swansea meeting a member of the Board of Selectmen stated that the loss of the street railway would mean far more to the people of the district than they realized at the time. There would be a loss to real estate, to taxation, to the manufacturing industries of the town and inconvenience to school children. It was brought out at the meeting that under the arrangements by which the road was operated prior to the suspension of service, the company received 2.5 cents per mile for handling Bay State cars over its line, but nothing from the Rhode Island Company, which took cars from the Massachusetts-Rhode Island line at Seekonk to Market Square, Providence. It was also stated that the Andrén company could make \$20,000 more at present market prices by selling the road piecemeal than by allowing the citizen interests to purchase it for \$90,000, but that the owners were willing to make the sacrifice in order to preserve the service to the community. Other prominent citizens and clergy spoke in

behalf of the retention of the road. On Sept. 28 another public meeting was held at the same place and pledges of \$80,000 out of the required \$90,000 were secured. In about a quarter of an hour \$15,000 more was pledged, and an extension of the time of the initial payment to Oct. 6 was announced.

In describing the meeting the *Fall River Globe* of Sept. 29 concluded with the statement that it is doubtful if ever in the history of the country a railway was sold in like manner, and the wildly enthusiastic scenes which attended the purchase resembled the plot of a most up-to-date "movie" drama. The solidarity of the community has been greatly increased by the proceedings, although the losses of the original security holders naturally have not made the story a wholly cheerful one.

It is expected that the new owners will seek legislation at the 1918 session in Massachusetts to permit a guarantee of 6 per cent dividends by the municipality of Swansea and also to reduce taxation burdens of the road.

Valuation Law Requires No Ultimate Value

Director Prouty, However, Says Full Benefits of Federal Valuation Cannot Be Realized Without Final Figures

ACCORDING to Charles A. Prouty, director of division of valuation, Interstate Commerce Commission, the present state of the federal valuation law requires no finding of ultimate value. In his opinion, however, the law will be useless unless it some time does require the commission to reach a conclusion as to the dollars and cents value of the property that a carrier is devoting to public use. These statements are contained in a memorandum discussion of the protest of the Texas Midland Railroad against the tentative report of the division of valuation.

Mr. Prouty's opinion is further set forth in detail below:

"As a member of the Interstate Commerce Commission I several times joined with my associates in recommending to Congress that it provide for a valuation of railroad property, and in so doing I for one understood that a valuation in dollars of the property as a whole was called for. There can be little doubt that a majority of the members of the Congress which enacted this measure understood that it provided for a statement of the value of the properties dealt with in money and that the act was so accepted by the country at large.

"It is still my own conviction that an ultimate value for rate-making purposes should be stated and that the full benefit of this valuation cannot be realized unless this be done. The vice of the railroad situation to-day is uncertainty. If the present system of providing public service by private capital is to be continued, some way must be found to assure that capital of the treatment which it will receive. It is difficult to see how this can be done until the value of the property now devoted to that service has been first determined.

"This does not, however, at all mean that any part of the work now being done or of the money now being expended is thrown away because the commission is not required to establish at this time such ultimate value.

Before such a value can be named the facts which the commission is collecting and reporting to Congress should be before the tribunal which fixes it. The facts are being prepared under the present act and a final value can be quickly stated when Congress has determined by whom and possibly by what rule such value shall be determined."

Mr. Prouty continues, however, with the remark that it is perhaps fortunate that the commission is not required now to state final values. He says:

"When the railroads whose protests are now under consideration were selected for valuation, the nature of this problem was not fully appreciated. None presents certain phases of this subject which should be before the commission before it lays down any rule for the determination of a final value. It may be doubted if any such final value can be safely stated until the tribunal making it has before it a sufficient number and variety of properties so that the full effect of whatever rule is adopted can be clearly apprehended. The ideal way in which to value the railroads would perhaps be to marshal the facts as to most of them exactly as that is now being done, and then with full knowledge of the meaning of whatever principles are applied to proceed with a statement of final value. While to my mind it would be unfortunate to omit an ultimate value in the end, it is not perhaps unfortunate that the statement of that value is for the present postponed."

COMMUNICATIONS

Cost of Storage Battery Maintenance

THE ELECTRIC STORAGE BATTERY COMPANY
PHILADELPHIA, PA., Oct. 3, 1917.

To the Editors:

In your issue of Sept. 1 I note an article by Prof. D. D. Ewing, describing several different plans for insuring continuous service from a railway transmission line for a town of about 2500 inhabitants, in which he compares a storage battery installation with several other methods for improving the continuity of service. On page 347 he tabulates the estimated financial results, and on the basis of this comparison recommends a gasoline engine-driven generator.

In Professor Ewing's discussion of the storage-battery plan there are some statements which I believe warrant further comment. In the first place the author makes a distinction between "a floating battery" and "a stand-by battery," which does not appear to be entirely clear. In modern central station practice the stand-by battery is always a floating battery, inasmuch as it is kept constantly connected to the station bus ready to carry the load in any emergency. This is true not only where a d.c. load is concerned, but also in those cases where a battery has been installed for stand-by service in connection with an a.c. distribution system, such as the installation at the Newton substation of the Boston Edison Company and the battery installed at the Alhambra substation of the Milwaukee Light, Heat & Power Company. In these instances the battery is always connected to the d.c. terminals of a motor-generator set or rotary converter operating on the a.c. side in parallel with the a.c.

station bus. In case of any interruption on the a.c. circuit, the battery is constantly ready to feed into the a.c. distribution system. In both of these cases a battery of the so-called stand-by type was installed, and such service is strictly stand-by work, inasmuch as the battery is discharged only in case of some accidental interruption in the normal power supply. It would appear, therefore, that "the very high degree of continuity of service" referred to by the author could be assured without increasing the investment shown in Table IV.

The annual charges against the storage-battery installation shown in Table IV appear to be abnormally high in view of the character of the battery installation and the kind of service contemplated. The interest charges at 5 per cent will amount to about \$1,000 per year. The cost of maintenance and depreciation would be extremely low. The maintenance charges against the motor-generator set and switchboard apparatus would be almost negligible. The cost of battery maintenance would also be comparatively small in view of the small amount of work required of the battery in strictly stand-by service such as this. From the results obtained from stand-by batteries in the last eight years, during which this type of battery and battery service has been developing, it is probably conservative to figure that \$500 per year would keep the installation described by Professor Ewing in first-class operative condition indefinitely.

In regard to the cost of attendance, while the author does not go into this in great detail, it is probable that the battery installation under consideration would not call for any additional attendance above that required for the existing substation apparatus.

I believe, therefore, that the author's figure of \$3,288 as the annual charge against the storage battery should be reduced to more nearly \$1,500, and that in view of the higher grade of service assured by this installation, it should be recommended in preference to either of the others.

J. LESTER WOODBRIDGE, Chief Engineer.

"More Service at Less Cost" Issue

PUGET SOUND TRACTION, LIGHT & POWER COMPANY
SEATTLE, WASH., Oct. 3, 1917.

To the Editors:

I have certainly enjoyed reading your "More Service at Less Cost" issue. It is the only up-to-date compilation on the light-weight safety car, and you certainly have treated this subject in a very thorough and painstaking manner. This number should be of great value to those street railways which are trying to introduce this service in their communities. The only trouble that I have with the situation so far as the light-weight car goes at the present is our inability to get them. We certainly could use all those we have on order immediately if we had them here.

G. A. RICHARDSON,
General Superintendent of Railways.

The Electrical Exposition and Motor Show, held annually in Grand Central Palace, New York, opened this week Wednesday to continue through next Saturday, Oct. 20. The booths of the Red Cross and the various government departments are particularly popular.

EQUIPMENT and MAINTENANCE

HAVE YOU A GOOD WAY
OF DOING A JOB?
—*Pass It Along*

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

Welded Compromise Track Joints

The Author Has Found Electric Welding Very Satisfactory in Making Such Joints

BY JULIAN M. SCOTT

Superintendent of Tools and Machinery,
Montreal (Canada) Tramways

The making of satisfactory compromise track joints is one of the difficult problems of the way department of electric railways. Some roads use fish plates made in their own shops, others use manufactured joints of one form or another, and still others find some form of welded joint the best. In so far as I am aware, the first welded compromise joint was made by the Thermit process. Such a joint is shown in the first illustration. When properly made it is perfectly satisfactory and the process is very simple. The general plan is to unite two 5-ft. pieces of each rail, giving a section of 10 ft. At each end of this is placed a standard rail joint. This makes an excellent job and is a good investment for the extra money spent as compared with the fish-plate joint. Having stated the case for the thermit compromise joint the writer will proceed to describe an adaptation of the electric arc welding process to the making of such joints, illustrating the description with several typical pieces of work.

The electric arc welding process supplemented by the acetylene cutting torch is well adapted to the making of compromise joints, involving a very simple procedure, inexpensive apparatus and practical immunity from failure. The materials required are flat, mild steel bars, ordinary $\frac{1}{4}$ -in. round, mild steel welding rods, and borax glass for the cleansing flux. The direct-current power needed is usually available in ample quan-

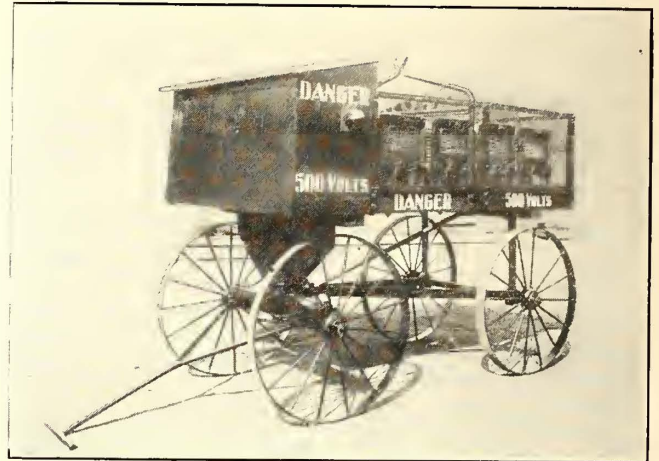


FIG. 5—PORTABLE RHEOSTAT OUTFIT FOR ELECTRIC ARC WELDING OF RAIL JOINTS

tity. The only apparatus necessary is a motor-generator set or a cheap welder resistance outfit, consisting, for example, of standard car rheostats capable of carrying 150 to 250 amp. and holding the current within these limits when 70 volts are consumed in the arc.

Such a set of rheostats arranged in portable form is shown in one of the illustrations. This is a home-made equipment designed for two circuits. It provides for a welding crew of three men, two welders and a helper, and does the work very well. Of course a motor-generator set would be more efficient.

A joint made between rails of approximately equal size is shown in Fig. 2; one between a 5-in. T-rail and a 7-in. girder guard rail in Fig. 3, and one between a

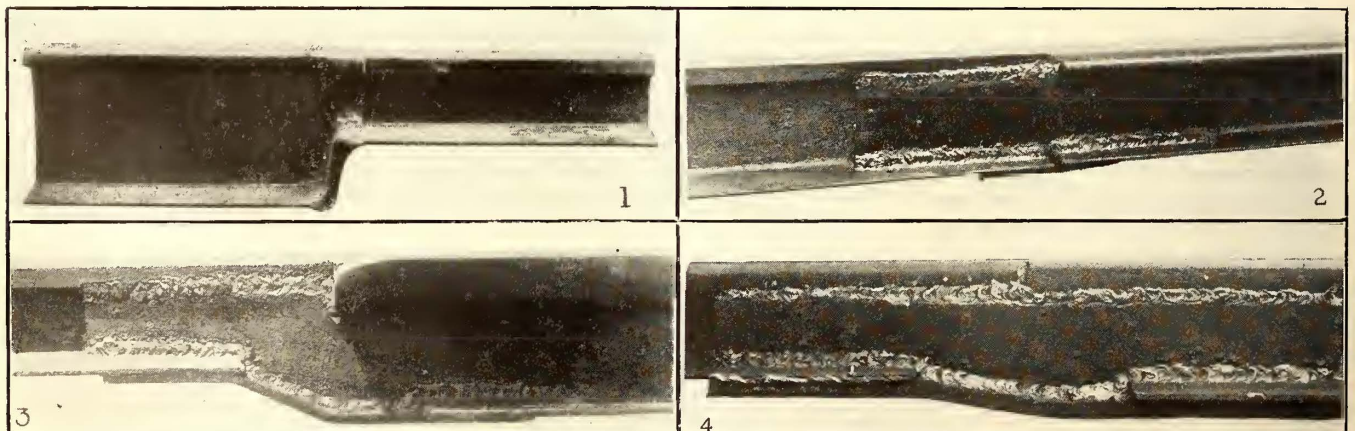


Fig. 1—Compromise thermit joint between 9-in. flange rail and 5-in. T-rail. Fig. 2—Electric arc welded compromise joint between two rails of approximately the same size. Fig. 3—Electric arc welded compromise joint between 5-in. T-rail and 7-in. girder guard rail. Fig. 4—Electric arc welded compromise joint between 4 1/4-in. T-rail and 5-in. T-rail.

FOUR VIEWS OF COMPROMISE RAIL JOINTS WELDED ELECTRICALLY

4 1/4-in. and a 5-in. T-rail in Fig. 4. In the last-named two joints there was no room for substantial side plates on account of the small depth. To overcome this lack of room 4 in. of the base of each rail was removed on both sides of the web. This gave room for the necessary depth of side plates and permitted the addition of a base plate which virtually continues the rail base, as is clearly indicated in Fig. 6. All trimming of rails and plates for these joints was done with an oxy-acety-

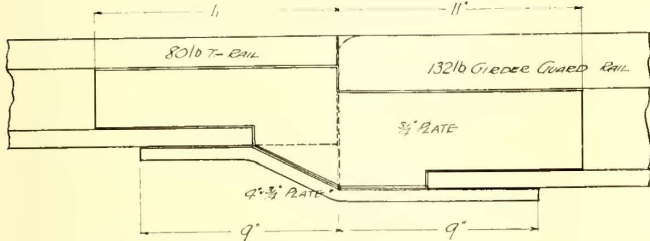


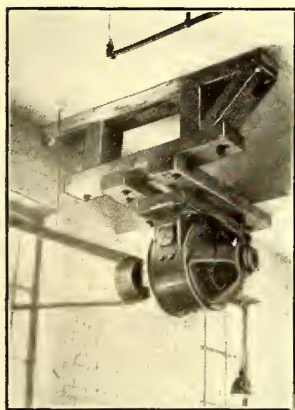
FIG. 6—DRAWING GIVING DETAILS OF JOINT SHOWN IN FIG. 3

lene torch, which is both quicker and neater than the carbon arc.

Joints made by the arc welding process described have been proved by test to be fully equal in strength to the adjacent rails, and in many cases were actually stronger. Our experience shows that two men with helper can produce from four to five of these joints per day. The number of arc-hours per day is about thirteen, one arc being used practically continuously and the other intermittently. With the rheostats the energy consumption per day is roughly 1000 kw.-hr., corresponding to from 250 to 200 kw.-hr. per joint. The energy consumption with a motor-generator set would probably be about one-third of this amount.

Location for Motor Makes Mounting Difficult

In the Hooper Street carhouse of the Springfield (Mass.) Street Railway, it became necessary to mount a 20-hp. motor on the ceiling for group drive service.



MOTOR MOUNTED ON CEILING IN SUBSTANTIAL WAY

The ceiling is supported by reinforced-concrete beams spaced too far apart for the use of an ordinary pair of base planks, and it was undesirable to cut down the light supply from the window shown at the left in the illustration by running any supporting structure in front of it. The situation was met by supporting the motor on two short planks attached at one end to one of the roof beams and at the other to an inexpensive but stout wooden cradle bolted into the ceiling and

seated into the shop outer wall. This left the space in front of the window clear except for the driving belt and enhanced the range of the sprinkler service by eliminating the extension obstruction which at first seemed the only solution of the problem. The motor mounted in this way is operating in a satisfactory manner, no trouble from vibration being experienced.

Time Studies Made in Digging Pole Holes

Costs Obtained on Poles Dug in Clay, Sand, Rock and Other Kinds of Subsurface Conditions

BY ALLAN C. HASKELL

Principal Assistant Engineer Construction Service Company, New York City

Several interesting and instructive figures have been obtained from a series of time studies made by the writer on a job of digging eighty-six pole holes. The work was done in New England where a cross-country line was being constructed and where a variety of soil conditions was encountered. The class of labor employed was exceptionally high, five of the eight men observed being natives of New England, two being born in America of Irish parents and the eighth a French-Canadian. All had worked as groundmen for a considerable time and were thoroughly familiar with the methods employed.

The specifications called for holes 5.5 ft. deep and 2 ft. in diameter, which were to receive 30 ft. cedar poles. As each hole was completed, however, it was carefully measured with a steel tape so that its contents could be accurately computed. There was found to be a considerable variation, the diameters ranging from 1.6 ft. to 2.4 ft. and the depths from 5 ft. to 5.9 ft.

Where the digging was fairly easy, as in sand or clay, there was one man to a hole and he was equipped with an iron bar about 8 ft. long for loosening, a short-handled pointed spade, and a long-handled round-nosed scoop. Of the eighty-six holes on which observations were made, sixty-seven were in clay, four in easy sand, three had boulders of various sizes throughout, but all capable of being handled by one man, one had one large boulder in it, requiring a chain to remove it, one was in sand and water where there were frequent cave-ins, one was in soft rock which could be broken by hand with the bar, and nine were in granite and had to be blasted.

A résumé of the observations on the sixty-seven clay holes follows, the time being given in minutes:

Man	Working Time			Total Time	No. of Holes	Cubic Yards	Man-Minutes Per Cubic Yard
	Actual	Other	Delays				
A.....	693	41	71	805	6	3.44	234
B.....	2,092	64	23	2,179	15	9.28	235
C.....	1,613	36	62	1,761	13	6.30	280
D.....	1,124	65	65	1,254	9	6.31	199
E.....	838	45	15	898	7	4.18	215
F.....	841	31	18	890	6	3.84	232
G.....	848	42	14	904	7	4.12	219
H.....	489	26	12	527	4	1.91	276
	8,538	400	280	9,218	67	39.38	234

Of the total time, 92.6 per cent was actually worked, that is, spent in digging or loosening; 4.4 per cent, noted as "other time," was spent in walking from hole to hole, changing tools, etc.; and only 3 per cent was lost in actual delays such as going for water, stopping to rest and the like. This is a very good performance, due in large measure to the foreman who kept his eye on his men most of the time, but also in part to the men themselves who were well trained, strong and industrious.

A record of the four sand holes was as follows, the time being given in minutes as in the previous table:

Man	Working Time			Total Time	No. of Holes	Cubic Yards	Man-Minutes Per Cubic Yard
	Actual	Other	Delays				
B.....	226	16	...	242	3	1.40	173
C.....	97	3	...	100	1	0.59	170
	323	19	...	342	4	1.99	172

The three holes in which one-man boulders were encountered were dug in the following minutes:

Man	Working Time		Delays	Total Time	No. of Holes	Cubic Yards	Man-Minutes Per Cub. Yard
	Actual	Other					
B.....	164	9	...	173	1	0.85	204
C.....	185	5	...	190	1	0.76	250
F.....	175	10	7	192	1	0.73	263
	524	24	7	555	3	2.34	237

It took the man A 354 minutes to dig the hole into which the large boulder fell. Of this time, however, 128 minutes were occupied in his going back to camp for a chain hoist and there was a delay of twenty-one minutes while he went to a farmhouse to fill the water pails. The normal time, therefore, should be as follows:

- 106 man-minutes, digging 3.5 ft. up to the time the boulder fell in.
- 20 man-minutes, fair allowance to get and arrange chain-hoist.
- 9 man-minutes, actually taking out boulder.
- 80 man-minutes, digging 2 ft. of earth to required depth.
- 215 man-minutes, total for 0.775 cu. yd., or 278 man-minutes per cubic yard.

It took the man D 197 minutes to dig the sand hole in which there was water. Of this time 167 minutes were spent in actually digging and 30 minutes in bailing out, every few shovelfuls, with a water-pail tied to the end of a stick. The hole was 5 ft. deep when finished and 2 ft. in diameter. Therefore the time per cubic yard was 338 man-minutes.

Man C dug hole which had soft rock throughout in 231 minutes. It was 5.3 ft. deep by 1.8 ft. in diameter, making 0.50 cu. yd., and when completed the time was 462 man-minutes per cubic yard.

A record of the nine rock holes follows. One man started these holes as usual, removing the earth until he encountered rock, then he went on to start the next hole. Later four men with hand drills and sledges drilled the rock, one holding the drill, two hammering, one pouring water, and then it was blasted. One drilling was usually enough. Two or three men cleared out the blasted rock.

Hole No.	Removing Earth, M. nutes	Depth of Earth, Ft.	Drilling to 5.5 Ft., Minutes	Blasting, Minutes	Clearing Rock, Minutes	Depth of Rock, Ft.
1....	81	4.3	225	44	216	1.2
2....	63	2.5	651	15	556	3.0
3....	39	1.7	759	22	679	3.8
4....	94	4.1	180	16	247	1.4
5....	23	1.3	706	14	727	4.2
6....	43	1.9	771	15	788	3.6
7....	96	3.8	387	20	378	1.7
8....	41	2.3	652	18	722	3.2
9....	35	1.7	565	21	563	3.8
	515	23.6	4,896	185	4,876	25.9

Thus it required about 189 man minutes per foot for drilling. On the basis of 5.5 ft. deep and 2 ft. diameter the total time per cubic yard for the earth portion was 187 man-minutes per cubic yard, and 3310 man-minutes per cubic yard for the rock portion. For these particular holes in which a little more than half was rock, the time was about 1820 man-minutes.

Groundmen were paid \$2, and the foreman \$5 per eight-hour day. Therefore, a man-minute cost $\frac{\$2}{480} = 0.42$ cent, and the costs of the various holes were as follows:

Clay Holes = $234 \times 0.42 = \$0.98$ per cubic yard for labor. The foreman had eight men under him on this work. Therefore, the cost per man-minute for supervision was $\frac{\$5.00}{8 \times 8 \times 60} = 0.13$ cent. The total cost, then, for groundmen and foremen = 98 cents + $(234 \times 0.13) = \$1.28$

per cubic yard. The average yardage per hole was $\frac{39.38}{67} = 0.59$ and the average cost per hole, 75 cents.

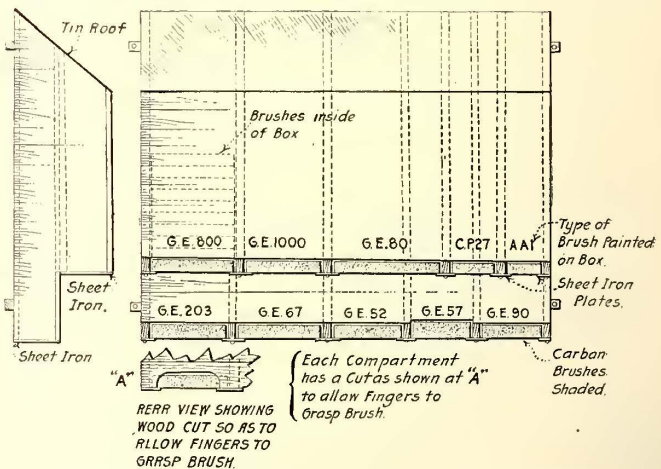
Computed in this way the costs for the other jobs were as follows:

- Sand holes..... = \$0.95 per cubic yd. \$0.47 per hole
- Holes with one-man boulders = \$1.31 per cubic yd. \$1.02 per hole
- Hole into which large boulder fell = \$1.53 per cubic yd. \$1.19 per hole
- Sand and water hole = \$1.86 per cubic yd. \$1.08 per hole
- Soft rock hole... = \$2.54 per cubic yd. \$1.27 per hole
- Solid rock.. = \$18.20 per cubic yd. for rock and \$10.00 for these particular holes which averaged a little more than half rock.

These costs do not include preparatory time, such as getting to the job, getting tools out ready to start, etc. This time varies on different jobs, and it is best to make whatever allowance is necessary according to the particular conditions. On the job observed this cost amounted to 5.9 per cent of the labor cost including the foreman. Roughly, one-half hour per day for all hands was used up in getting under way.

Box for Convenient Storage of Motor Brushes

In one of the shops of a large street railway company the motor brushes are kept in a box such as is shown in the accompanying illustration. There is a compartment for each size of brush and the box is located on a post which is convenient to the repair pits. Owing to the narrowness of the post and the objection to having



DETAILS OF BOX FOR HOLDING MOTOR BRUSHES

the sides of the box project beyond the sides of the post the compartments are arranged in a double row. This arrangement, however, would not be necessary if the box were located on the wall. The top of the box is made sloping and covered with tin to prevent waste or other materials from being placed on it. As shown, the wood at the back of the box is cut away along the bottom line to give room for the fingers to slip in and grasp the brush. The compartments of the box are filled by inserting brushes in the bottom, each brush pushing up the one above it. The use of this box has effected considerable saving since the brushes are no longer left around on the floor and in the pit where they may be damaged or swept up as refuse.

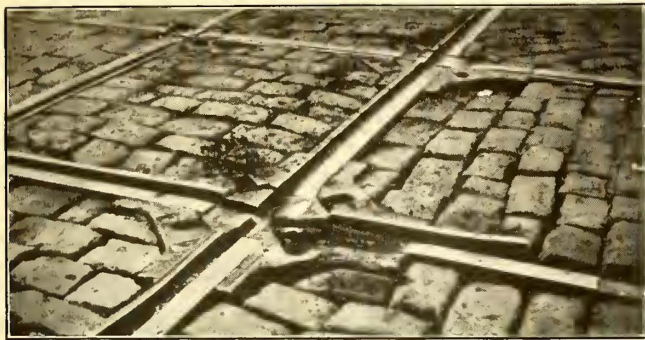


FIG. 1—BROKEN DOWN INSERT PLATE AND WING RAIL BEFORE REPAIR

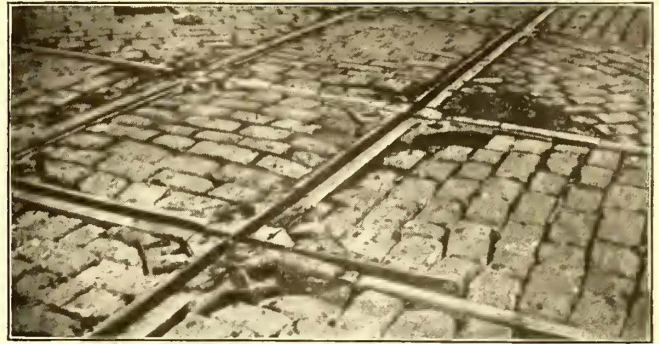


FIG. 2—SAME RAIL INTERSECTION AFTER REPAIR WORK HAD BEEN COMPLETED

How Some Difficult Special Work Repair Jobs Were Accomplished

Three Types of Welding Processes Used in Repairing Special Work That Could Not Be Replaced

BY W. L. WHITLOCK

Office Engineer Denver Tramway Company

Inability to get delivery on new special work and high costs have necessitated the repairing of old special work which was worn beyond what would ordinarily be considered good practice to attempt to retain in service. In a number of cases the work of repairing these badly worn pieces called into play all the ingenuity of our track force and the use of all our special track repair devices.

A square crossing where the manganese insert was broken and the ball of the wing rail was broken off as well is shown in Fig. 1. The problem of repairing this wing rail in the absence of new special work to replace it was particularly hard to solve. The first attempt was to cut a short piece of rail similar to the piece broken off and to weld this into the proper position on the casting. However, the welding on the casting did not hold.

The next attempt was to burn out the web and base remaining in the casting in order to fit in a new piece of rail. For this purpose a Prest-O-Lite outfit was called into use, but without much success. The Indianapolis welder and the Lincoln bonding machine were also given a try-out in attempting to cut away this casting, but none of them would cut it enough to allow the removal of the original rail. The Prest-O-Lite outfit was again called into action and this time succeeded in cutting a little wider space in the casting, although it was impossible to cut away the entire rail or casting around it. However, a short piece of rail

was cut off to fit in this place and the new insert and short piece of rail were thermit welded into position. The cupped rails at the inserts were then built up and ground, making a good finished job, as is seen in Fig. 2.

A SUBSTITUTE FOR SPELTER IN INSERT FOUNDATIONS

The old scheme of placing the manganese insert on a spelter foundation in the casting has been a source of constant maintenance expense. Our company is now using thermit instead of spelter for this purpose, and while this practice has only been in use a few weeks, it is apparently going to prove satisfactory. This thermit welding is done by the track department.

The track men first remove the insert and clean the casting thoroughly during the daytime. After service is off at night the thermit gang comes on the job. A portable air compressor and gasoline torch are used to preheat the casting, and molder's sand is placed in the casting in such a way as to prevent the thermit from running out. The insert is also preheated and placed in a position slightly below the level of the adjoining rails by letting it rest on small pieces of scrap iron. The thermit crucibles are then placed in position and fired, the thermit entering the holes around the inserts and filling up all space underneath and around the manganese piece. The gang used in this work consists of five men. They are usually followed up by the arc welders and rail grinders, who fill up and grind off all low places adjoining the inserts.

A badly disintegrated manganese curve crossing on one of the heaviest traveled lines in Denver is shown in Fig. 3. This crossing had been in service for ten years at the time the photograph was taken and the manganese frog and wing rail were in dangerous condition. Delivery was still uncertain on the new crossing which had been ordered months before. While the frog was



FIG. 3—FROG AND WING RAIL BADLY IN NEED OF REPAIR



FIG. 4—SAME FROG AFTER WING RAIL HAD BEEN REPLACED WITH NEW RAIL SECTION

in bad shape, it still had a solid piece where the wing rail was cast into the frog. Because of this it was decided to replace the wing rail with a short piece of ordinary rail as a temporary repair. Special fish plates were made long enough to reach from the frog to a point 10 in. beyond the joint, and these plates were arranged to be bolted to the rail, thereby serving as a sort of clamp to hold the new piece of rail in position during the repair process and as an angle-bar support afterward.

After traffic was off the line, two track men, a Prest-O-Lite outfit and an Indianapolis welder were assigned to the job, and in the short time of two hours had the manganese wing rail cut off about 6 in. from the frog. The Prest-O-Lite outfit was used for this purpose, and also to cut the bolt holes in the new section of rail to fit the corresponding holes in the fish plates. The old curved rail adjoining the new section of rail installed was so worn down that it was necessary to build up the ball of the rail to meet the new pieces. For this purpose the Indianapolis welder was used. Fig. 4 shows the section of rail in place before the frog had been built up.

The entire job at this crossing involved a labor and material cost which did not exceed \$7.

Next New Haven Locomotives to Have Two Additional Driving Axles

New Equipment Will Have Twelve Motors and 50 per Cent Greater Capacity—To Operate Over New Haven, New York Central and Pennsylvania Railroad Lines

Brief mention was made last week of the new passenger locomotives which the Westinghouse Electric & Manufacturing Company is building for the New York, New Haven & Hartford Railroad. The locomotives will weigh approximately 180 tons and will differ from the present New Haven geared locomotives in having six driving axles instead of four. Additional motors have

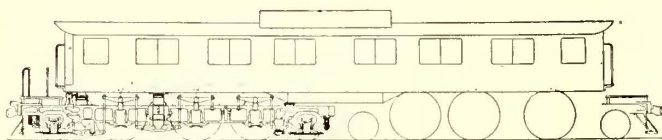


FIG. 1—OUTLINE OF NEW HAVEN RAILROAD NEW PASSENGER LOCOMOTIVE

also been provided so that the capacity will be 50 per cent greater than any of the electric locomotives now in service on this road. The maximum tractive effort will be at least 47,500 lb. The locomotives will be of the articulated truck type shown in Fig. 1, each main truck having what is known as the "Prairie" type of wheel arrangement. The cab is to be supported by means of spring loaded friction plates on the running gear.

Like the other New Haven electric engines the new equipment will have series motors designed to operate on either alternating or direct current. The direct current is obtained directly from the third rail when the locomotives are operating on the New York Central tracks and those of the Pennsylvania Railroad. On the New York Connecting Railroad and at other locations the alternating-current system is used, the power

is taken from the 11,000-volt overhead trolley wire, and the potential is reduced by means of a transformer.

Geared to each driving axle will be two single-phase series motors. The twelve motors will be divided into four groups, the motors of each group being connected permanently in series. Thus there will be a comparatively low voltage across each individual commutator and the cables in the main motor circuit need only be

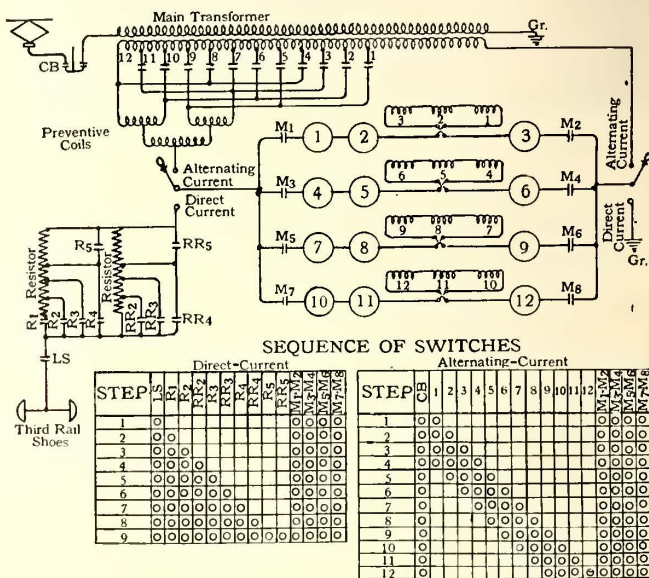


FIG. 2—CONTROL CIRCUITS FOR BOTH A.C. AND D.C. OPERATION

large enough to carry the current taken by a single motor.

While the new locomotives will be 50 per cent larger than the present ones, yet on account of the larger hauling requirements which will eventually exist, it is expected that the trains will operate double headed. The control has, therefore, been developed for multiple-unit operation with any of the geared type locomotives now in service on this road. The control circuit connections for both direct-current and alternating-current operation will be as shown in Fig. 2. When operating on alternating current the speed control will be obtained by using different transformer taps, preventive coils being provided so that when changing from one tap to another the transformer coils can be momentarily short circuited without causing an excessive flow of current.

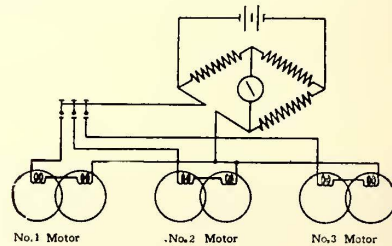


FIG. 3—CONNECTIONS FOR TEMPERATURE COILS

On direct-current operation the usual resistors will be used for starting and for speed control.

Temperature coils will be located in the armatures of each pair of motors. These coils will be connected as shown in Fig. 3 so that one set can be made the fourth leg of the Wheatstone bridge. The resistances in the other legs of this bridge are constant and the voltmeter across the bridge is calibrated so that the

temperature can be read directly. Thus the armature temperature can be closely watched and any overheating can be quickly detected.

Complete steam heating equipment capable of heating through passenger trains will be installed in each locomotive. This equipment will consist of an extended-surface, flash-type, kerosene-burning boiler with a capacity for evaporating 4200 lb. of water per hour. For supplying this boiler there will be a water tank having a capacity of 1440 gal. and an oil tank capable of holding 370 gal.

A Theory of Rail Corrugation

Temperature Difference of Rail Head and Base and Absence of Freedom of Rail to Expand and Contract Given as Reasons for Beginning of Corrugation

BY C. L. HUNTZINGER

Chicago, Ill.

The construction of modern street car tracks is such that eccentric stresses due to temperature are developed in the rail. The head is the only portion of the rail exposed to the elements as the web and base are incased in the paving material, sand bed, grout or concrete base. These incasing materials insulate the lower portions of the rail from the heat of the sun and carry off the heat which reaches the lower portions of the rail through conduction, causing a considerable difference in temperature in the head and base.

That this condition exists can be verified on a hot summer's day while the sun is shining by removing a rail from the track bed. The head will be so hot that the hand can scarcely be held in contact with it, while the base will be comparatively cool. To find these conditions the work must be done quickly as the heat will distribute itself evenly through the rail section in a short time after being exposed.

On steam roads and other tracks where the entire rail is exposed every portion of the rail section has the same temperature and its linear expansion or contraction is the same for any point on the perimeter of the section. This expansion is taken care of in the joints by means of slotted holes in the rail, or in the case of elevated railroads by expansion joints, designed purposely to accommodate this change in length. By allowing this free movement of the rail in expanding and contracting all stresses due to temperature are eliminated.

The case of a rail in a section of street car track is entirely different. As explained before, no two portions of a rail section have the same temperature, so the linear expansion or contraction is different for every point in a vertical section. Provision for expansion and contraction is not made, as in the case of steam and elevated roads, and with welded joints it is impossible for the rail to have any linear motion whatsoever. Any change in temperature causing expansion or contraction must be taken care of by the rail in the form of stress. A rail unevenly heated, if not restrained, would assume the shape of an arc, but being held rigidly in place by the track fastenings and construction it is impossible for it to respond to the interior stresses, thereby causing an eccentric compressive stress in the extreme fibers of the portion, generally the head, having the greatest heat.

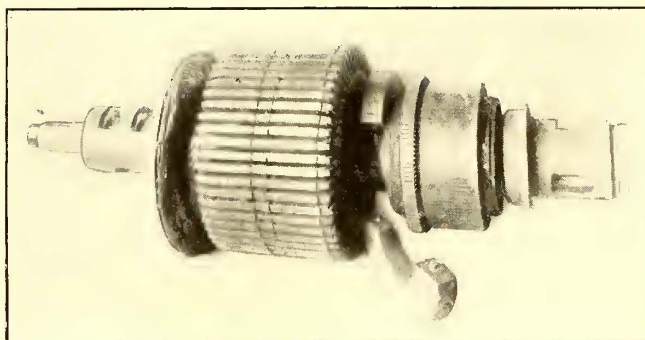
The material in the head resists this expansive stress thereby becoming more compressed in texture, but instead of being uniformly compressed throughout its length the rail texture assumes a series of waves, which show a greater degree of compression at the crests than in the valleys. The behavior of the rail under these conditions is similar to that produced by heating one edge of a slender piece of metal and cooling the other, at the same time restraining it so it is impossible for it to expand in its natural manner. These waves are naturally microscopic, but small as they are this condition of the rail makes it favorable for the commencement of corrugation.

If a moving load is rolled over a rail while stressed, as explained above, the wheel passing from the crest of the stressed wave to the less stressed trough will act as a blow. With successive wheels passing, the ensuing blows form a dish in the rail which, no matter how small, still remains even after the unequal temperature and accompanying stresses have been removed. In support of my argument that the rolling load while moving along a rail acts as a blow, I wish to call attention to the noticeable vibration or chatter which street car trucks have while moving at ordinary speed, and this I contend is sufficient to be manifest in the form of an impact or blow. Although the depressions prior to and directly after the passing of the load are microscopic in size, rail corrugation has started, and those familiar with the subject know with what rapidity it increases in depth and spreads along the rail, once it is started.

Many authorities on street railway construction and maintenance have experimented with rails having heads of various contour, trying to find a section which would be free from corrugating, but the writer is of the opinion that as long as conditions exist where an uneven temperature and the accompanying stresses are created in a rail, this trouble will be experienced to a greater or lesser degree.

Useful Kink in Rewinding Armatures

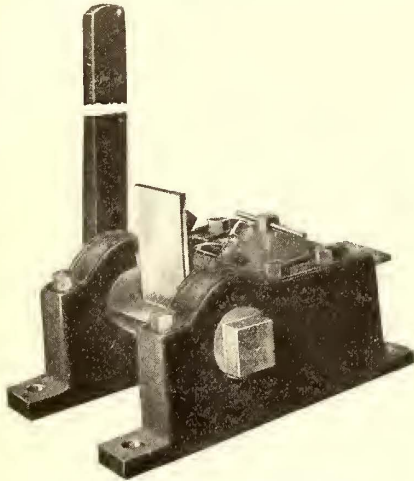
The Spokane & Inland Empire Railroad has rehabilitated a large number of Westinghouse-68C motors in order to improve their operation. In connection with this job the armatures were rewound and to do this satisfactorily it was found necessary to provide substantial support for the coils at the end of the core. These supports are seen in the illustration. On the commutator end a split ring of hard wood treated with linseed oil was used, while the support on the other end consists of a casting made at a local foundry and insulated with mica and Empire cloth. By winding the



VIEW OF ARMATURE SHOWING COIL SUPPORTS AT CORE ENDS

coils on these supports all movement and breaking of the coils and the severing of the contacts have been eliminated. The end of the finished armature is covered with asbestos cloth to guard against flashing commutators.

Busbar Bending Machine



DEVICE FOR BENDING BUSBARS

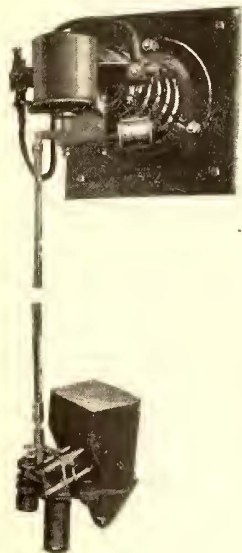
Busbar bending is simplified by the use of a machine which has suitable adjustments. Apparatus made by the General Devices & Fittings Company, Chicago, Ill., for this purpose is shown in the illustration. It can be set to bend bars to any desired angle up to 90 deg., and by an additional adjustment any number of pieces can be bent with the proper allowance so

that they will lie together evenly spaced in a stack.

The device will handle bars up to 6 in. in width and $\frac{3}{8}$ in. in thickness. The bar to be bent is run through the bed of the machine and clasped in place. Operating the long bending arm causes a heavy jaw to carry the ends of the bar to the desired angle.

Series Relay for High-Voltage Circuits

For tripping oil circuit breakers the high-voltage series relay shown in the illustration has been developed for installations where economic considerations prohibit the use of the usual relays connected to current transformers.



HIGH-VOLTAGE RELAY WITH INSULATING ROD

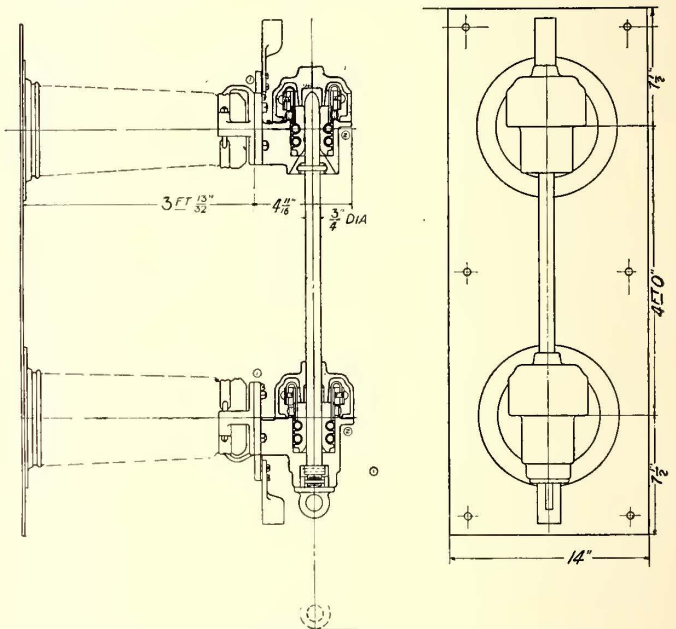
The upper section consists of a solenoid mounted on a high-voltage insulator to isolate it from the ground. The coil of this solenoid is connected in series with the line on which it operates. One end of the coil is also connected to the solenoid frame to avoid objectionable static stresses. The lower section of the relay contains the calibration parts, adjustments for load settings, time-limit arrangements and circuit breaker control circuit contacts. The two sections are connected by a long wooden rod so that all the parts in the lower section except the contacts can be at ground potential, making it safe for adjustments even when the line is at operating voltage.

These relays operate either instantaneously or on an inverse time limit, obtained by means of a dash-pot mounted on the frame which holds the tripping con-

tacts. The same contacts, operating and adjusting mechanisms and solenoid are used for all voltages. The solenoid coil is rated according to the normal current in the line, and the size of the insulator on which the solenoid is mounted is based on the line potential. The solenoid coil can be readily changed when the voltage is off the circuit. The relay was developed by the General Electric Company for use on voltages up to 15,000.

Disconnecting Switch Designed for Restricted Quarters

Operating the ordinary high-voltage knife-blade disconnecting switch requires considerable space below and in front of the switch, the amount of space being dependent both upon the length of the blade and of the hook rod used to operate the switch. In cases where space is at a premium the switch shown in the illustration has solved the difficulty. In this switch the knife blade has been replaced by a copper rod with a cast eye



DISCONNECTING SWITCH HAVING ROD IN PLACE OF SWITCH BLADE

fastened on one end and a renewable solid brass contact tip on the other. Pulling this rod down opens the switch. When the switch is opened a flange near the top of the rod prevents it from dropping below the upper part of the lower stationary contact. The wide flare of the lower end of the upper contact block leads the rod into position when the switch is being closed, and after the rod is in the upper position a slight turn to the right or left locks it and prevents it from accidentally opening. The switch was developed by the General Electric Company.

To obtain commutator saws the Washington Water Power Company, Spokane, Wash., buys soft steel washers about 1 in. in diameter. A hundred of these at a time are placed on a spindle and milled with cutting teeth. They are then case hardened. The cost of the little saws complete is about a half cent apiece, and very good service is obtained from them.

News of Electric Railways

Traffic and Transportation

Financial and Corporate

Personal Mention

Construction News

\$15,455,000 Spent in Three Years

Kansas City Railways Shows How This Sum Has Been Expended to the Lasting Benefit of the City

Clyde Taylor, vice-president of the Kansas City (Mo.) Railways, as noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 15, page 452, discussed the problems of the company before a special meeting of the officials of Kansas City, Mo., and Kansas City, Kan., recently. In reviewing the work already done by the company Mr. Taylor said in part:

"A few figures will demonstrate the importance of this property to the city.

CALENDAR YEAR 1916

This company:	
Paid to Kansas City business concerns.....	\$1,512,670
Payroll.....	3,120,000
Paid for fuel.....	917,265
Paid Kansas City water department.....	15,830
Bought 75 new cars.....	450,000
Rebuilt 121 cars, equipped with folding doors and steps.....	75,000
Built 9 miles of new extension and rebuilt 16.7 miles of old track at cost of over.....	1,000,000

THREE-YEAR PERIOD ENDING JULY 7, 1917.

This company:	
Rehabilitated, repaved and repaired track at.....	\$1,506,000
Purchased 125 new cars.....	635,000
Built 25.5 miles of extensions.....	836,000
	<hr/>
	\$2,777,000
174 cars equipped with folding doors and steps.....	\$111,000
22 cars equipped with folding steps only.....	11,000
42 cars completely rebuilt.....	44,000
274 cars repaired and revarnished.....	72,000
	<hr/>
	\$238,000
In addition:	
Spent for general maintenance.....	\$3,756,000
Paid for wages.....	9,158,000
Paid for taxes.....	1,346,000
Placed to credit of city.....	1,195,000
	<hr/>
	\$15,455,000

"This property is confronted with serious problems, upon the correct solution of which the future of Kansas City will largely depend. Everything that one buys has advanced tremendously in price within the last five years. Here are some of our figures:

FIVE-YEAR PERIOD FROM 1912 TO 1917

During this time:	
Materials and supplies advanced, per cent.....	36.78
Taxes increased per cent.....	84.72
Wages of employees advanced, per cent.....	15.24
Cost of fuel advanced, per cent.....	46.16
Present cost of fuel at mines.....	\$1.00
Probable cost under President's order fixing price.....	\$1.70
Approximate tonnage burned per day, tons.....	1,000
Increase in cost if President's price prevails.....	\$255,000

TEN-YEAR PERIOD ENDING 1917. JUNE 30 TO JUNE 30.

Annual payroll:	
1908.....	\$1,736,000
1909.....	1,851,000
1910.....	2,035,000
1911.....	2,429,000
1912 (receivership).....	2,321,000
1913.....	2,467,000
1914.....	2,664,000
1915.....	2,998,000
1916.....	3,070,000
1917.....	3,091,000
	<hr/>
Total payroll.....	\$24,662,000

"Now, in almost all industries where the costs of operation have increased, the business has been kept going by increasing the price of the output, so that the ultimate consumer bears the burden and this is economically and morally sound. Electric railway transportation has not increased in price, but has in this community, in fact, decreased, because of many extensions, thereby giving more service for the same 5 cents. This in the face of tremendous increase in the cost of the service.

"This company has approximately 3500 employees. They

have their problems and I think we are broad enough to recognize, and I hope they are, that their problems are of the same character as ours. We have invited the different classes of employees to form committees, whose functions will be frankly and fairly to take up the wage problems with the officials of the company. If we cannot agree it is stipulated that there shall be selected fair, competent and honest arbitrators who will themselves go into the situation and give us and them the answer. The problems that face this property are not only the problems of this property but of every citizen in this community.

"I ask support in working for a solution that will be for the benefit of all. I ask you men to see to it that politics are kept out and that all vindictiveness and ill will be kept out, and that if there are those in the community who, for ulterior reasons, seek to stir up strife and turmoil, then that this town shall put a stop to that sort of business."

Fundamental Differences Considered

Hearing on Oct. 5 on Proposed Philadelphia Lease Looked Upon as Very Helpful to an Understanding

The matter of the lease of the high-speed rapid transit lines in Philadelphia to the Philadelphia Rapid Transit Company was gone into again at the hearing on Oct. 5 before the finance committee of Councils and the joint committee of finance and street railways. At the previous meetings the draft lease was fully explained and the different interpretations fully discussed. At the meeting on Oct. 5 the fundamental differences were gone into with respect to the attitudes in which ex-Director of City Transit A. Merritt Taylor and the present director, W. S. Twining, approached the problem of framing the lease. This was done by James Collins Jones, counsel for the Chamber of Commerce, who summed up the differences in the questions "Who shall bear the burden of the initial losses from the operation of the unified transit system—the city or the car riders?" and "Who shall take the profits in the later years of the lease?" It was Mr. Jones' judgment that the Twining lease offered the fairer solution. Mr. Jones agreed with some of the ideas of Mr. Taylor and suggested changes in the proposed lease. At the same time he leaned most in his attitude toward the administration proposition. In the opinion of the Philadelphia *Public Ledger* Mr. Jones appeared as counselor and could point out differences to the rival elements and thereby suggest a way to settlement and compromise.

Mr. Jones said the Taylor lease protected a 5 per cent dividend for the transit company, but he did not concede that the company was as strongly protected in the Twining lease in the matter of the 5 and 6 per cent dividends. Mr. Jones agreed with Mr. Taylor in favor of the immediate abolition of the 3-cent exchange ticket. He opposed it as being discriminatory in that some car riders were transported for 5 cents while others under similar conditions were obliged to pay an extra 3 cents for an exchange ticket. He suggested a substitution of the universal transfer for which the same charge would be made all over the city. He thought that the extra charge for universal transfers or exchanges should be about 1 cent, making the total fare for the rider who used a transfer 6 cents. He said at one point that, far from being impressed with the looseness of the drawing of the Twining lease, he had been impressed with the high-grade character of the draftsmanship displayed.

Dr. Lewis, special counsel to the Mayor, said that when the hearings had been concluded and the proposed lease had been considered from every angle of public interest,

he would be glad to consider with Thomas Raeburn White, of counsel for Mr. Taylor, amendments to be made to the Twining lease. Later on it was agreed that both sides should confer and try to arrive at a mutual understanding.

Another feature of the meeting was the reading of a paper by Mr. Taylor which he described as containing a "discussion of and constructive suggestions as to provision for deficits and for returns to the city and company, also as to immediate elimination of exchange tickets."

Increases in Wages in Baltimore

Following a meeting of the board of directors of the United Railways & Electric Company, Baltimore, Md., on Sept. 28, T. A. Cross, president of the company, announced an increase in the rates of pay of motormen and conductors of the company, and of employees in a number of other departments, amounting to approximately \$250,000 for the year. The board authorized the increase in view of the present high cost of living, and in appreciation of the loyalty of the men to the service. The revised schedule of wages to motormen and conductors is as follows:

Class No. 1 will comprise men who have been in the service less than one year, and will be paid 26 cents an hour.

Class No. 2 will comprise men who have been continuously in the service more than one year and less than two, and will be paid 27 cents an hour.

Class No. 3 will comprise men who have been continuously in the service more than two years and less than three, and will be paid 28 cents an hour.

Class No. 4 will comprise men who have been continuously in the service more than three years and less than five, and will be paid 29 cents an hour.

Class No. 5 will comprise men who have been continuously in the service more than five years, and will be paid 30 cents an hour.

The company maintains a pension system for the benefit of its employees, under which those retiring, after a specified period, are pensioned for the remainder of their lives. The company also has in operation a death benefit, or insurance plan, to the privileges of which employees are eligible, the entire expense of both the pension and insurance plans being borne by the company without any outlay whatever on the part of the employees.

Chattanooga Strike Developments

Several conferences were held on Sept. 24 by those who are seeking to bring together the officers of the Chattanooga Railway & Light Company, Chattanooga, Tenn., and the men who are out on strike. Certain concessions were said to have been made by F. W. Hoover, vice-president of the company, in the interest of a settlement. The prospects were regarded as bright at that time. Toward midnight, after receiving a message from the conference with Mr. Hoover, Organizer Cline for the men said he could not see his way clear to recommend all that had been proposed to the union for adoption. Several days more of dickering followed. A formal offer was then outlined by the company. Mr. Hoover later left the city on business and was gone several days. During his absence the agitation for a settlement was kept up by outside interests. Mr. Cline, representing the men, again balked at the individual contract. The whole matter was, however, gone over by the men, who submitted certain amendments.

On Sept. 30 the *Chattanooga Times* published a story to show that in their insistence upon recognition of the union the men were demanding concessions not recognized by the Amalgamated Association as a justifiable cause for a strike. In support of this the paper quoted from the testimony of Edward McMorrow, a member of the executive committee of the national body, presented during the inquiry in June by the Senate committee into the strike of the electric railway employees in Washington.

On Oct. 1 it was made plain by the Chattanooga Railway & Light Company that the last word had been said by it. All the concessions possible had been made. On Oct. 3 the matter still rested as just related.

Seattle Wins Earnings Case

Judge J. T. Ronald of the King County Superior Court at Seattle, Wash., recently sustained the city's demurrer to an amended answer in the action brought by the city of Seattle to recover \$64,000, representing 2 per cent of the gross earnings of the Puget Sound Traction, Light & Power Company of Seattle during 1916. Hugh M. Caldwell, corporation counsel, entered a demurrer to the amended answer of the company, in which answer the company pleaded that it had petitioned the State Public Service Commission to be relieved of this 2 per cent gross earning tax and other franchise obligations; and claimed that the city was responsible for a loss of \$70,000 or thereabouts through the passage of an ordinance requiring the sale of tickets on cars, later held invalid by the federal court. On Jan. 15, last, the Puget Sound Traction, Light & Power Company offered a check to the city for \$64,000, representing 2 per cent of its gross earnings for 1916, with the provision that in accepting it the city abandon its plan of bringing suit to require the company to pave rights-of-way, assume portion of the cost of bridges and other obligations, which the company is seeking to have abrogated by the State Public Service Commission. The city of Seattle refused the check and directed Mr. Caldwell to bring suit to recover the amount.

Municipal Extension Impediments

Assistant Corporation Counsel of Seattle Outlines Procedure Necessary to Secure Funds to Extend Municipal Railroad

In an opinion rendered by Walter F. Meier, assistant corporation counsel of the city of Seattle, Wash., to Councilman Will H. Hanna, chairman of the finance committee of the Council, it is stated that before money can be taken from the general fund to build an extension to the municipal railway system, under the express provisions of the state statute it will be necessary to submit the plan for such extension to the people for their approval. The proposed appropriation of \$12,000 from the general fund to be used in the construction of an extension from the end of Division A into Ballard is, therefore, illegal. In an opinion made to the Council about a week ago, Mr. Meier held that the transfer of money from the light depreciation fund for the extension of the railway is illegal. Following that opinion, the Council abandoned the plan of appropriating money from the light depreciation fund, and a bill transferring an equal amount from the general fund was introduced. Under the two opinions furnished by Mr. Meier, at the request of the finance committee, there are only two ways to finance an electric railway extension. One is to obtain the approval of the voters to such a plan and to the consequent expenditure, and the other is to authorize and sell utility bonds, without submitting the proposition to the voters.

Discipline of Kansas City Police

It will be remembered that union leaders had threatened a general strike if policemen who had refused to ride cars with strike breakers were discharged from the force. The policemen were discharged, but no strike was called. The union leaders declared that they would secure the dismissal of John Ranson, police commissioner, who had taken a decided stand for discipline and protection of property. It had been promised at the meeting of the State Federation of Labor that definite steps would be taken against Governor Gardner if Governor Gardner did not dismiss Mr. Ranson. The State Federation, however, went on record as supporting law and order and opposed to any labor unsettlement that might be construed as springing from enemy influence, and no mention was made publicly of the Kansas City situation. It is reported that the union leaders were advised not to start a fight on Governor Gardner on the ground that he would not take the part of strikers against his appointees on police boards. It is also reported that labor leaders expect to see the discharged policemen reinstated in their jobs in Kansas City in due time, and with this statement the criticisms of the more radical are being met.

Union Recognition Waived

Publicity by Business Men Helps to Mold Public Opinion Against Union Recognition

The labor troubles in Kansas City, Mo., which started with the strike of employees of the Kansas City Railways and have extended to packing houses, freight depots, soap factories and manufacturing establishments, still hamper plans of business men. A turning point, however, seems to have been reached, for on Sept. 23 the striking freight handlers agreed to return to work without recognition of their union. It will be remembered that the street railway strike was settled without formal recognition of the union. The packers, however, recognized the union in their settlement. Union leaders then declared that the basis of the packing house settlement would be that of other strikes. Several weeks ago a Business Men's Association was organized and it used large newspaper space to inform the public of the incitement of unrest among workmen. The publicity campaign was credited with effecting such a change of public sentiment that the freight handlers decided it would be most unwise to insist upon union recognition. The railroads had been able to keep their freight depots more or less in operation, and the agreement provides that the men employed during the strike need not be discharged to make places for the strikers who now return to work. Patrick F. Gill, government mediator, arranged the settlement of the freight handlers' strike. Teamsters and chauffeurs who refused to handle goods for or from freight houses have returned to work.

Electrification Efficient, Economical and Satisfactory

Charles A. Goodnow, vice-president of the Chicago, Milwaukee & St. Paul Railroad, who has been in charge of the electrical construction during the last few years, is quoted as follows:

"It was unjustly and ignorantly stated in the financial column of a New York newspaper that St. Paul was going on with its electrification, not because that method of operating had proved satisfactory or economical, but because we had gone so far that we could not stop.

"This may be flatly denied, like some other recent stories in the campaign against St. Paul's credit. Electrification has not only proved to be highly efficient, but economical and satisfactory in every way. It has solved the problem of reliable and cheap mountain operation, especially in the winter, and has demonstrated that the cost of repairs is only about one-half that of steam operation, while the capacity of the electric engines as regards both speed and tonnage, is practically double that of steam locomotives. Electric engines put in service in December, 1915, are still doing 100 per cent work and have never had a general overhauling."

Abandonment of Road Sought

The Inter Urban Railway, Des Moines, Iowa, has filed a petition with the State Railroad Commission of Iowa requesting permission to abandon its branch to Woodward, on a spur of the line to Perry and 5 miles from the junction point at Moran. The company contends that the road is not a paying proposition; that it cannot afford to pay for an overhead crossing which the Railroad Commission has ordered, and that the rails are needed by the company for double tracking its line to Camp Dodge. Citizens of Woodward have declared through Senator A. M. McColl that they will oppose the closing of the road.

The Inter Urban Railway has announced that if it can secure a 15-cent rate for soldiers it will double-track its entire line to Camp Dodge. At the present time the soldiers are paying 10 cents to Des Moines, while citizens pay 15 cents. Emil G. Schmidt, president of the road, states that it will cost \$300,000 to double-track the line to Camp Dodge, but that with the increased fare he has made arrangements to finance the work. Camp Dodge is 12 miles from Des Moines, so at the present time the company is receiving less than 1 cent a mile for carrying the soldiers.

Strike in Twin Cities

Minnesota Public Safety Commission Brings About Settlement—Discharges to Be Investigated

A strike of trainmen of the Twin City Rapid Transit Company begun on Oct. 6, as a result of the activity of union organizers, was ended on Oct. 9 at the direction of the Minnesota Public Safety Commission. The commission found that the only real difference between the company and the men on strike was the question of the reinstatement of men previously discharged and that the policy of the company was not to discharge employees solely on the score of their membership in any organization. It advised that the men return to work immediately, the status of the fifty-seven men to be investigated on their individual merits. The present status seems to be just about the same as it was before the strike. The company has not recognized the union.

DEVELOPMENTS JUST BEFORE THE STRIKE

Previous to the strike the company was conferring with a co-operative trainmen's committee selected from the car-houses and had agreed to practically all the requests of the men. Later an advance of 10 per cent in wages was granted. At this time the union intervened. Horace Lowry, president of the company, refused to confer with the union under the circumstances. Vice-President T. F. Line and Representative Edward McMorrow of the Amalgamated then took over the direction of the affairs of the men who had organized and the strike began. A general sympathetic strike was threatened, but the commissioners' order ended the affair. Following the settlement President Lowry said:

"I have nothing to say except the Public Safety Commission has taken the matter out of my hands and the company's control. We must and will obey cheerfully and patriotically the order of the commission."

PUBLIC INCONVENIENCED LITTLE

Rowdiness in St. Paul resulted in damage to equipment of the company and in slight injuries to passengers and policemen. Except for these outbreaks and the discontinuance of owl service three nights the public was inconvenienced very little. An average of 88.8 per cent normal service was reported by the company the last day. This was 6.8 per cent over the previous day. When the strike was called the company announced that 319 trainmen out of 2716, or 16 per cent, failed to report for duty. Three per cent is the normal absence report, leaving the percentage of men on strike at only 13 per cent of the total. The company was prompt to offer to receive applications from men who had quit work but had done no unlawful act while out.

A Question of Veracity

Policemen Accused of Insubordination Plead Lack of Definite Instructions

After deliberating seventeen and one-half hours without reaching an agreement, the jury considering the case against former Patrolman E. W. Benjamin of Seattle, Wash., charged with failure to do his duty as a public officer during the recent strike of the railway employees of the Puget Sound Traction, Light & Power Company in Seattle, was discharged by Superior Judge Boyd J. Tallman. Benjamin is one of thirteen officers charged in one information with the same offense, but granted separate trials. It is stated that his case will be tried again before the State proceeds against the other defendants. The State's case rested mainly upon testimony of Police Sergeant F. A. Ribbach, who said he ordered the policemen to board the cars for a trip downtown for the purpose of protecting property and the car crew, and that Benjamin and his co-defendants refused to obey him. All of the "striking" policemen testified that Ribbach did not issue any orders, and that when they attempted to learn from him what they should do, once upon the cars, he walked away. They all asserted they were ready to obey any commands as soon as detailed instructions were received by them. G. A. Richardson, general superintendent of railways of the Puget Sound Traction, Light & Power Company at Seattle, testified that his company had asked the police for protection.

Cleveland Considers Coal Situation

Chamber of Commerce Takes Up Matter Which Threatens Community

At a meeting of the industrial development committee of the Chamber of Commerce of Cleveland, Ohio, recently, business men discussed the coal situation in its various phases. A serious shortage of coal exists and there is grave concern as to the possibility of securing the fuel necessary for keeping mills, factories, industrial plants and utility stations in operation until the opening of the spring season. On Sept. 20 coal producers and jobbers met with the committee to discuss means of securing a proper supply. It is probable that the matter will be taken to the authorities at Washington.

Orders have been received by the railroads to deliver slack coal for industrial purposes. This will give some relief, but perhaps not fully satisfy the needs of the industries.

A few days ago the Western Ohio Railway, Lima, notified the Public Utilities Commission that its supply was running very low and that something would have to be done within a short time in order to keep the road in operation. It is understood that arrangements have been made to take care of the situation temporarily.

Review of Danville Strike

Company Agrees to Recognize Union and Reinstate Two Discharged Employees—Question of Wage Scale to Be Arbitrated

Previous to a four-day strike called on Sept. 13, about 100 city trainmen of the Danville Street Railway & Light Company, Danville, Ill., had been working under individual contracts with the company. Two increases in pay had already been allowed by the company during the present year, bringing their wage scale up to the following amounts: First six months' service, \$2.35 a day; second six months, \$2.45; second and third years, \$2.55; fourth and fifth years, \$2.65; all over five years of service, \$2.75 per day, all on the basis of a nine-hour day.

Prompted by J. D. Keenan, a resident of Danville and a member of the Boilermakers' Union, a few of the trainmen organized a local division of the Amalgamated Association on Sept. 11 and appointed a committee to wait upon the company. The principal demands of this committee were for the reinstatement of two trainmen who had been discharged early that same week, an increase in pay of 7½ cents an hour to all trainmen and recognition of the union. J. E. Johnson, general superintendent, pointed out to the committee that the company had increased wages twice since last May, and that the men were receiving pay which compared favorably with that of men in similar work in other cities of like size in the Middle West. The trainmen were further told that although the contracts signed by the individual employees had not expired, and although the majority of employees had no interest in the union, yet the company felt that a strike was an extremely unfortunate thing particularly at the present time and that it would deal with the union if this were formed and undertake to negotiate a new contract rather than be a party to any labor disturbance. The men were told that their right to organize would be respected, and the committee was asked to appear with some authorized representative of the Amalgamated Association for the purpose of negotiating a contract.

STRIKE CALLED WITHOUT WARNING

Without further notice or negotiations the committee called a strike of all trainmen on the morning of Thursday, Sept. 13, the opening day of the Illinois-Indiana Fair. A number of the company's employees reported for work that morning, but it was considered inadvisable to attempt to operate. The cars were ordered to the carhouse, where they remained for three days. During this period the company made no effort to resume service. Through the Illinois-Indiana Fair Association another conference was arranged for Monday, Sept. 17, between authorized representatives of the Amalgamated Association and H. E. Chubbuck, vice-

president executive of the Illinois Traction System, which controls the Danville property.

BASIS OF SETTLEMENT

At this conference a settlement was reached. The company agreed to reinstate the two discharged employees, to recognize the organization, not to discriminate against a man because of his union or non-union affiliations, and finally to leave the question of wage scale to the decision of a board of arbitration to consist of three members, one to be appointed by the trainmen's organization, one by the company, and the two arbitrators to select the third member. This board was to report its findings within thirty days after its organization. Up to the present time the selection of the members of the board of arbitration has not been made.

Naval Reserve Officers Wanted

The Secretary of the Navy has authorized the commissioning of 100 graduate electrical engineers as lieutenants, junior grade, in the Naval Reserve, and has directed that the necessary action be taken to provide these officers at the earliest practicable date. Eighty-five nominations are to be made by each of the following agencies: Naval Consulting Board, National Reserve Council and the American Institute of Electrical Engineers. From the 255 nominations thus made a board of naval officers will select 100 for appointment about Oct. 20. The officers selected will receive a month's training on shore and upon the completion of that term will be ordered to the active fleet as electrical officers of ships for a period of at least six months. After this period they will be assigned to duty as the exigencies of the service may demand.

Developments in San Francisco

First Conference of Engineers on Purchase Matter—Eight Hundred Platform Men on Duty—Many Men Returning Daily

The first conference between representatives of the city and the United Railroads, San Francisco, Cal., on the matter of purchase of the railway properties by the city, was held on Oct. 2. This meeting was in accordance with the authorization of the Board of Supervisors, as reported in the ELECTRIC RAILWAY JOURNAL recently. M. M. O'Shaughnessy, city engineer, represented the city, and William von Phul, general manager of the United Railroads, represented the company. Further conferences have been planned at which the details of both sides of the matter will be discussed.

As for the strike of the trainmen of the company service on Oct. 5 was practically normal on all lines north of Market Street until 1 a. m. and the owl cars were expected to be put on the run very shortly. Auto buses operated by large factories, etc., were being discontinued except by those companies in sympathy with union labor. On Oct. 5 about 800 platform men were on duty and their ranks were being increased by five to fifteen men a day from among the strikers. The company is reinstating only men whose records are good. The men reinstated are working at the old rate with the loss of seniority. There was a meeting of strikers on the evening of Oct. 5 for the announced purpose of holding a secret ballot on the question of returning to work. The result of the ballot was to continue the strike. The company, however, does not believe this to have been a fair test.

An appraisal of the value of the United Railroads' physical properties which has been undertaken by the California Railroad Commission is expected to facilitate the work of representatives of the city and the company who are meeting for a similar purpose.

It is notable that the receipts of the Municipal Railway have increased during the strike on the United Railroads. Earnings of the municipal lines for September totaled \$313,125 as against \$236,935 in August, 1915, which was the next largest month in the history of the system.

Relief of Coal Situation in Lexington.—Resumption of mining operations in the southeastern Kentucky-Tennessee field on a basis which leaves the differences to arbitration is believed to have relieved the embarrassment of the Kentucky Traction & Terminal Company, Lexington, Ky., which has been on the verge of a shutdown for lack of coal for several weeks.

Mr. von Phul Selected by Company to Confer with City Engineer.—William von Phul, vice-president and general manager of the United Railroads, San Francisco, Cal., has been appointed to represent the corporation in the negotiations with the city to make an appraisal looking toward the purchase of the railroad's lines by the municipality of San Francisco.

Employees Buy Coal at Cost.—In accordance with its custom of doing everything possible to assist those in its employ, the United Railways, St. Louis, Mo., is now delivering 10,000 tons of coal to the homes of its employees at cost. This is the fulfillment of a plan announced by President McCulloch several weeks ago. The company purchased the coal after receiving orders for approximately 10,000 tons. The coal is being delivered to the homes at about \$3.85 a ton.

Minneapolis Franchise Matter Still Before Council Committee.—The Minneapolis (Minn.) Street Railway franchise matter is still before the street railway committee of the Council, which has been listening to an extended discussion of the differences between C. L. Pillsbury's valuation of the company's property and that of the city engineer. Mr. Pillsbury is in the East. S. P. Jones, expert, and the city attorney are still engaged in drafting the outline of a franchise.

Increase in Wages in Wheeling.—The West Virginia Traction & Electric Company, Wheeling, W. Va., has granted another increase in wages to its motormen and conductors. The advance went into effect on Oct. 1. The former scale of wages was from 22 to 31 cents an hour. The new scale is from 26 to 34 cents an hour and will remain in force until May 1, 1918. The increase will mean an additional outlay of about \$1,000 a month or about \$12,000 a year, and 110 men will be benefited.

Municipal Railway Loss Piles Up.—Up to September of this year, the municipal electric railway lines in Seattle, Wash., have operated at a loss of \$113,739. In addition to this loss, the lighting department lost up to Jan. 1, 1917, in excess of \$20,000 on current furnished for the operation of cars. The street railway fund is now indebted to the general fund, through loans and advances in the sum of \$149,429, of which amount \$72,093 represents interest on \$425,000 of street railway bonds.

Cars Used for Advertising Liberty Loan.—On the opening day of the second Liberty Loan campaign, John J. Stanley, president of the Cleveland (Ohio) Railway, contributed to the advertising of the campaign by having two cars run as a train and carry a big lettered message commending the purchase of the bonds. The cars were decorated with flags, and miniature liberty bells heralded their approach. One of the big signs on the side of the cars was as follows: "Back Up the Boys at the Front. If You Can't Go—Buy U. S. Government Liberty Bonds."

United States Engineering Agency.—The United States Department of Labor has created a division whose function it is to aid the employer in obtaining suitable professional help. It is known as the Teachers and Professional Service Division. While intended to embrace all professions, attention has thus far been confined to the teaching and engineering professions. The services of the division are free to both employer and employee. All communications should be addressed: Teachers and Professional Service Division, U. S. Employment Service, 845 South Wabash Avenue, Chicago, Ill.

Electric Railway Successful in Crossing Case.—Justice Swazey in the Court of Errors and Appeals at Trenton, N. J., has filed an opinion in which Hamilton Township loses its long fight to compel the Trenton & Mercer County Traction Corporation to construct its line across the tracks of the Pennsylvania Railroad at Yardville and continue to the Monmouth County line. The court holds that the electric railway is without legal right to cross the railroad at

that place, and that the township has no legal right to mandamus the company to continue the road. The court of errors reverses the Supreme Court, which permitted the company to build its line in two sections.

New Working Terms in Knoxville.—A contract entered into by the Knoxville Railway & Light Company, Knoxville, Tenn., with its employees runs for two years from Aug. 31 last and provides for increases in pay of the employees of the railway. The union is recognized and experienced trainmen and shopmen are granted an increase of 2 cents an hour, while the newer men in the operating department are advanced 4 cents an hour. Time and a half for overtime is another condition of the contract, which also stipulates that each extra conductor shall be paid at least \$1.50 on every day he reports for duty. A provision for the renewal of the contract is contained in the agreement.

Another Wage Increase in Spokane.—The second raise to be granted in one month has been allowed by the Washington Water Power Company, Spokane, Wash., to trainmen in its employ for three years or more. The new wages are retroactive to Sept. 14. The increase is 1 cent an hour for men who have been with the company three years and 2 cents for those who have completed fifteen years of service. The extra men are raised \$5 a month and the minimum salary guarantee for them has been made \$65. The revised schedule allows two-man car employees of three to fifteen years' service 35 cents an hour and the one-man workers 39 cents. Those of fifteen years or more are allowed 37 and 41 cents for two-man and one-man service, respectively.

Disagreement Between Company and City Over Municipal Line Operations.—Following a deadlock between members of the City Council of Tacoma, Wash., and the Tacoma Railway & Power Company over the granting of transfers between the tideflats railway line of the city and the railway lines of the private company, Mayor A. V. Fawcett has presented to the City Council a proposition for operating the municipal electric railway to the tideflats directly under the Mayor's department. The deadlock came as the result of adoption by the City Council of a resolution requesting the return of 2 cents on every transfer, and the ultimatum of Louis H. Bean, manager of the company, that his company would not pay the city more than 1¼ cents on each transfer. This controversy temporarily leaves the city without transfer facilities on its tideflats line.

East Cleveland Franchise Matter Settled.—The new contract between the Cleveland (Ohio) Railway and East Cleveland relative to service on Hayden Avenue having been approved by the City Council of Cleveland on Oct. 6, service was installed the following day. Hayden Avenue people now have a six-minute service through to the Public Square, Cleveland. They must pay a fare of 5 cents, with 1 cent for a transfer to other lines. Anyone using the Hayden Avenue cars within the boundaries of East Cleveland must pay a 5-cent fare, but while within the limits of Cleveland proper the fare on Hayden Avenue cars is 3 cents. The settlement of this dispute, however, has not improved the East Cleveland service, which, as a result of the order of Fielder Sanders, street railway commissioner of Cleveland, has been made unsatisfactory to East Cleveland.

Railway Supplies Employees with Coal.—Many employees of the Louisville Railway are getting their winter's supplies of coal this fall with the assistance of the company, which buys domestic sizes in carlots and lets the employees have the coal at cost. The men arrange for the delivery of the coal to their homes and the company pays the initial charges, taking the amounts charged against each man from his pay envelope at a schedule determined upon. The service to the employees started in a small way among some of the employees of the shops of the company. It has been very successful in that it is enabling the employees to get their coal at a cost about \$1.50 on the ton under the Louisville retail market. The company's own coal requirements are well protected by contracts which have more than a year to run, enough time to give the company opportunity to make what preparations may be necessary to meet conditions that will exist when the contracts expire. Allowances were made to the operators holding the contracts and they are getting a higher figure than when the contracts were made.

Increase in Wages in Spokane.—Employees of the Spokane (Wash.) Traction Company, the city street railway system of the Spokane & Inland Empire Railway, have voted to accept the company's offer of a general advance in pay of 3 cents an hour. The action has successfully concluded negotiations which started with a demand for an increase of 5 cents an hour. Under the wage agreement the company will continue to give its employees and their wives half rates over the suburban lines, also on the Great Northern Railway, which owns the Spokane system, but it does not give free transportation on city or suburban lines to the wives of its men. The increase is retroactive to Sept. 1. Under the new schedule the men will receive 30 cents an hour the first six months, 31 cents the second six months, 32 cents the third six months, and 33 cents the fourth six months. Thereafter they will receive 35 cents an hour. Under the old schedule the minimum pay was 28 cents an hour and the maximum 33 cents. Men operating the one-man cars, under the new schedule, will receive 1 cent an hour more than employees on cars requiring two men.

Coasting Recorder Saves a Cow.—*The Trollier*, published by the Rhode Island Company, Providence, R. I., contained in a recent issue an item in part as follows: "While Motorman Minot was driving his car to Providence one night last week and observing the rules as required in connection with the operation of the recorder by coasting whenever and wherever possible, a black cow suddenly appeared on the track ahead of him. He applied the brakes and stopped within a few feet of the milk producer. Owing to the fact that he was coasting, he had good control of his car and avoided what surely would have been an accident under other conditions. Motorman Minot stated that before using the recorder he was accustomed to coming along through that locality with full power on. If he had been doing so the other night it would certainly have been 'Good-by, cow.' Motorman Minot ran into and killed a deer a few years ago at about the same spot. While the Rico recorder is not used for that purpose, it appears that in this case it was a good auxiliary to the work of the Hoover commission at Washington because it assisted in conserving the supply of milk. This is just one little incident that shows the advantage of having cars equipped with this modern coasting device."

Change Proposed in Cincinnati Rapid Transit Locations.—At a meeting of the Rapid Transit Commission of Cincinnati, Ohio, on Oct. 5, Frank S. Krug, chief engineer, submitted a plan for a change of location of the rapid transit tracks between Mohawk and Brighton. Instead of following the canal bed between those two points, the new plan provides that the tracks emerge from the bed of the canal into the open between the bed and Central Avenue and continue in that manner for about half a mile, re-entering the canal bed at or near Brighton. Mr. Krug also submitted plans in greater detail of changes suggested several weeks ago whereby the interurban station would be located under Government Square, or a combined interurban station and loop station under Government Square and Fountain Square, between Main and Vine Streets. The original plan provided for a station on Canal Street. In order to build the combined interurban and loop station under Government and Fountain Squares, Vine Street would have to be substituted for Walnut Street as the location of the subway. Nine separate plans, with costs, have been worked out for these stations. The commission, however, has not had time to go into the details. Until this is done, nothing definite can be said as to the choice.

Program of Association Meeting

Jovian Order

The national convention of the Jovian Order will be held at the McAlpin Hotel, New York, on Oct. 22 and 23. On Oct. 22 the local Jovian League will entertain all visiting Jovians at luncheon. Dr. Carl Wallis Petty will deliver a patriotic address. On the afternoon of Oct. 22 the business sessions of the convention will be opened by H. L. Doherty, Jupiter of the order. On Oct. 23 the business sessions will be opened by an address by John W. Lieb, president of the National Electric Light Association.

Financial and Corporate

Annual Reports

International Traction Company

The comparative income statement of the International Traction Company system, Buffalo, N. Y., for the years ended Dec. 31, 1915 and 1916, is as shown in the following insert:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross passenger earnings....	\$7,530,041	96.3	\$6,564,631	95.9
Receipts from other sources..	288,636	3.7	275,343	4.1
Total	\$7,818,677	100.0	\$6,839,974	100.0
Operating expenses	\$4,030,282	51.6	\$3,480,543	50.9
Taxes	535,156	6.8	425,485	6.2
Total	\$4,565,438	58.4	\$3,906,028	57.1
Net earnings from operation.	\$3,253,239	41.6	\$2,933,946	42.9
Interest	\$1,667,276	21.3	\$1,681,468	24.6
Rentals	46,210	0.6	47,971	0.7
Sinking fund and amortization of debt discount and expense	149,223	1.9	137,521	2.0
Total fixed charges.....	\$1,862,709	23.8	\$1,866,960	27.3
Balance for renewals, replacements and dividends.....	\$1,390,530	17.8	\$1,066,986	15.6
Residuals and replacements reserve	522,708	6.7	396,582	5.8
Surplus	\$867,822	11.1	\$670,404	9.8

The gross earnings of the system for the year 1916 showed an increase of \$978,703, or 14.3 per cent over 1915. This increase was due to exceptional industrial activity prevalent throughout the territory served. Although largely stimulated by the excessive demand for war munitions and supplies, the natural growth of traffic has been steadily upward. Accordingly constant effort is being exerted to expand the facilities of the company to keep pace with the need of service.

The operating expenses and taxes for 1916 increased \$659,410 or 16.8 per cent. This increase is mainly accounted for by an increase in wages granted the employees on May 1, 1916, as well as a very large increase in cost of materials and supplies, and increased taxes, federal, State and municipal.

The fixed charges for 1916 decreased \$4,251 as compared with the previous year. The balance remaining for renewals, replacements and dividends showed a gain of \$323,544, and the amount reserved for renewals and replacements increased \$126,126.

The report of the company states that operation for the opening months of 1917 shows an increase in gross earnings. Although the cost of nearly everything used in the operation of the property has increased enormously, the management is confident that the net results for the year 1917 will show a substantial increase.

Philadelphia & Western Railway

The earnings of the Philadelphia & Western Railway, Upper Darby, Pa., for the fiscal year ended June 30, 1917, were adversely affected by the infantile-paralysis quarantine in 1916, but in spite of this the operating revenues at \$538,137 showed a gain of \$46,649 for the last year. The operating expenses, however, increased \$31,951, so that the operating income at \$271,366 represented an increase of \$14,697 over the preceding year. The net income gained \$14,574. After appropriating \$10,000 for the purchase of new equipment, there was a balance of \$110,844 transferred to profit and loss.

The passengers carried in the last fiscal year numbered 3,644,752, an increase of 274,284. Other statistics of operation follow: Receipts per passenger, 13.9 cents, an increase of 0.2 cent; passenger car mileage, 1,417,891, an increase of 41,200; earnings per passenger car-mile, 35.6 cents, an

increase of 2.1 cents; and expenses per revenue car-mile, 18.51 cents, an increase of 1.76 cents.

It is stated, however, that the net earnings for the last six months have shown a decline, in spite of an increase in gross. This has been due to the great increase in the prices of coal, all other materials and labor. New rates effective on July 5, 1917, are now being investigated by the commission, excess fare receipts being issued. Until the case is decided, the additional fares cannot be included in the company's earnings.

Stock to Employees and Patrons

Monongahela Valley Traction Company Announces Plan Under Which Its Employees and Patrons May Share in Company's Profits

A plan whereby its employees and the citizens of the communities on the lines of the Monongahela Valley Traction Company, Fairmont, W. Va., are offered an opportunity of participating in the ownership of the company has been announced. The plan is designed to make it easy for the employees and for the patrons of the company to become owners, on attractive terms, of common and preferred stock of the company under a partial-payment plan which provides for payments to be applied to the purchase of the shares at convenient times and at convenient places. The sale of stock is in the hands of Robert Garret & Sons, investment bankers, Baltimore, and the plan of sale as they worked it out is as follows:

The price of the shares will be \$43 for each combination of one share of preferred and one share of common stock of a par value of \$25 each, but no more than fifty shares of preferred and fifty shares of common will be confirmed to any one subscriber under this plan.

An initial payment of \$7 will be required on each combination of one share of preferred and one share of common, which will be credited to the subscriber's account at the banking institution, the subscriber agreeing to pay the balance in installments of \$3 a month on each combination of one share of preferred and one share of common until paid for.

The subscriber's account will be credited with all dividends received on the stocks and will be charged with interest on the unpaid balance at the rate of 6 per cent per annum, such charges to be made quarterly. On the present dividend basis the stocks will return the subscriber about 6.40 per cent on the investment.

Under this plan the shares will be fully paid for in one year, the last payment being an odd amount which will adjust interest charges as against dividends received. Subscribers may anticipate their monthly installments and complete the payments at any time.

The stocks pledged with the banking institution are to be retained by it until full payment is made under this monthly plan.

On the failure of any subscriber to pay his monthly installments thirty days' grace will be allowed and if payment is not made at that time, the banking institution will have the right to sell the stocks pledged, at the market price, returning to the subscriber any excess over the amount realized from the sale.

Protest Against Paving Charges

The Chambersburg & Gettysburg Electric Railway, which operates 13 miles of electric railway in Chambersburg, Pa., is asking for relief from paving charges sought to be imposed upon it by the Borough Council of Chambersburg. At a meeting of the Council on Sept. 17 the company filed a letter setting forth its side of the case. It said that since 1905 the gross earnings have averaged only \$40,132 a year, the expenses \$37,748 a year, and the net income after the payment of taxes only \$1,739 a year. All of the net has been put back into the property for improvements and extensions. The company said that it would cost about \$16,800 to pave the six blocks called for in the ordinance. The carrying charges on this sum would amount to about \$1,680, or almost as much as the average annual net income of all the lines of the company for the last twelve years.

The bond interest at present in default amounted to \$161,250. Unless the company received some relief the bondholders would be obliged to foreclose. Three plans were advanced as possible solutions. The first suggested, among various things, a modification of the franchise, with the understanding that the company would pave its remaining track within the borough limits at the rate of not exceeding one block per annum. The second suggested the purchase of the railway by the borough or its purchase by either or both of the other electric railways operating in Chambersburg. The third suggested an arrangement with the other companies operating in the city for specified trackage rights with the understanding that the Chambersburg & Gettysburg Railway should not be required to pave its remaining trackage at the rate of more than one block a year.

American Water Works & Electric Company, New York, N. Y.—The income of the American Water Works & Electric Company for the fiscal year ended June 30, 1917, amounted to \$1,538,016 as compared to \$1,366,810 the year before, an increase of \$171,205. The expenses and taxes, less the proportion contributed by subsidiary companies for expense of administration and included in the operating expenses of such companies, totaled \$75,433 in 1917 and \$67,719 in 1916. The net earnings in 1917 were, therefore, \$1,462,582 as compared to \$1,299,091 in 1916. Deductions increased from \$789,958 to \$814,347, but the net still showed a gain from \$509,133 to \$648,234, or \$139,101. The holding company's income in 1917 included \$139,266 for nine months' dividends declared on the preferred stock of the West Penn Traction & Water Power Company, there having been no amount included in 1916. The holding company's proportion of the undistributed earnings of the West Penn properties for the last fiscal year, not included above, was approximately \$425,000.

Boston & Maine Railroad, Boston, Mass.—The annual report of the Boston & Maine Railroad for the year ended June 30, 1917, covers the operations of the two owned electric railway branches, the Portsmouth (N. H.) Electric Railway and the Concord & Manchester Electric Branch, Manchester, N. H., and the one leased line, the Conway (Mass.) Electric Street Railway. The combined operating revenues of the first two lines for the last fiscal year were \$259,671, an increase of \$9,313 over the returns of the year before. The operating expenses, however, increased \$43,337 to a total of \$202,000. As a result, therefore, the net revenue at \$57,670 showed a falling off of \$34,024. The number of passengers carried increased from 4,931,397 to 5,115,662, and the revenue car-miles decreased from 1,068,142 to 1,050,047. The operating revenues of the Conway Electric Street Railway decreased from \$10,774 in 1915 to \$10,522 in 1916, but the operating expense, on account of lessened maintenance and general expenses, dropped to a greater extent—from \$11,176 in 1915 to \$8,377 in 1916. The operating deficit of \$402 in 1915 was thus converted into an operating income of \$2,144 in 1916. After taxes and interest, however, there was a deficit of \$5,333 for the last year as compared to a deficit of \$7,466 the year before.

Boston & Worcester Street Railway, Boston, Mass.—The total revenues of the Boston & Worcester Street Railway for the year ended June 30, 1917, were \$806,179, an increase of \$4,926 over the results of the year before. All of this gain came from revenue from transportation, for miscellaneous revenue decreased. The expense of operation, however, rose \$42,652 to a total of \$541,905, so that the net operating revenue at \$264,274 represented a decrease of \$37,726. Taxes and interest charges were about the same in the last two years, but the dividend payments fell off from \$99,769 to \$77,457. The surplus for the last year totaled \$16,264 as compared with \$31,284 the year before. The car-miles operated in 1917 totaled 2,105,738 and the car-hours 139,281.

Cape Town Consolidated Tramways & Land Company, Ltd., Cape Town, S. A.—The profit and loss statement of the Cape Town Consolidated Tramways & Land Company, Ltd., for the calendar year 1916 shows a debit balance of £630 as compared to £816 the year before. The operation of the tramway subsidiary during 1916 resulted in a profit of £2,225 as compared to £1,486 in 1915. The number of passengers

carried increased 49,424, and the receipts £543. Expenses increased on account of higher labor and material costs. The amount representing the cost of the advances to the three subsidiary companies has been reduced by £19,100, representing the value of the Cape Town Municipal debentures received from the Cape Marine Suburbs, Ltd., in part repayment of advances made to that company. No dividends have been declared by the subsidiary companies during the year.

Chicago (Ill.) City Railway.—Application has been filed with the Illinois Public Utilities Commission by the Chicago City Railway for authority to issue 5 per cent first mortgage bonds in the amount of \$2,172,000, the money to be used in the construction and expansion of lines.

Columbus, Delaware & Marion Electric Company, Columbus, Ohio.—Under date of Sept. 27, Rudolph Kleybolte, chairman of the bondholders' protective committee of the Columbus, Delaware & Marion Electric Railroad, appealed to the holders of the first mortgage bonds of that company not to exchange their bonds for second mortgage bonds of the Columbus, Delaware & Marion Electric Company, the successor company under the sale of the property at foreclosure. According to Mr. Kleybolte, \$250,000 of the bonds which were deposited have been withdrawn from the plan. On Oct. 4 Mr. Kleybolte said that Fincke, Bangert & Company had made a written offer of \$850 for each \$1,000 bond of the Columbus, Delaware & Marion Electric Railroad, provided they could buy \$501,000 or more of the bonds. It is said to be their purpose, if they secure a majority of the bonds, to remove the Cleveland Trust Company as trustee and to designate a new trustee. Mr. Kleybolte urges the first mortgage bondholders to pay their assessment under protest and notify the Cleveland Trust Company they refuse to exchange their first mortgage bonds for second mortgage bonds.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—The following committee has been appointed to protect the interests of the holders of the first mortgage 5 per cent bonds of the Lafayette & Logansport Traction Company, due on June 1, 1936: Col. Sheldon Potter, William B. Whelen, Edward B. Kane and Rowland Comly, chairman, all of Philadelphia. The Lafayette & Logansport Traction Company's property is included in the system of the Fort Wayne & Northern Indiana Traction Company.

Lehigh Valley Transit Company, Allentown, Pa.—George E. Clafin has been elected a director of the Lehigh Valley Transit Company to succeed Charles E. Ingersoll, resigned.

Louisville (Ky.) Railway.—Letters to stockholders of the Louisville Traction Company, holding company of the Louisville Railway, recommend a plan for surrender of the charter of the traction company, a New Jersey corporation, and exchange of its stock for stock in the Louisville Railway. The plan has been discussed for several months and is in the line of economy, since dissolution of the traction company would eliminate cost of its continued existence, besides eliminating taxes paid by that company and the necessity of stockholders' estates paying additional inheritance taxes in cases of death. The capital of the Louisville Railway is \$2,500,000 of preferred and \$5,456,000 of common; that of the traction company \$3,500,000 of preferred and \$11,889,700 of common. It is proposed to increase the preferred stock of the Louisville Railway to \$3,500,000 and the common stock to \$8,322,790 and to exchange the preferred stock of the Louisville Traction Company share for share and the common stock on the basis of 100 shares of the traction for seventy shares of the railway stock. Stockholders are asked to vote on the proposal.

Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.—Judge Wilbur F. Booth in the United States District Court at Minneapolis has handed down a decision prohibiting the abandonment or dismantling of the line of the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company and has ordered that the property be again offered for sale, the time and place to be fixed later. The property is to be first offered as one parcel with an upset price of \$400,000. In default of bids for the property so offered it is to be re-offered as follows: As a whole but with the privilege to the purchaser to abandon the operation of and to dismantle that part of the line extending from Auto Junction to Luce Line

Junction, the upset price under these conditions to be \$450,000. In default of bids under the terms just mentioned the property is again to be offered in two parcels at an upset price of \$350,000. Under this offering either parcel may be disposed of independently of the other.

Nashville-Gallatin Interurban Railway, Nashville, Tenn.—The property of the Nashville-Gallatin Interurban Railway was purchased at receiver's sale recently by the Southern Trust Company, trustee for the bondholders. Application has been made for a charter for the Union Traction Company as the successor. The new company has an authorized capital stock of \$300,000, divided into shares of \$100 par value. The incorporators named in the application are H. H. Corsen, John A. Bell, W. G. Simmons, J. H. Reeves and Guilford Dudley.

New York (N. Y.) Railways.—A bondholders' committee consisting of Frank L. Hall, Charles P. Howland and George B. Leighton, representing the owners of \$6,000,000 of 5 per cent gold income bonds of the New York Railways, has filed a petition in the Supreme Court asking permission to intervene in an action brought by the company against the Public Service Commission. The plaintiffs say that the bonds were issued in 1911 under the scheme of reorganization of the Metropolitan Street Railway, but that for the five years ended June 30 last the bondholders received only a total of 16.60 per cent and got nothing at all on June 30 last. They say this condition is due to the fact that by an order of the Public Service Commission made in 1911 the railroad company is required to set aside 20 per cent each year from the gross operating revenues, for depreciation and maintenance of the property, the unexpended balance being required to be added to the amortization fund. They contend that there has been unnecessary delay in the proceedings looking toward a review of the commission's order by the court.

Northern Electric Railway, Chico, Cal.—Involuntary bankruptcy proceedings have been begun against the five signers of the \$5,000,000 note which was indorsed to finance the Northern Electric Railway at the time of the 1906-1907 business depression. The signers of this note were Leon Sloss, Louis Sloss, W. P. Hammon, Eugene de Sabla, Jr., and E. R. Lilienthal. The proceedings instituted on Sept. 27 had been anticipated in San Francisco. The larger number of claimants preferred to test the strength of the combination in bankruptcy proceedings. When the note was signed it was thought that the signers would be able to sell bonds of the company and take up the notes, but the panic resulted in the famous "certificates of indebtedness" and nothing could be sold. It was announced that the reorganization of the Northern Electric Railway will finally be accomplished as soon as this suit is adjusted. A compromise with creditors is considered possible.

Providence & Fall River Street Railway, Swansea Center, Mass.—Karl Andrén, the purchaser of the Providence & Fall River Street Railway under foreclosure, granted a reprieve on Oct. 6, subject to the payment of a guarantee fund of \$20,000, to A. H. Barney and others of Swansea, Mass., seeking to purchase the road from him, and subscriptions were at once collected to insure the continuation of the road in operation. As stated elsewhere in this issue it now seems probable that the road will be purchased from Mr. Andrén at a price of \$90,000 and that service will be restored within a few days. The new owners will probably seek legislation at the 1918 session of the Massachusetts Legislature to permit a guarantee of 6 per cent dividends by the municipality of Swansea and also to reduce the road's taxation burdens.

St. Paul (Minn.) Southern Electric Railway.—Irving Todd, Jr., vice-president of the St. Paul Southern Electric Railway, is reported to have said that the company is just about breaking even on its operating expenses and that there is no money to pay interest on the bonds. He says that the officers of the road have done the best they could, but that there is not enough business to pay for the operation of the road and leave anything over for mortgage interest. He did not know what to advise. It is reported that owners of first mortgage bonds with interest in default have taken steps to foreclose. It is also reported that the holders of the second mortgage bonds have appointed a committee headed by W. W. Cutler to inspect and make a report upon the status of the road.

Second Avenue Railroad, New York, N. Y.—A. E. Kalbach, receiver for the Second Avenue Railroad, announced recently that he was authorized to pay the interest on \$3,140,000 of outstanding receiver's certificates, at 6 per cent for the six months ending Oct. 1, and to issue new certificates to such holders of the old as desire to exchange them. The new certificates are dated Oct. 1, 1917, and are redeemable on Oct. 1, 1918, at par and accrued interest.

Stroudsburg (Pa.) Traction Company.—A consolidation was effected of the Stroudsburg Passenger Railway and the Stroudsburg, Water Gap & Portland Railway on Oct. 1, as the Stroudsburg Traction Company. The roads are being connected physically at Seventh and Main Streets, Stroudsburg, and after Nov. 1, Water Gap cars will operate through to the Lackawanna station in East Stroudsburg, making a continuous interurban connection from Stroudsburg through to Sixty-ninth Street, Philadelphia. The officers of the Stroudsburg Traction Company are A. A. Ho. brook, president; H. E. Sweeny, secretary and treasurer, and E. A. MacMillan, superintendent.

Electric Railway Monthly Earnings

AURORA, ELGIN & CHICAGO RAILWAY, WHEATON, ILL.						
Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., Aug., '17	\$217,103	*\$142,877	\$74,226	\$35,700	\$38,526	
1 " " '16	198,214	*125,332	72,882	35,933	36,949	
8 " " '17	1,435,994	*1,027,928	408,066	286,086	121,980	
8 " " '16	1,354,077	*896,334	457,743	290,560	167,183	
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.						
1m., Aug., '17	\$78,486	*\$43,521	\$34,965	\$19,227	\$15,738	
1 " " '16	74,805	*42,000	32,805	17,884	14,921	
12 " " '17	865,266	*492,238	373,028	223,977	149,051	
12 " " '16	806,971	*438,398	368,573	211,851	156,722	
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.						
1m., Aug., '17	\$142,801	*\$101,878	\$40,923	\$29,871	\$11,052	
1 " " '16	100,238	*67,335	32,903	29,962	2,941	
12 " " '17	1,379,817	*966,918	412,899	357,054	55,845	
12 " " '16	1,204,145	*754,506	449,639	356,744	92,895	
COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO						
1m., Aug., '17	\$333,849	*\$233,627	\$100,222	\$50,761	\$49,461	
1 " " '16	290,082	*176,785	113,297	42,863	70,434	
12 " " '17	3,824,984	*2,598,042	1,226,942	543,857	683,085	
12 " " '16	3,402,472	*1,984,418	1,418,054	506,995	911,059	
COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.						
1m., Aug., '17	\$1,585,919	*\$1,022,683	\$563,236	\$437,829	\$125,407	
1 " " '16	1,358,867	*765,087	593,780	419,647	174,133	
12 " " '17	18,582,072	*11,031,354	7,550,718	5,156,724	2,393,994	
12 " " '16	16,152,529	*8,629,990	7,522,539	4,926,315	2,596,224	
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.						
1m., Aug., '17	\$324,901	*\$181,164	\$143,737	\$70,302	\$73,435	
1 " " '16	306,679	*167,037	139,642	69,178	70,464	
12 " " '17	3,038,213	*1,997,428	1,040,785	813,884	226,901	
12 " " '16	2,783,082	*1,679,684	1,103,398	798,642	304,756	
EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.						
1m., Aug., '17	\$317,838	*\$214,640	\$103,198	\$65,175	\$38,023	
1 " " '16	251,981	*150,445	101,536	62,886	38,650	
12 " " '17	3,484,103	*2,237,784	1,246,319	771,280	475,039	
12 " " '16	2,807,253	*1,671,118	1,136,135	752,407	383,728	
FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.						
1m., July, '17	\$222,773	*\$160,475	\$62,298	\$49,129	\$13,169	
1 " " '16	202,362	*136,381	65,981	48,070	17,911	
7 " " '17	1,568,505	*1,079,385	489,120	342,463	146,657	
7 " " '16	1,453,896	*987,595	466,301	340,931	125,370	
GRAND RAPIDS (MICH.) RAILWAY						
1m., Aug., '17	\$109,269	*\$77,203	\$32,066	\$18,476	\$13,590	
1 " " '16	106,497	*73,977	32,520	16,838	15,682	
12 " " '17	1,305,304	*871,233	434,071	209,954	224,117	
12 " " '16	1,269,110	*835,957	433,153	174,780	258,373	
LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.						
1m., Aug., '17	\$100,579	*\$61,192	\$39,387	\$15,498	\$23,889	
1 " " '16	87,115	*53,180	33,935	15,075	18,860	
12 " " '17	875,287	*645,783	229,504	185,464	44,040	
12 " " '16	779,888	*518,633	261,255	190,633	70,622	
NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.						
1m., Aug., '17	\$200,686	*\$133,775	\$66,911	\$41,374	\$25,537	
1 " " '16	199,574	*122,736	76,838	42,236	34,602	
12 " " '17	2,431,327	*1,546,716	884,611	495,209	389,402	
12 " " '16	2,316,748	*1,423,419	893,329	513,685	379,644	
PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.						
1m., Aug., '17	\$505,552	*\$303,922	\$201,630	\$178,505	\$23,125	
1 " " '16	447,502	*255,342	192,160	181,701	10,459	
12 " " '17	5,785,649	*3,142,497	2,643,152	2,166,386	476,766	
12 " " '16	5,423,882	*3,067,277	2,356,605	2,185,086	171,519	

*Includes taxes.

Traffic and Transportation

"Pay for Distance" Fare Request

Bay State Street Railway Applies for Approval of Zone or Mileage Rates for Rural Fares

Following an exhaustive investigation and study into the method of basing interurban electric railway fares on substantially equal short distances, the Bay State Street Railway on Oct. 9 filed a petition with the Public Service Commission of Massachusetts asking approval for a new schedule of fares on its rural or interurban lines, covering approximately 370 miles of track.

In a large measure the new schedule has been drawn to conform with suggestions made by various town and county officials who have appeared before public service and legislative investigating commissions at hearings relative to the decreasing revenue and increasing costs of operation and materials to the electric railway.

The distance rates of fare asked will apply only to the interurban routes as distinguished from the urban or suburban lines and are located in less populous districts. This means that the fare units now effective in the larger cities and suburbs will remain unchanged, but that fares between points in the country will depend upon the number of miles traveled, with a minimum charge of 6 cents.

It is proposed that a tentative 3-cents-a-mile rate shall be established along some of the non-paying lines, and on others where the conditions are not so alarming a 2½-cents-a-mile rate. In other sections the rate will be 2 cents a mile. In every instance an initial fare of 6 cents to pay for transportation over the first 3 miles, or any part thereof, will be collected. It is to avoid the necessity of discontinuing and perhaps scrapping its rural lines that the Bay State Company has petitioned the Public Service Commission for approval of this mileage system.

At present a fare of 6 cents is charged for a ride over any part of certain established long and short distances, with an extra 6 cents if the passenger merely enters the second district no matter if the ride in the second district is only a few hundred feet. This means that many patrons of the road who are obliged now to pay two fares—12 cents—for a ride which takes them only part way through two contiguous districts will, under the new schedule, pay an initial fare of 6 cents, and then an additional 2 cents for each mile traveled in the next zone. Many who now pay 12 cents between certain points will be able to take the same ride for 8 or possibly 10 cents, as the case may be, under the new schedule.

The proposed change will not affect present fares in the larger cities and suburbs.

Fare Increases in Australia

Because of the rising cost of supplies and higher wages railway rates were generally increased in the State of New South Wales on Aug. 8. The new rates provide for 10 per cent, and in certain cases 15 per cent, increase over those previously existing. There is a 10 per cent increase on passenger fares and periodical tickets, including workmen's tickets, and 10 per cent increase on parcel rates. Freight rates on hay, straw and chaff are advanced 10 per cent. Coal carried in the railway's trucks is increased 10 per cent and coal carried in owners' trucks 15 per cent.

The street railways in Sydney, which are owned by the State government, have been included in the advance. The charges on these lines have been 2, 4 and 6 cents, according to the distance traveled. The minimum charge of 2 cents has been raised to 3 cents, the charge for the longer sections remaining the same.

Through passenger fares between Sydney and Melbourne and Sydney and Brisbane have not been altered, but necessary adjustments have been made in the rates for intermediate stations.

Publicity Policy Explained

Southern Public Utilities Company Sets Forth Its Purposes in an Editorial in Its Own Magazine

The publicity policy of the Southern Public Utilities Company, operating an extensive system of electric railway and lighting properties in Charlotte, N. C., and other cities, was discussed in an editorial in the October issue of the *Southern Public Utilities Magazine*, published by the company. The editorial was as follows:

WHAT THE OUTSIDER THOUGHT

"Just what are your duties?" asked the managing editor of one of the largest newspapers on Southern Public Utilities Company territory of the editor recently.

"I have watched the news columns of this newspaper and those of other papers published in cities in which you operate and it is very seldom that I see a news item relative to the activities of your company. Knowing the very friendly personal relations existing between you and the newspaper men, I expected to find a superfluity of matter relating to your company. I should like to know just what are your duties and what is your attitude toward the newspapers."

"This editor has asked a question which it is a pleasure to answer.

"There was a time when the 'press agent' for any interest was expected to have in every issue of every newspaper published in his territory some reference to that interest, regardless of whether that reference was of any news value. That may still be true in certain sections. But it is the policy of this company to offer to the newspapers only such matters as are of interest to the general public, and that in a straightforward, businesslike way, unvarnished and unornamented.

POLICY OF PAID ADVERTISEMENTS

"It is the policy of this company to announce to the public, through paid advertisements in the various newspapers, changes affecting the operation of any and all departments in which the public may be directly or indirectly involved, and to offer the news department only such information as possesses a real, live and legitimate news value.

"The publicity department of the company is always open to the newspaper men for such information as they may desire, and in no instance is any item of news withheld from the press. This is borne out in the matter of accidents. The facts, as they are secured by the company, are given to the newspaper men just as they come to the department, and without any effort to minimize the gravity of any situation or condition or to mislead the newspapers as to the exact facts.

"Information concerning the development of the company, changes in the personnel of its officers or employees in which the public may be interested and which the newspapers may desire to publish, is gladly furnished, but it is not our policy to 'load' the newspapers with such matter for the sake of keeping the name of the company before the public.

POLICY OF SUPPRESSION NEVER PREVAILED

"The old-time policy of suppression of information concerning any activities of a company does not now prevail nor has it ever prevailed in the offices of the Southern Public Utilities Company. On the other hand, this company does not desire, nor will it allow itself to be placed in the attitude of seeking 'free publicity' concerning its activities, and to this end we prefer to deal with the public through the newspapers just as any other legitimate business concern in the cities in which the Southern Public Utilities Company operates.

"The company magazine is published primarily for the information and pleasure of the employee body of the company, but any individual interested in the affairs of the company may secure a single copy, without cost, or may be placed on the regular mailing list of the publication so that anyone so desiring may keep in direct touch with our activities and operations and get the same information that goes to every officer and employee of the Southern Public Utilities Company."

Philadelphia & Western Fare Increase

Table Presented Which Compares Present and Former Rates for One-Way and Ten-Trip Tickets

Brief references were made in the *ELECTRIC RAILWAY JOURNAL* of Sept. 29, page 601, and Oct. 6, page 644, to the matter of hearings before the Public Service Commission of Pennsylvania with respect to the recent fare advances by the Philadelphia & Western Railway. It was inadvertently stated in the first of these items that the hearing was concerned with a proposed increase in the unit fares from 5 cents to 6 cents. This was in error. The operation of the Philadelphia & Western Railway is similar to that of steam railroads in that it has regular stations along its line. The one-way and ten-trip tickets are the only classes of tickets affected by the increase. The company also sells sixty-trip monthly tickets, fifty-trip tickets good for one year and forty-six-trip school tickets. These are unaffected by the change in rates. A comparison of present and former rates for one-way and ten-trip tickets, including a comparison with steam railroad rates, follows:

	ONE-WAY TICKETS				TEN-TRIP TICKETS				Steam	
	Philadelphia & Western				Philadelphia & Western					
	Old Rate, Cents	Inc. in Cents	Inc. per Cent	Price*	Cost per Ride	Inc. in Cents	Inc. per Cent	Price†		
W. Overbrook	5	0	0	10	
Penfield	5	1	20	11	..	5	..	1.00	..	
Beechwood	5	2	40	12	..	5	..	1.00	..	
Wynewood Rd.	5	3	60	13	..	5	..	1.00	..	
Ardmore Junct.	5	4	80	14	..	5	..	1.00	..	
Ardmore Avenue	8	2	25	15	..	8	33	1.30	..	
Haverford Coll.	8	3	37.5	16	24	8½	1½	21	1.35	1.86
Haverford	8	4	50	17	24	9	2	28	1.40	1.86
Bryn Mawr	10	3	30	18	26	10	2	25	1.50	2.06
Rosemont	10	4	40	19	28	11	2	22	1.60	2.20
Garrett Hill	13	2	15.5	20	..	13	3½	37	1.80	..
Villa Nova	13	3	23	21	31	13½	3	29	1.85	2.42
Radnor	15	5	33	25	33	15	2½	20	2.00	2.62
Ithan	15	6	40	26	..	16	2½	18.5	2.10	..
St. Davids	18	4	22	27	35	18	4	28.5	2.30	2.78
Wayne	18	5	28	28	37	19	4	26.5	2.40	2.92
Sugartown Rd.	20	4	20	29	..	19½	3½	22	2.45	..
Stratford	20	5	25	30	39	20	3	17.5	2.50	3.10
Gulph	20	3	15	28	..	19½	3	30	2.45	..
DeKalb Street	25	1	4	31	..	20½	4½	2.5	2.55	..
Bridgeport	25	2	8	32	43	22	2	10	2.70	3.44
Norristown	25	5	20	35	43	22½	2½	12.5	2.75	3.44
COLUMNS	A	B	C	D	E	F	G	H	I	J

NOTE: Compare columns "A" and "F."
*5 cents added for fare on Market Street elevated in Philadelphia. †50 cents added for fare on Market Street elevated.

One-Man Cars on All Calgary Lines

City Has 60,000 Population and It Is Largest on Continent to Operate Exclusively with One-Man Cars

By a vote of seven to five the City Council of Calgary, Alta., has decided to order the use of one-man cars on all city lines. Although A. G. Graves, street railway commissioner, stated to the Council that he believed he already had authority to put the one-man system into operation, he preferred to have action by the Council favorable to such procedure. He wished to use one-man cars throughout the city partly on account of the shortage of men and partly because the one-man cars already in operation were saving the city several thousand dollars a month. He said that on the Crescent Heights line, on which some of the Aldermen wished two-man operation to be continued, a saving of nearly \$20 a day would result from one-man operation with six cars.

Thomas H. McCauley, superintendent of the railway, reports that the electric railway department will now proceed to install one-man cars on the entire system. They will serve a population of 60,000. Thus Calgary will have the distinction of being the largest city on the continent to date to operate exclusively with one-man cars. Mr. McCauley

explained the situation in regard to one-man cars in Calgary in an article in the special issue of the *ELECTRIC RAILWAY JOURNAL* for Sept. 22. This issue reached Calgary on the eve of the action by the Council, and the leading paper, the *Calgary Daily Herald*, printed an extended abstract of several of the articles in support of the campaign for one-man operation.

Key Route Fare Requests

Two Applications for Fare Increases by the San Francisco - Oakland Terminal Railways Before California Commission

The San Francisco-Oakland Terminal Railways, Oakland, Cal., has filed with the Railroad Commission two applications for fare adjustments, one by the Traction division, asking an increase of fares in the electric railway service of the Key Route in Alameda County and between points in Alameda and Contra Costa Counties, and the other an amended application by the Key division for a raise and adjustment of rates in the trans-bay passenger service.

The Traction division's application is a new one and recites that the value of the going concern of this part of the company's property is not less than \$12,000,000; that the gross revenue for the year ending June 30, 1917, for the Traction division was \$3,242,849, and that the operating expenses were \$2,522,373, leaving an operating income of \$720,475 out of which to pay fixed charges, such as interest on bonds and return to stockholders. The Key Route recites that it will be put to an extra expense of \$240,000 if it grants the demands of its platform men on the Traction division, who are now seeking additional wages.

The first application of the Key division of the San Francisco-Oakland Terminal Railways is now before the commission, hearings having been held and a further hearing being set for Nov. 12. At present the question of a raise in wages of the motormen and conductors of the Key division is being arbitrated.

In the amended application filed on Sept. 28 it is shown that the gross revenue of the Key division for the year ending June 30, 1917, was \$1,229,436, and the operating expenses were \$1,217,700, leaving a net return of \$11,735 with which to pay fixed charges such as interest on bonds and interest on unsecured debts. The application also says that the company sustained a loss of \$261,623 because of the abandonment of the old Key division trestle last year.

Auto License Income for Road Building

A \$60,000,000 Bond Issue for Constructing 4000 Miles of Hard Surface Roads in Illinois Will Probably Be Financed by an Automobile Tax

The bill passed by the State Legislature of Illinois last winter, providing for the building of about 4000 miles of hard surface roads throughout the State from the proceeds of automobile taxes, exclusively, bids fair to be passed by referendum vote at the November elections. The plan, if approved at the referendum, will give the people of the State a very extensive system of good roads passing through every county and connecting all the leading towns. All this will be accomplished without any part of the burden being placed against the general tax.

Governor Lowden was opposed to increasing the tax burden, and after an extended study became convinced that as a State-wide system of highways would be used so extensively by automobiles and trucks the cost of the improvement should be borne by the owners of such vehicles. The bill as passed by the State Legislature provides that the State license tax, which ranges from \$3 for cars of 10 hp. or less to \$10 for 50-hp. cars, shall be increased 50 per cent in 1918 and an additional 50 per cent in 1920, so that the present tax will be doubled at that time. It is estimated that this will bring a sufficient income in the twenty year period of the \$60,000,000 of bonds to pay the principal and interest on the issue and maintain the State-aid roads which are now provided for out of the automobile license income. A State law provides that if the fees from this source are not sufficient to take care of this bond issue, any deficit must be made up out of general tax funds.

Proposal of Skip Stop Opposed.—Mayor Litty of Memphis, Tenn., has declined to approve of the purpose of the Memphis Street Railway to put a system of skip stops into effect. Club women objected to skip stops on behalf of working girls.

Fare Increase Protested.—The borough of Pottstown on Oct. 8 filed objections against the proposed increase of fare within the borough by the Reading Transit & Light Company, Reading, Pa., from 5 cents to 6 cents. The borough charges that the service is inadequate, that the cars do not maintain the schedule and that there are no local cars, notwithstanding development of sections of the borough because of iron and steel activity.

Thirty Persons Hurt in Subway Accident.—Two trains collided on Oct. 9 on the Jerome Avenue elevated extension of the subway division of the Interborough Rapid Transit Company. Thirty persons are reported to have been slightly injured. The accident happened at 8.30 o'clock in the morning about 100 ft. north of the tunnel entrance at 157th Street. A northbound three-car train was stopped by a new trip signal and the train behind crashed into the rear of the stalled train.

Springfield Jitneys to Test Ordinance.—Jitney drivers of Springfield, Mass., are making a test case on the constitutionality of a new ordinance requiring them to file a bond of \$1,000 and accept passengers for only the seating capacity of their cars. They will protest the bond requirement and demand permission to carry running-board passengers during rush hours. When the ordinance went into effect more than 200 drivers retired from the business for the time being because they were unable to put up the required bond. The jitneys were operating along the lines of the Springfield Street Railway.

Reroutings Authorized by Council in Detroit.—The Common Council of Detroit, Mich., has authorized further rerouting of the car lines of the Detroit United Railway in the downtown section. Just when the plan will go into effect depends largely on the settlement of the Farmer Street track matter, the several routes as laid out in the general plan being considerably interwoven and dependent one on the other. The rerouting plan now being tried as a result of the Council's agreement is working out splendidly with a considerable reduction in the amount of traffic congestion in the heart of the city.

Discussion of Jitney With Passengers Urged.—Paul Shoup, president of the Pacific Electric Railway, Los Angeles, Cal., has written a letter to the employees of the company in Pasadena, requesting them to discuss the jitney question with patrons of the road. The letter states that the company does not earn interest on its original investment in Pasadena, due to the competition of jitney buses. If necessary the company will take up the subject of having the city of Pasadena require the buses to operate in districts the railway does not serve, thus eliminating direct competition of jitneys with the electric railway.

Conduct Rules for Trainmen.—The Birmingham Railway, Light & Power Company, Birmingham, Ala., has recently issued a pamphlet addressed to the trainmen of the railway department entitled "How to Treat the Public." It contains a series of rules on courtesy, collecting fares, making change, serving passengers, etc., based to some extent on the rules of the Twin City Rapid Transit Company, as published in the issue of this paper for July 22, 1916, but modified to suit Birmingham conditions. The rules are published in full in the bulletin for October, issued by the United Gas & Electric Engineering Corporation, which controls the Birmingham company.

Free Rides Curtailed in Dallas.—Under the ruling of City Attorney Callaway of Dallas, Tex., many city employees who have heretofore been riding on the electric railways free have been deprived of that privilege. Mr. Callaway holds that under the State anti-pass law only regular salaried members of the police department are entitled to free transportation. This excludes sanitary officers, meter readers, inspectors of various kinds, and all special officers who have heretofore used their badges as passes in riding on cars. The city departments deprived of the right of free transportation for their employees have bought tickets which they issue to the employees as needed.

Personal Mention

W. B. Page has resigned as superintendent of the Interstate Public Service Company, Columbus, Ind.

M. W. Kirkwood, superintendent of the Galt, Preston & Hespeler Street Railway and the Lake Erie & Northern Railway, Galt, Ont., has been appointed general manager of both companies, succeeding the late Martin N. Todd.

I. N. Smith has been appointed superintendent of the Charleston (W. Va.) Interurban Railroad to succeed S. M. Gallaher, resigned. Mr. Smith has been connected for about fifteen years with the Diamond Ice & Coal Company of Charleston.

R. Niver, superintendent of the traction department of the City Light & Traction Company, Sedalia, Mo., has been made superintendent of all departments of the company. In assuming charge of the ice and gas departments he will succeed C. A. Knight, resigned.

William F. Heinemann has accepted the position of superintendent of overhead and block signals with the Chicago, Lake Shore & South Bend Railway at Michigan City, Ind. Mr. Heinemann heretofore held a similar position with the Kansas City, Clay County & St. Joseph Railway.

Herbert B. Reynolds, formerly connected with the Interborough Rapid Transit Company, New York City, as assistant engineer in the motive power department, has been appointed mechanical assistant to the superintendent of motive power of the United Railways & Electric Company, Baltimore, Md.

M. Milne Todd, heretofore assistant to the superintendent of the Galt, Preston & Hespeler Street Railway and the Lake Erie & Northern Railway, Galt, Ont., has been elected president of the former company, succeeding his father, the late Martin N. Todd. He was elected vice-president of the Lake Erie & Northern Railway.

Robert W. Woolley has been nominated for membership on the Interstate Commerce Commission to succeed the late Judson C. Clements. Mr. Woolley was formerly director of the mint, which position he resigned to take charge of publicity for the first Liberty Loan. His experience has been principally that of a newspaper man.

L. M. Brown has been appointed superintendent of the Interstate Public Service Company, Columbus, Ind., to succeed W. B. Page, resigned. Mr. Brown began railway work twelve years ago with the Indianapolis, Columbus & Southern Traction Company. He served as conductor and dispatcher and later was promoted to the position of trainmaster, which he has held until the present time.

Charles B. Hart, formerly new-business manager of the light and power department of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has been placed in general charge of this department. It was reported in error in this paper last week that he had been appointed electrical engineer of the company. Mr. Hart has been with the company for the last twelve years, having started in as a cashier.

Dean McLaughlin, city superintendent of Jackson for the Michigan Railway, has been made superintendent of the city lines of Jackson, Lansing and Owosso, and the Southern and Northern interurban divisions. The former comprises the interurban lines from Kalamazoo to Jackson and the latter comprises the interurban lines between Jackson and Lansing and between Owosso and St. Johns. Mr. McLaughlin's headquarters will be in Jackson.

O. A. Voepel has resigned as master mechanic of the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., to enter government service. Mr. Voepel has been with that company for four years. During this period he designed high-tension lines and 38 miles of overhead construction, installed three substations and a step-up station to change from 6600 volts to 33,000 volts, besides making changes in the motor equipment of the cars.

Clyde B. Aitchison, solicitor for the valuation committee of the National Association of Railway Commissioners, has been nominated for appointment to the Interstate Commerce Commission. Mr. Aitchison was formerly chairman of the Railroad Commission of Oregon and was one of the authors of the Oregon railroad commission law, which was adopted in February, 1907. Prior to 1907 Mr. Aitchison practised law in Council Bluffs, Iowa, and in Portland, Ore.

George W. Anderson, United States district attorney for Massachusetts, has been nominated for appointment to the Interstate Commerce Commission. Mr. Anderson has practised law in Boston since 1890. He was appointed a member of the Public Service Commission of Massachusetts upon its creation in 1913 and resigned in November, 1914, to become United States district attorney. Last winter he was appointed special assistant to the attorney general of the United States in charge of an investigation of matters pertaining to the prices of food supplies.

D. J. McGrath, special assistant to President M. C. Brush of the Boston (Mass.) Elevated Railway since the summer of 1916, has received a commission as first lieutenant in the sanitary corps, U. S. Reserves. He has left Boston to take up executive duties in connection with the production of gas masks. Mr. McGrath is widely known in the electric railway industry for his work in the field of fare research. He is joint author with Prof. D. C. Jackson of the Massachusetts Institute of Technology of a book which sums up the fare investigations made by the research division in the electrical engineering department of the Institute.

L. W. Gent, traffic manager of the Arkansas Valley Interurban Railway, Wichita, Kan., has resigned. He will go to Philadelphia to accept the position of traffic manager of the American International Shipbuilding Company. Mr. Gent entered the employ of the Arkansas Valley Interurban Railway in December, 1915. He has had supervision of the passenger, freight, express, advertising and claims departments. Prior to his connection with that company he was assistant traffic commissioner of the Kansas City Commercial Club and Board of Trade. He has also been identified with traffic departments of several steam lines in the West.

J. D. Kent, electrical engineer of the Union Railway and other roads controlled by the Third Avenue Railway, New York, N. Y., has resigned to accept a position as captain, engineers, in the Officers' Reserve Corps, where his splendid engineering ability will stand his country in good stead. Mr. Kent has been connected with the New York lines for many years. He has contributed articles to the technical press at different times, the most noteworthy of which is an article describing the various types of overhead line maintenance motor trucks as used on the Third Avenue Railway System. This contribution from Mr. Kent appeared in the *ELECTRIC RAILWAY JOURNAL* for July 15, 1916.

William Elmer, formerly in the employ of the Atlantic Coast Electric Railway, Asbury Park, N. J., has been appointed superintendent of the Schuylkill division of the Pennsylvania Railroad. Mr. Elmer is forty-seven years of age. After leaving the State Model School at Trenton he was graduated from Princeton University where he took a course in electrical engineering. He afterwards became a motorman on the Atlantic Coast road. In 1896 he entered the employ of the Pennsylvania Railroad and was for a time a fireman on the New York division. He then made tests of the Mount Holly electric branch and was also in charge of the power plant of the West Jersey & Seashore Railroad. Later he was appointed general foreman of the electric car service at Atlantic City and was finally made assistant engineer of motive power.

William S. Richhart has been appointed electrical engineer of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, to succeed E. S. Myers, who resigned recently to take charge of the Vicksburg Light & Traction Company, Vicksburg, Miss. Mr. Richhart is a native of Indiana. He was graduated from the electrical engineering department of Purdue University in 1905. Thereafter he became connected with the Allis-Chalmers Bullock Electric Company at Cincinnati and was later occupied in research work at Purdue University with Prof. W. F. M. Goss. He served as instructor in electrical engineering at the Uni-

versity of Pennsylvania for five years and was associated with the Westinghouse Electric & Manufacturing Company for an equal period. In this latter connection he handled technical engineering work in connection with the erection and trouble work from the district offices. For the last year Mr. Richhart has been associated with the Public Service Commission of Indiana as engineer. He is a member of the American Institute of Electrical Engineers.

Earle N. Milliken, local manager of the Cape Breton Electric Company, Sydney, N. S., has been appointed manager of the Houghton County Traction Company and the Houghton County Electric Light Company, Houghton, Mich. Mr. Milliken was born at Biddeford, Me., in 1888, and was educated at the University of Maine, from which he was graduated in 1908 with the degree of Bachelor of Science in Electrical Engineering. After his graduation he was engaged in the statistics department of the Stone & Webster Management Association, Boston, Mass., and entered the service of the Cape Breton Electric Company, which is managed by Stone & Webster, in November of that year. During the first year of his connection with the company he was clerk to the manager and the next two years he was superintendent of distribution and electrical engineer. He served also as superintendent of light and power. In May, 1912, he was appointed manager of the company, the position he held for the last five years. Mr. Milliken was elected a member of the executive committee of the Canadian Electric Railway Association last June.

S. M. Gallaher has accepted a position as manager of the Monongahela Valley Traction Company, Parkersburg, W. Va. This Parkersburg-Marietta division of the Monongahela Valley Traction Company was formerly the Parkersburg, Marietta & Interurban Railway. In 1915 the name was changed to the Kanawha Traction & Electric Company and last July it was leased to the Monongahela Valley Traction Company, Fairmont, W. Va. The property consists of approximately 60 miles of line including the city lines in Parkersburg and Marietta, Ohio, the interurban line between the two cities and one between Marietta and Beverly, Ohio. The company supplies light and power to Parkersburg, Marietta and adjacent towns in the two States and operates two water-power plants on the Muskingum River. It has a new central station at Parkersburg on the Ohio River, designed and constructed by Sanderson & Porter, engineers, with an ultimate capacity of 10,000 kw., half of which is installed at the present time. Mr. Gallaher, after his graduation from Princeton University in 1908, was associated with the Monongahela Valley Traction Company at Fairmont and Clarksburg for four years. He acquired a wide practical experience while serving in the office, car shops, power plant, substations and electrical engineering department and also in the construction department, both on track and overhead work. He spent also about nine months on special railway and power work at the Westinghouse Electric & Manufacturing Company, East Pittsburgh, in 1911. In July, 1912, he was appointed superintendent at Clarksburg, from which position he resigned in May, 1913, to become general manager of the Charleston (W. Va.) Interurban Railroad. During the four years of his management there Mr. Gallaher rebuilt most of the city and interurban lines, and constructed a 17-mile interurban line from Charleston to Cabin Creek Junction. He installed a modern turbine generating plant and substation, converted old cars into cars for prepayment operation and put on all-steel cars as well as the light-weight "one-man" car. He constructed terminal stations at Cabin Creek Junction and St. Albans and a main terminal at Charleston, consisting of the company's offices, passenger and freight departments and engineering department.



S. M. GALLAHER

Walter S. Finlay, Jr., as noted recently in these columns, has been made superintendent of motive power of the Interborough Rapid Transit Company and the New York Railways, New York City, as successor to the late H. G. Stott. Late in 1916, during the illness which resulted in his death the following January, Mr. Stott designated Mr. Finlay chairman of the staff to carry on the work of the department. This arrangement was continued until Mr. Finlay's recent appointment as superintendent of motive power. Mr. Finlay was born in Hoboken, N. J., in 1882. His preliminary education was received in the public schools of Brooklyn and at Cornell University, from which he was graduated in 1904 with the degree of mechanical engineer. Soon after his graduation he entered the employ of the Interborough Rapid Transit Company as an assistant on the staff of Mr. Stott. His early work in the company was identified with the construction of the Fifty-ninth Street power station. After the plant was placed in operation he did some experimental and research work in connection with methods for its development and the promotion of its efficiency. He was later placed in charge of construction work involved by the requirements of increasing the plant load. In 1909 Mr. Finlay left the company and continued in engineering work with J. G. White & Company, Inc., and the New England Engineering Company. Subsequently he became associated with his father, W. S. Finlay, in commercial work, returning to the Interborough in 1915 to take charge of the installation of turbines and auxiliary mechanical equipment necessitated by the extensions which are being made to the subway and elevated systems.



W. S. FINLAY, JR.

Horace E. Allen, assistant general superintendent of the Michigan Railway, Jackson, Mich., has resigned to accept the position of assistant general manager of the Springfield (Ill.) Consolidated Railway. Mr. Allen has been connected with the Michigan Railway for about one year. He is a graduate of the Massachusetts Institute of Technology. After completing his electrical engineering course there, he accepted a position with the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and in 1910 he became connected with the Toledo Railways & Light Company, Toledo, Ohio, under J. F. Collins, then assistant general manager. When Mr. Collins, now vice-president and general manager of the Michigan United Railways and the Michigan Railway, resigned to go to Jackson, Mr. Allen received entire supervision of the Toledo, Ottawa Beach & Northern Railway and the Maumee Valley Railway & Light Company, which, together with the Toledo Railways & Light Company, are controlled by the Toledo Traction, Light & Power Company. He assumed the position of assistant general superintendent of the Michigan Railway in September of last year.

John C. Welch, foreman of the electrical engineers of the New York, New Haven & Hartford Railroad, died on Oct. 7 at Stamford, Conn. Mr. Welch was a graduate of Iowa State College, class of 1900. He was a native of Des Moines.

Obituary

Frederick H. Treat, president of the Washington-Virginia Railway, Washington, D. C., died recently after an illness of several weeks. Mr. Treat was born in Westfield, Mass., in 1854. He went to Philadelphia in 1870 and later became identified with several commercial concerns. In 1892 he moved to Wayne, Pa., and through his interest in public affairs became responsible in large part for the development of Wayne, St. Davids and Devon. Mr. Treat was also president of the New Jersey Gas Company, a director of the Washington Utilities Company, and was interested in several other corporations.

Construction News

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

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

RECENT INCORPORATIONS

*Northern Electric Railway, San Francisco, Cal.—Incorporated with a capital stock of \$10,000. Directors: G. B. Davis, E. Coe and W. J. Hayes.

*Gary (Ind.) Street Railway.—Incorporated to construct a street and interurban railway. Capital stock, \$10,000. Directors: Thomas W. King, B. B. Clark, M. Arnold, M. H. Shiel and M. Riley.

*Union Traction Company, Nashville, Tenn.—Application for a charter has been made by the Union Traction Company to succeed the Nashville-Gallatin Interurban Railway, recently sold under foreclosure. Capital stock, \$300,000. Incorporators; H. H. Corsen, John A. Bell, W. G. Simmons, J. H. Reeves and Guilford Dudley.

FRANCHISES

Oakland, Cal.—The Peninsular Railway has asked the Railroad Commission for permission to build a track at grade from its track on University Avenue extension, near Palo Alto, across the westerly side of University Avenue extension and across a spur track of the Southern Pacific Company.

San Francisco, Cal.—The Municipal Railways of San Francisco has received a franchise from the Board of Supervisors for the construction of a new line from the west portal of the Twin Peaks Tunnel to Twentieth and Taraval Streets. The Supervisors also set aside \$90,000 of the municipal railroad fund to be employed in the construction of the extension.

Galesburg, Ill.—The Galesburg Railway, Lighting & Power Company has received a franchise from the City Council to construct an express track and switch on the northeast part of the public square.

Muskegon, Mich.—The Muskegon Traction & Lighting Company has received a thirty-year franchise from the City Council of Muskegon for the operation of its electric railway.

St. Johns, Newfoundland.—The St. Johns Street Railway has asked the City Council of St. Johns for permission to extend its car lines in several directions.

Cincinnati, Ohio.—Mayor George Puchta recently signed the ordinance granting a twenty-five-year franchise to the Cincinnati, Newport & Covington Street Railway for the operation of the Green Line cars in Cincinnati.

Cleveland, Ohio.—Councilman Dittrick has prepared a franchise ordinance to be introduced in the City Council soon, which will authorize the Cleveland Railway to extend a single-track line in West 117th Street from Clifton Boulevard to Bellair Road, S. W., about 4 miles. If the road is built, it is the intention to have a double track, but one side of the street is in Lakewood and a franchise for the track on that side must be secured from the Lakewood Council. The extension would give access to the village of Lindale.

Chattanooga, Tenn.—The Chattanooga Traction Company has received a franchise from the City Council on Market Street between the new bridge and Water Street.

TRACK AND ROADWAY

Birmingham Railway, Light & Power Company, Birmingham, Ala.—Plans are being made by the Birmingham Railway, Light & Power Company to construct an extension to a new plant of the Tennessee Coal, Iron & Railroad Company, west of Fairfield.

Douglas Traction & Light Company, Douglas, Ariz.—An extension will be built by the Douglas Traction & Light Company to Pirtleville in the near future.

Pacific Electric Railway, Los Angeles, Cal.—Surveys have been made for improvements in the Pacific Electric Railway Company's roadbed on Santa Monica Boulevard in Sawtelle that mean an outlay of \$130,000. New and heavier rails will be laid the entire distance from the westerly to the easterly city limits, and the roadbed given a heavy rock ballasting and paved with oil and macadam.

Tampa (Fla.) Electric Company.—It is reported that this company will extend its Hyde Park line to the city limits by the first of the year.

Illinois Traction Company, Peoria, Ill.—This company will soon begin some extensive improvements in Hillsboro, Ill. Its tracks on Main, Wood and Hamilton Streets will be abandoned and a freight and passenger station will be established at the west end of Wood Street. The cost of these changes will aggregate \$15,000.

Union Traction Company of Indiana, Anderson, Ind.—This company will improve its tracks in College Avenue from Forty-second to Forty-eighth Streets.

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind.—This company reports that it is now paving and rebuilding 2 miles of double-track with 125-lb. A. S. C. E. rail between South Bend and Mishawaka.

Cincinnati, Newport & Covington Railway, Covington, Ky.—This company will reconstruct its tracks on Ludlow Highway, Ludlow, in connection with paving to be done by the city.

Shelbyville & Frankfort Realty Company, Shelbyville, Ky.—At a conference at Shelbyville on Oct. 3 a contract was entered into between the Shelbyville & Frankfort Realty Company, a corporation organized to promote the construction of an electric line between Shelbyville and Frankfort, and P. C. Phillips, Philadelphia, whereby the latter agreed to organize a company which will build, equip and operate a road between the towns before Jan. 1, 1920. This will be formally ratified as soon as deeds to all the property necessary for the right-of-way have been executed. The company is to have a free right-of-way, with necessary terminal facilities, and the contract shall become void if the company fails to begin work by March 1, 1918, and continue it without undue interruption until it is completed by the date specified. The proposed line will connect the Louisville & Interurban Railway with the Kentucky Traction & Terminal Company's line. [Sept. 29, '17.]

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.—The Public Utilities Commission of Maine has dismissed the petition of the municipal officers of the city of Augusta for the removal of the double tracks of the Lewiston, Augusta & Waterville Street Railway from Water Street and replacing them with a single track, dismissing the petition on the grounds of recent changes made in the running schedule by the company which seems to do away with the annoyance of congestion in the street as complained.

Boston (Mass.) Elevated Railway.—An agreement has been reached between the Boston Elevated Railway and the Massachusetts Waterways Commission whereby a connection will be built between the new South Boston \$1,000,000 Fish Pier and the Boston Elevated Railway. Work will be begun on the line at once. The commission will construct the line and lease it to the Boston Elevated Railway to operate.

Duluth (Minn.) Street Railway.—Announcement has been made by the Duluth Street Railway that operation on its Kenwood line would be begun about Oct. 15.

United Railways Company of St. Louis, St. Louis, Mo.—A new cross-town line, to be known as the West St. Louis line, is being planned by the United Railways Company of St. Louis to connect Suburban Garden with Benton, south of Forest Park. The new line will be an extension of the present Hamilton Avenue line to the south and a consolidation of the Hamilton and Hodiadmont lines north of Plymouth Avenue.

Claremont Railway & Light Company, Claremont, N. H.—This company is installing new girder rail on Pleasant Street and it is expected that the work will be completed within the next few weeks.

Point Pleasant (N. J.) Traction Company.—A report from the Point Pleasant Traction Company states that the company will reconstruct practically its entire line, which connects Point Pleasant and Bay Head.

New York (N. Y.) Railways.—The proposal made by the New York Railways to abandon a portion of the line of the Bleecker Street & Fulton Ferry Railroad, hearings upon which are in progress before the Public Service Commission for the First District of New York, is being opposed by one of the minority stockholders of the road. The portion of the line which it is proposed to abandon has been operated for horse-car service only. The last such service was operated was late in July and it was proposed that such portions of the line as were used for the horse-car service should be abandoned. The opposing stockholder, George F. Morgan, has advanced to the commission the proposition that if the New York Railways, which now holds the Bleecker Street & Fulton Ferry Railroad under lease, were obliged to relinquish the line to the owners, that they would not possess a line which could be operated, because it would consist only of several disconnected segments of trackage.

Cleveland (Ohio) Railway.—Work will be begun this fall by the Cleveland Railway on the construction of an extension from the present terminal of the Cedar Avenue line up Cedar Road to Coventry Road.

Youngstown & Sharon Street Railway, Youngstown, Ohio.—Work has been begun by the Youngstown & Sharon Street Railway on the construction of the east hill electric railway on Spruce Street from George Street to King Street, east on King Street to Stambaugh Street and over Stambaugh Street to State Street.

Philadelphia, Pa.—Preliminary work on the subway delivery loop has been begun west of Tenth Street on Arch Street, and on Arch Street just east of Thirteenth Street. At these points shafts will be sunk and tunneling begun. The work is in charge of the Keystone State Construction Company. Ground for the Locust Street section of the loop was broken when the work of opening Locust Street at Eighth for the relaying of two sewers was begun. One square will be completed at a time to avoid hampering owners of property along Locust Street too seriously. The paving for a distance of 45 ft. at each end of the street will be kept intact during the operation. The delivery loop will extend from Broad and Arch Streets under Arch to Eighth Street, under Eighth to Locust Street and under Locust Street to Broad Street.

Chattanooga (Tenn.) Traction Company.—Negotiations have been practically completed between the Market Street Bridge Commission and officials of the Chattanooga Traction Company for the lease of the car tracks on the bridge, which are the property of the county. The company proposes to construct its own tracks on the approaches and will ask the county for a franchise for tracks on the north approach and the city commission for a franchise for tracks on the south approach.

Dallas (Tex.) Railway.—The immediate construction of five electric railway lines and extensions is planned by C. W. Hobson, president of the Dallas Railway. Steel and other materials for these lines have been ordered. Plans for these extensions and new lines must be submitted to the Board of Commissioners for their approval before the work can be commenced. The lines contemplated will be constructed to serve Second Avenue, Oakland Cemetery, City Hospital, Oak Lawn and Dallas University and a line in Oak Cliff. A rearrangement of the two Oak Cliff lines will be made.

Seattle (Wash.) Municipal Railway.—The Seattle City Council recently passed a bill adopting a plan for an extension of the city car lines by connecting up the Lake Burien and Division A lines. The plan proposes the construction of an elevated railway on Washington Street, Railroad Avenue, Whatcom Avenue and Spokane Street, and extending from First Avenue South to the West Waterway, at an estimated cost of \$350,000, to be paid for by the sale of utility bonds, interest and principal payable from the revenues of the street car system. In order to connect the lines, it is proposed to utilize the tracks of the Seattle &

Rainier Valley line on Stewart Street, Fourth Avenue, Fourth Avenue South and Washington Street by a common user agreement. This would extend the Division A line now ending at Third Avenue and Pine Street, to the West Waterway. Connection with the Lake Burien line will be brought about by the extension of that line from Riverside across the new temporary bridge across the West Waterway.

Tacoma (Wash.) Municipal Railway.—The City Council of Tacoma has refused the offer of the Tacoma Railway & Power Company to operate the line to the tideflats at cost for two years. The line will be operated by the city of Tacoma.

SHOPS AND BUILDINGS

Pacific Electric Railway, Los Angeles, Cal.—A temporary building 75 ft. x 220 ft. has just been completed by the Pacific Electric Railway on its big carhouse site at Torrance, in which 300 freight cars contracted by the company for immediate delivery will be constructed. Work on the permanent buildings of the huge plant projected by the company will proceed as rapidly as building materials are available. Contracts for the steel work and much of the equipment have been let, the necessary trackage has been laid, and the grading of the site has been completed. The Torrance plant is being built on a plot of 125 acres, which will meet all present needs and allow for 100 per cent future expansion, besides permitting ample storage for heavy freight service. The new shops are to have double the capacity now required for the company's equipment. Only heavy overhauling and new work will be regularly undertaken at Torrance, all light repairs being handled at the company's various division carhouses. A clubhouse and athletic grounds will be provided for employees. The principal buildings are to have steel frames, brick walls, reinforced concrete roofs, steel sashes and creosoted wood block floors.

New York Municipal Railway, Brooklyn, N. Y.—The public Service Commission for the First District of New York has awarded to D. C. Serber, the lowest bidder, at the figure of \$69,084.69, the contract for completion of construction and station finish in the Fourth Avenue subway and Center Street loop subway. Several small construction items are included in this contract, among them being the changing of the wall panels on the platform of the former Gold Street station on the Fourth Avenue subway in Brooklyn to Myrtle Avenue to conform to the new name for the station recently adopted by the commission.

Cleveland (Ohio) Railway.—Negotiations have been closed by the Cleveland Railway for a parcel of land 503 ft. x 750 ft. at West 117th Street and Linnett Avenue, where a new carhouse and yard will be located. The improvement may not be made for two years, however.

Southeastern Ohio Railway, Zanesville, Ohio.—This company reports that it will construct extensions to its freight stations at Roseville and Crooksville.

POWER HOUSES AND SUBSTATIONS

Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala.—A report from the Tuscaloosa Railway & Utilities Company states that it will construct an extension to its power house and carhouse.

Washington Water Power Company, Spokane, Wash.—Another power line, costing approximately \$200,000, will be built into Coeur d'Alenes by the Washington Water Power Company. The line will be started early in the spring and finished during the summer, according to C. S. MacCalla, manager of the company. It will extend from the company's plant at Post Falls, Idaho, 45 miles to Cataldo through Fourth of July Canyon.

Ashland Light, Power & Street Railway Company, Ashland, Wis.—Work has been begun by the Ashland Light, Power & Street Railway Company on a \$100,000 power plant at the mouth of Montreal River on the boundary line between Michigan and Wisconsin. A 1200-hp. plant will be built and tied up with the company's lines connecting Ashland, Mellen and Ironwood. A line will be built directly from Montreal River to Ashland, across the Bad River Indian reservation at a cost of \$50,000.

Manufactures and Markets

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

Rolling Stock Purchases

Market Quotations

Business Announcements

Conditions of Supply and Demand Along Atlantic Coast

One-Man Car Equipment and Fare Boxes in Good Demand, Buying of Other Equipment Is Deferred

Roads in the Middle States territory in and about New York City are buying equipment, supplies and accessories in a careful way, owing, primarily to the non-settlement of the fare-increase application. Favorable action on that matter in any state would greatly stimulate purchases among the railways affected. In the meantime purchases are confined largely to those of actual necessity along the line of maintenance.

Deliveries on general supplies are normal to two or three months behind, according to the character of the specifications. No advance in prices has been announced within the past two weeks. Spot deliveries on gears and pinions may be had if standard sizes are ordered. On special goods, if castings and blanks are available, shipments are within thirty to sixty days. Material of this description ordered in January last is just now coming to hand. The finished merchandise, as rapidly as received, is allotted to buyers in a ratio to meet and partly satisfy rush orders. Trolley accessories are in a good position on the question of deliveries. Fare boxes of the improved type are in steady demand, and several sizable orders are pending practical tests of economical utility. On some classes of raw material, mills are accepting rush orders at government prices on metals.

Generator deliveries are from eighteen months to over two years, depending on size. Controller deliveries are also longer than normal. All prices are subject to change within fifteen days without notice. Government orders are given preference when placed direct, but if incidental to another buyer's needs are subject to further consideration by the manufacturer as to priority of execution and delivery. Prices on material are such as to create a profound feeling of uneasiness. Future supply and the requirements of customers are being carefully revised before ultimate acceptance. The attitude of labor is embarrassing, to say the least, and the difficulties constantly arising in the factories in this respect are dealt with in no arbitrary manner. In short, everything is costly and difficult from various points of view. The patience of customers, under the trying conditions is generally mentioned as admirable in every quarter.

MOTOR DELIVERIES DEPENDENT ON SIZE

Railway motor deliveries depend on size, ranging from four to seven months. No stock is being kept and manufacture is begun only on order.

An order placed for trolley poles eighteen months back is now being delivered, and shipments to customers are going forward promptly. Trolley wheels and accessories are in fair condition as to deliveries; but the immediate future is not promising as to the carrying out of contracts for definite shipments. Brushes at present are six months in arrears on reaching their destination, and no definite delivery dates for future orders will be accepted.

Car heaters are slow, very little new business being placed, and no order is booked for delivery under ninety days. Considerable repair work has been done on heaters, railway companies making strenuous and determined efforts to use old equipment in this class to the uttermost degree of usefulness. Porcelain for all purposes is in bad shape, and no improvement in deliveries is in sight. Bolts, nuts, and spikes are reported by manufacturers, with whom orders are generally placed direct, as in a favorable position for deliveries. Business has been rather quiet, but a revival has occurred within the last ten days. Specifications, however,

are not large, but an improvement is expected. On rails the demand exceeds the supply and the factories are sold up for the remainder of this year and 1918. No heavy shipments will be forwarded unless the mills should make excess rollings.

Angle bars are hard to get, with tie plates fair in delivery, at thirty to sixty days. Rail joints are in fair demand but moving slowly. A number of roads that have track material on hand are unable to use it, as labor has been scarce all summer; in some instances practically no labor has been available for this work. The army has absorbed an appreciable number of section hands and the munition factories, with the allurements of abnormally high wages, the remainder. The railways in New York State and New Jersey are particularly affected.

RAIL BONDS HIGHER

Rail bonds, of the flexible type, flat wire and cable, were advanced from 10 to 17½ per cent Oct. 1, delivery in thirty days. The demand is steady. The government has taken over the entire shovel output, and no private orders are accepted under sixty days, providing the Washington officials will release enough material. As the government price on steel prevails in the shovel plants no advance for finished goods has been formulated.

Chairs and seatings were advanced from 10 to 20 per cent the first of the month. Deliveries are made in six or eight weeks without difficulty. The demand is quiet in common with other lines of car equipment. Another advance in wool waste of 2 per cent becomes effective Nov. 7.

Snow plows and sweepers, for which orders were placed in July, are beginning to be delivered. Subsequent engagements cannot be shipped before Feb., 1918, according to one manufacturer. A number of belated orders offered were withdrawn on account of the high price. In fact the selling figures are 100 per cent higher than last year. Labor conditions at the factories and the uncertainty of obtaining material are such that no orders offered at present could be promised delivery for an indefinite time. In other words, manufacturers and agencies in the car building line are unable to guarantee deliveries at specified periods.

On complete car equipment an advance, ranging from 10 to 20 and 35 per cent, was announced Oct. 1. Safety car devices—one-man equipment—were marked up 12½ per cent at the same time, with the manufacturers loaded up with orders until the first of the year.

A land-office business is being done in railroad lamps of the flood-light projecting type, not so heavy for railway purposes as on government orders, to be installed at the army cantonments and naval bases. Deliveries are prompt at present, but the future is uncertain. No change in price has occurred since July and none is anticipated, unless the factory finds it necessary to assume a different attitude, which sometimes occurs unexpectedly and without much ceremony.

Following the readjustment in copper wire of last week, prices are firm except for weatherproof which showed a softening in the local market of half a cent or more. Most manufacturers are working on a 35-cent base with a few at 34 cents. Local distributors are feeling the effect of the government order to copper producers to hold up deliveries until government needs are determined and provision made therefor. Inquiry on Monday for a quantity of wire brought forth either no desire to bid or bids away too high. Many wire manufacturers are living from hand to mouth on copper supply and the curtailment of supply finds the local market destitute of certain sizes in many places. The situation is expected to clear up shortly as the government early this week allowed producers to make shipments on contracts.

One of the high spots is the request for bids by the

Brooklyn Rapid Transit Company for 250 new cars. Almost everybody is bidding on the order. Bids will be held open until Oct. 15.

Progress of Chilled Car Wheel Standardization

Annual Meeting of the Manufacturers' Association Held This Week in New York City

The annual meeting of the Association of Manufacturers of Chilled Car Wheels was held on Tuesday of this week in New York City. The matter of standardization progress of the chilled car wheel was dwelt on rather fully by George W. Lyndon, president of the association. Extracts from his address follow:

"It is needless for me to tell you that the chilled iron wheel stands on a firm foundation. You do not see the criticism in the press of the limitation of chilled iron for car wheel purposes.

"The recognition of a standard 850-lb. chilled iron wheel by the Master Car Builders' Association will dispel the illusions of our competitors with respect to the limit of the carrying capacity of chilled iron.

"It is now a well-established fact that the load that can be carried on a chilled iron wheel is only measured by the ability of the rail to support it. It has taken a long time to bring this about, and the work we have accomplished this year is the result of persistent effort and close association with all the leading organizations in the country that study the wheel question, and we have also followed up with individual railroads the introduction of new standards.

"We must pay the closest attention to the quality of our product.

"While we have accomplished two-fifths of our program, we should not rest until we have secured the other three-fifths. We must see that the interior of the 625 and the 725-lb. wheels receive recognition in the matter of increased plate thicknesses, which can only be obtained by additional weight. We must have a reasonable factor of safety when measured by excessive stresses encountered in service and these heat stresses are now recognized everywhere due to our educational campaign.

"We are not influenced by commercial considerations in asking for heavier wheels. We know the increased weights are necessary."

The following officers were re-elected for the ensuing year: President and treasurer, George W. Lyndon; vice-presidents, E. F. Carry and J. A. Kilpatrick; secretary, George F. Griffin; consulting engineer, F. K. Vial; board of directors: J. M. Buick, vice-president American Car & Foundry Company; J. A. Kilpatrick, president Albany Car Wheel Company; W. S. Atwood, chief engineer Canadian Car & Foundry Company; Charles A. Lindstrom, assistant to president Central Car Wheel Company; F. K. Vial, chief engineer Griffin Wheel Company; E. F. Carry, president Haskell & Barker Car Company; A. G. Wellington, president Maryland Car Wheel Works; W. C. Arthurs, president Mount Vernon Car Manufacturing Company; J. D. Rhodes, president National Car Wheel Company; F. B. Cooley, president New York Car Wheel Company; A. J. Miller, general manager Ramapo Foundry & Wheel Works; William F. Cutler, vice-president Southern Wheel Company.

Shippers Should Utilize Full Capacity of Every Car

The commission on car service, committee on national defense, American Railway Association, is admonishing all shippers to utilize to the full capacity every car which is sent over the road. The commission feels that even the full capacity of all the facilities of the carriers of freight will not meet the demand, but that a practice of loading every car to its full capacity will help materially to alleviate the car shortage existing. From its knowledge of the transportation and commercial conditions of the nation, the commission considers it most unpatriotic of any shipper to fail to make the maximum use of any car assigned to him.

Car Prices Not Likely to Come Down to Pre-War Mark

Conclusion of War Will Leave Many Permanent Effects, Tending to Hold Prices Up Higher than Those Prevailing Before the War

BY GEORGE H. TONTRUP

General Manager American Car Company, St. Louis, Mo.

The many electric railways which are holding off on equipment purchases in the hope that prices may again return to the low figures which prevailed before the war are in a good way to find disappointment. This will not be because of any concerted action on the part of the car builders to maintain present high prices, but simply because the war has brought about new conditions, many of which are permanent and which will continue to keep up prices even though the war should cease to-morrow. Principal among these is the labor situation.

A general establishment of the eight-hour law; the depletion in the ranks of the laborers through loss in battle, through extensive migration to the native lands to take part in the war and through the practical cessation of immigration, and the general elevation of the plane of living of the laboring man due to his present prosperity—all these influences are working against a lowering of the present labor cost. At least the wage scale will not likely decline to its former level.

In the material market, it is reasonable to expect that the demand for materials during the reconstruction period after the war will be of such extent as to hold the prices up for perhaps two or three years. And certainly no one anticipates any drop worth mentioning as long as the war is in progress.

Hence it cannot be anticipated that there will be any marked lowering in the cost of rolling stock from the present prices for at least two or three years, and the possibility of a complete return to the prices of two or three years ago is negligible. The prospect of better purchasing conditions, then, seems so remote that it emphasizes the losses which are being taken while an operating company holds off on purchases and thus during the war and reconstruction period loses the earning power of cars which are really badly needed.

NEW YORK METAL MARKET PRICES

	Oct. 3	Oct. 10
Prime Lake, cents per lb.	23½	23½
Electrolytic, cents per lb.	23½	23½
Copper wire base, cents per lb.	35	35
Lead, cents per lb.	8	7.60
Nickel, cents per lb.	50	50
Spelter, cents per lb.	8¾	8¾
Tin, Straits, cents per lb.	60½	61
Aluminum, 98 to 99 per cent, cents per lb.	42½	42

OLD METAL PRICES—NEW YORK

	Oct. 3	Oct. 10
Heavy copper, cents per lb.	23½	23½
Light copper, cents per lb.	20½	20½
Red brass, cents per lb.	19	19
Yellow brass, cents per lb.	16¾	16¾
Lead, heavy, cents per lb.	7	7
Zinc, cents per lb.	6	6
Steel car axles, Chicago, per net ton	\$41.00	\$41.00
Oid car wheels, Chicago, per gross ton	\$25.00	\$28.00
Steel rails (scrap), Chicago, per gross ton	\$30.00	\$35.00
Steel rails (relaying), Chicago, per gross ton	\$55.00	\$55.00
Machine shop turnings, Chicago, per net ton	\$16.00	\$15.50

RAILWAY MATERIALS

	Oct. 3	Oct. 10
Rubber-covered wire base, New York, cents per lb.	35	35
Rails, heavy, Bessemer, Pittsburgh	\$38.00	\$38.00
Rails, heavy, O. H. Pittsburgh, per gross ton	\$40.00	\$40.00
Wire nails, Pittsburgh, per 100 lb.	\$4.00	\$4.00
Railroad spikes, 9/16 in., Pittsburgh, per 100 lb.	\$7.00	\$7.00
Steel bars, Pittsburgh, per 100 lb.	\$4.50	\$4.50
Sheet iron, black (24 gage), Pittsburgh, per 100 lb.	\$8.85	\$8.85
Sheet iron, galvanized (24 gage), Pittsburgh, per 100 lb.	\$9.55	\$9.55
Galvanized barbed wire, Pittsburgh, cents per lb.	4.85	4.85
Galvanized wire, ordinary, Pittsburgh, cents per lb.	4.65	4.65
Cement (carload lots), New York, per bbl.	\$2.22	\$2.22
Cement (carload lots), Chicago, per bbl.	\$2.31	\$2.31
Cement (carload lots), Seattle, per bbl.	\$2.65	\$2.65
Linseed oil (raw, 5 bbl. lots), New York, per gal.	\$1.22	\$1.18
Linseed oil (boiled, 5 bbl. lots), New York, per gal.	\$1.23	\$1.19
White lead (100 lb. keg), New York, cents per gal.	11	12
Turpentine (bbl. lots), New York, cents per gal.	47	50

ROLLING STOCK

Nashville (Tenn.) Railway & Light Company is reported as turning a number of its open trailers into new side-door inclosed trail cars. Each of the rebuilt cars will have twelve electric heaters.

Bay State Street Railway, Boston, Mass., will rebuild nineteen cars for one-man operation, as it has received permission from the Massachusetts Public Service Commission to use one-man cars on several routes, as noted on page 638 of the *ELECTRIC RAILWAY JOURNAL* of Oct. 6.

Seattle (Wash.) Municipal Railway, through C. B. Bagley, chairman of the Board of Public Works, has awarded contracts for six one-man cars for use on Division A of the road, as follows: B. R. Stare & Company, representing the St. Louis Car Company, received contract for car bodies at \$3,620 each; for air brakes, at an estimated cost of \$665.50 each; and for motor equipment costing \$1,413 for each car. The total cost of the new type of car will be \$5,698.40. In order to provide sufficient money to pay for the one-man cars, a bill has been introduced in the city council appropriating \$10,000 addition from the municipal railway bond issue, making \$35,000 in all appropriated for that purpose. The preliminary announcement relative to these cars was made in this paper on Sept. 1.

Honolulu Rapid Transit & Land Company, Honolulu, Hawaii, noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 29 as having purchased ten cars from The J. G. Brill Company, has specified the following details for this equipment:

Date order was placed,	Sept. 25, 1917	Control...Westinghouse, type K
Date of delivery,	March 25, 1918	CouplersBrill channel iron
Builder of car body,	The J. G. Brill Co.	Curtain fixturesAcme
Type of car,	14-bench center aisle open car	Curtain materialPantasote
Seating capacity	56	Hand brakes...Brill vertical wheel, with Ackley attachment
Weight, car body and trucks,	26,000 lb.	Headlights,
Bolster centers, length,	29 ft. 7 in.	Golden Glow incandescent
Length over bumpers,	47 ft. 0 in.	Journal boxesBrill
Length over vestibule,	46 ft. 3 in.	Lightning arresters.
Height, rail to trolley base,	11 ft. 7 1/2 in.	Motors...West. 546J—2 per car outside hung
Body	Wood	Paint,
Interior trim	Ash and cherry	Cars painted at destination
Headlining	Agasote	RegistersInternational
Roof, arch or monitor	Arch	SandersBrill Dumpit
Air brakes	G. E.	Seats, styleAm. Car Co.'s reversible—Wood slat
Axles...Ordinary hammered steel		Seating materialWood
BumpersBrill angle iron		SpringsBrill
Car trimmings,	Brill—Bronze trim	Step treadsWood
		Trucks, typeBrill 39E1
		Wheels...Furnished by purchaser
		Trolley baseWest

TRADE NOTES

Automatic Trolley Lock Company—Incorporated in New York on Oct. 9, with a capital of \$100,000. The incorporators are H. D. Junge, L. F. Roggenstein and J. M. Ruhf.

Asbestos Protected Metal Company, Pittsburgh, Pa., announces the appointment of Ole K. Olsen, 822 Perdido Street, New Orleans, as sales agent for the State of Louisiana and the southern portion of Mississippi.

The Hoeschen Manufacturing Company, Omaha, Neb., has received from the Detroit United Railway an order for six wigwag crossing bells without batteries. This brings the total number of this type of crossing signals installed on the D. U. R. up to over eighty.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has recently secured the services of W. H. Bramman, who is acting as assistant to the president. Mr. Bramman was formerly connected with the American Carbon & Battery Company.

C. F. Lomont, until recently with the McGraw-Hill Publishing Company in Chicago, has accepted a position with the Electric Service Supplies Company as its representative in the North and Northwest, with headquarters in Minneapolis. Mr. Lomont was graduated from Purdue University in electrical engineering. Before joining the forces of the McGraw-Hill Publishing Company, he was engaged in public utility valuation and later was for a time in the employ of the Chicago & Western Indiana Railroad on construction work in Chicago.

Railway Improvement Company, New York, has just received an order by telegraph for 375 Rico coasting record-

ers to be shipped by express to the Chicago Elevated Lines, comprising the Metropolitan West Side Elevated Railway, the Northwestern Elevated Railway, the South Side Elevated Railroad and the Chicago & Oak Park Elevated Railroad. The order is signed by Britton I. Budd as president of the first three railways and by Samuel Insull as receiver for the Chicago & Oak Park Elevated Railroad. The coasting recorders will be delivered in time to take care of the winter load and also will help to avoid the high rate for power which applies when the peak load contracted for is exceeded.

NEW ADVERTISING LITERATURE

Coats Machine Tool Company, Inc., New York, N. Y.: A bulletin has been sent out describing the Prestwich fluid gage of this concern.

Fire Gun Manufacturing Company, New York, N. Y.: In a leaflet, now going through the mail, the company's fire gun is illustrated and described.

Worthington Pump & Machinery Corporation, New York, N. Y., sales agent for Henry R. Worthington, is distributing bulletin W-400, descriptive of the Worthington outside-packed plunger pattern pump, designed for general service.

New Publication

Street Railway Fares, Their Relation to Length of Haul and Cost of Service. By Dougald C. Jackson and David J. McGrath. McGraw-Hill Book Company, Inc., New York. 169 pages, price \$2.50.

This book constitutes the report of the investigation carried on by Professor Jackson and Mr. McGrath, in the research division of the electrical engineering department of the Massachusetts Institute of Technology. It is officially known as research division bulletin No. 14 but is published in book form on account of its size and to permit wider circulation. Some portions of this study have been published in the *ELECTRIC RAILWAY JOURNAL* in the form of articles by Mr. McGrath, but the book under review gathers these and other researches made by the authors into one complete whole with their conclusions. One of the most important of these is that to meet increasing costs of service and properly prepare for extensions of existing systems, the street railways of the United States, both urban and suburban, will sooner or later be forced to adopt a system of rates based more nearly on the length of haul. This, for urban systems, would involve a zone system with possibly, in some cases, a limited central area served at less than 5 cents.

The general conclusions are stated in the first chapter. The rest of the book is devoted to an elaboration and exposition of these conclusions.

Chapters 2 and 3 are devoted to a discussion of density of traffic in which the authors develop the unit of "investment per revenue passenger" and also bring out clearly the close relation between the length of haul and traffic density, namely, the longer the average haul the less the traffic density as measured in fare passengers per car-mile. Chapter 4 discusses the relation of the rate of fare to the growth of traffic, the conclusion being that higher fares reduce traffic. Chapter 5, shows that in Massachusetts the average rate of return is undergoing a steady decline. Chapters 6 and 7 are devoted respectively to the division of the nickel and the Cleveland fare system, and chapter 8 describes the Milwaukee zone system. Chapter 9 compares British and American practice as regards fares and shows that while the cash revenue per car-mile is not greatly different the American passenger pays a higher rate per mile, and the wages in this country and the investment per passenger are much higher. The latter fact, the authors explain, is due in part to the higher density of traffic in Great Britain, in part to the shorter average haul of passengers and in part to the fact that the majority of the British systems have no investment in power plants. The later chapters of the book develop the idea of the zone system for urban and interurban roads and suggest methods for fare collection.

The book is well illustrated with diagrams, and the subject treated is of such live present interest as to make the volume an important contribution to electric railway literature.