

Street Railway Journal

VOL. XXX.

NEW YORK, SATURDAY, OCTOBER 26, 1907.

No. 17

PUBLISHED EVERY SATURDAY BY THE

McGraw Publishing Company

James H. McGraw, Pres.

Curtis E. Whittlesey, Sec. & Treas.

MAIN OFFICE:

NEW YORK, 239 WEST THIRTY-NINTH STREET.

BRANCH OFFICES:

Chicago: Old Colony Building.

Philadelphia: Real Estate Trust Building.

Cleveland: Schofield Building.

San Francisco: Atlas Building.

London: Hastings House, Norfolk St., Strand.

Cable Address, "Stryjourn, New York"; "Stryjourn, London"—Lieber's Code used.

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In the United States, Hawaii, Puerto Rico, Philippines, Cuba, Mexico and the Canal Zone:

Street Railway Journal (52 issues).....\$3.00 per annum
Single copies10 cents
Combination Rate, with Electric Railway Directory and Buyer's Manual (3 issues—Feb., Aug. and Nov.).....\$4.00 per annum
Both of the above, in connection with American Street Railway Investments (The "Red Book"—Published annually in May; regular price, \$5.00 per copy).....\$6.50 per annum

To Dominion of Canada:

Street Railway Journal (52 issues), postage prepaid.....\$4.50 per annum
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Street Railway Journal (52 issues), postage prepaid..... \$6.00
25 shillings. 25 marks. 31 francs.
Single copies 20 cents

Remittances for foreign subscriptions may be made through our European office.

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DATE ON WRAPPER shows the month at the end of which the subscription expires. The sending of remittances for renewal prior to that date will be much appreciated by the publishers.

Of this issue of the Street Railway Journal 8300 copies are printed. Total circulation for 1907 to date 354,650 copies, an average of 8247 copies per week.

Proposed Association of Transportation Superintendents

An important resolution was introduced by ex-President Ely during the last hour of Friday's session, and promises to exercise an important effect upon the character of the papers to be presented at future meetings of the association. Mr. Ely's plan, which was the outcome of the executive session of the association held on Thursday afternoon, was the organization of another affiliated association which should take up lines of work pertaining to transportation,

traffic and general operation, topics which are now generally considered as belonging to the field of the general manager on small and medium sized roads and also to that of the superintendent of transportation on the larger properties. If this plan should be adopted, the work of the main association would be largely that of receiving and acting upon reports from the new affiliated association, as well as from the others, and discussing broad questions of policy which are beyond the somewhat narrower field of transportation only, to which hitherto the main association has directed its attention. Logically there should be an excellent opportunity for the development of a highly efficient organization of the kind proposed. An examination of the programme of the American Street and Interurban Railway Association at Atlantic City indicates that most of the papers presented would come within the purview of the organization proposed. This applies particularly to the reports and papers presented on Thursday, with the exception of the report on heavy electric traction and the paper on the use of T-rail, and to the paper on interurban railway fares, presented by Mr. Stebbins during Friday morning's session.

One of the principal aims of the new organization would be a study of the best means of promoting traffic, which would include advertising in its various forms, such as the establishment of street railway parks and the selection of attractions there to be provided. Its scope would also embrace the consideration of means for conducting transportation outside of the engineering features, such as the type of car, the prices to be charged for transportation, the preparation of schedules and most desirable speeds. It would include the methods of collecting the receipts, other than the purely accounting phases, and the discipline of the motormen and conductors. Finally, it could take up the relations of the company and of the operating force to the patrons. Altogether the scope of an organization of this kind is so large and the problems to be considered so varied that a most valuable programme could be laid out for its consideration each year for many years to come.

There is no doubt that the activities of an association of transportation managers would intrench somewhat upon the field now occupied by the main association, but this fact need not in any way reduce the amount of effective work accomplished by the organization as a whole. Where the transportation department is conducted by the president or general manager, or where this officer is particularly interested in transportation, he will be as welcome at the meetings of the new affiliated organization as he is now at those of any one of the other organizations which are conducting independent meetings. We presume that if the association is organized, its meetings will be attended by more of such officers of the different companies than the meetings of the other affiliated organizations, because the president as a rule gives more of his time to transportation subjects

than to engineering or accounting questions or to the problems of the claim department. But the fact that such an organization is devoting its energies entirely to this subject will give, it is thought, an impetus to the work and attract the active participation of many who do not now engage to any considerable extent in the discussions of the main organization. Moreover, as in the case of the other affiliated organizations, solid work can be accomplished better than under the present plan. The idea may appear to some to be revolutionary, but it is entirely in line with the objects of the association up to the present, and such a plan, if not actually contemplated when the constitution was drawn, was a contingency for which provisions were made in that instrument.

If such a plan is carried out it will lend additional weight to the argument that the meetings of all of the affiliated associations need not and ought not to occur during the same week. This question received more consideration, though informally, at Atlantic City than ever before. More men are attending the conventions than used to be the case. In some cases the number from a single company was as high as twenty-five or thirty, and in most cases the attendance of all those who ought to go to the convention means a serious depletion of the active members of the force. On the other hand, there are arguments which appear as strong toward a continuance of the present practice of having all the meetings at the same time. The question of exhibits is one thing; the value of meeting men in other departments is another; the fact that on the smaller roads it is frequent for one man to be interested in the work of several departments is a third. All in all, the problem is a serious one. Possibly, if the meetings of the officers of the transportation and engineering departments were held at the same time the question of exhibits would be answered. The other objections to separate meetings might find some satisfactory solution. On the whole, however, we believe that the advantages of holding the meetings of all of the associations at the same place and at practically the same time outweigh the disadvantages. In an industry in which the departments are so closely interrelated as in the street railway business we cannot but believe that it is in the highest degree beneficial for the accountants to meet the representatives of the engineering department, for both of them to become acquainted with the claim agents, and for all departments to keep in touch with the broad questions of policies discussed by the managers. There is no way in which this can be done better than by the personal acquaintances made and renewed at each annual convention. An organization of the size of that which must represent the street and interurban railway interests of the country cannot expect to find its future obvious at first glance, but the association has always had the ability to attract to its support the best minds in the industry, and the problems which have arisen in the past have been more serious than those which now lie before it and have been satisfactorily answered. We do not anticipate, that with the loyalty of its members and the satisfactory record to which it can point of its achievements in the past, there is any danger that the association will take a wrong step at this time, whatever the conclusion reached upon this particular point.

Reports of the Committees

A considerable part of the work of the American Association this year, as well as that of the affiliated associations, was represented by reports of the committees. Some of these, like those on promotion of traffic and municipal ownership, partook more of the nature of papers upon the topics treated, while others, as those on compensation for carrying mail, standardization, car wiring, heavy electric traction, insurance, rules for the construction of modern car houses and public relations, were more like the usual committee report; that is, they presented a statement of the work carried on by the committee during the past year, or occurring in the industry, with recommendations for future action by the association. The report of the committee on municipal ownership, itself a comprehensive discussion of the subject, was supplemented by a paper by W. J. Clark, who has made a study of this topic and whose array of statistics should prove most instructive.

The reports on the construction of standard railway car storage and operating car houses, and on car wiring are excellent instances of the practical benefit of association work in directions which result in a direct monetary gain to the street railway industry. In their investigation of fire insurance conditions, these two committees received the hearty cooperation of the fire underwriters, who met with the committees and participated in their deliberations. The interests of the companies and the insurance organizations run very largely along parallel lines, because it is a well-known fact that the profit in underwriting fire risks is very much larger when good risks are insured at low rates than when poor risks are insured at high rates. Last year was the first time, so far as we recall, that the old line companies have been represented at any street railway convention. This year not only were a number of gentlemen from the insurance exchanges present at the meetings, but they were represented among those who contributed papers.

The Problems of the Small Road

Mr. Cooper's paper on the "Problems of the Small Electric Road" begins with a definition of the "small road," not on the basis of receipts or mileage, but as the one so situated that it is not divided into the proper number of clear-cut and non-interfering departments with a competent, technically practical man at the head of each. On such a road the manager is the expert head of all or most all departments—he is the man personally responsible for every move. However, even though this be the case, Mr. Cooper wisely advises a departmental organization to the smallest of roads, although it may seem to the outsider to be somewhat of a farce. He suggests a plan of organization that may be put into effect on the very small electric road, and follows through to roads on which the organization may be made in eight or nine separate departments. The belief is expressed that such an organization, although it may seem to be "play" at first, will soon prove to be of serious advantage in dealing with other problems outside the organization.

The second problem mentioned is that of the small road's direct and personal relations with its patrons and the community. The solution is given as perfect equity between the company and the public and the municipality. The third problem mentioned is the one relating to employes.

On the small road there is a personal relation between the management and the employe, and the reserve of trained men is not so large or available. While the public in large cities wants rapid transit in an impersonal way, the patrons of the small road require the company's employes to be human, with some courtesy and tact.

In the matter of supplies and men, the problem of the amount of reserve or stock to keep on hand is a serious one. Rush days are larger in proportion to the average day than on larger roads, and how to get and keep men for rush day supply is often a serious matter with the small road. In the matter of stock or supplies the question is also serious—a small stock means less interest on investment, less stock room space, less insurance and more rigid economy, while a large stock means better prices and better freight rates, besides better insurance against interruptions to service.

Mr. Cooper points out that all these and other problems of the small road are personal problems of its manager—and also that the questions which arise on the large road are those of the small one “condensed, intensified, made into a formula by pressure of traffic, by condensation of population, by humanity, in the gross instead of in the individual.”

Maintenance and Inspection of Electrical Equipment

The report of the committee on maintenance and inspection of electrical equipment presented at the meeting of the Engineering Association on Oct. 15 was briefly considered in these columns last week, but the importance of the subject, the large amount of excellent work of which it bears the impress, and the standing of the committee warrant its further consideration. The report summarizes the present practice of a number of railway companies in a multitude of points, and some of these different methods were considered in the previous editorial. The committee does not make many definite suggestions except where current practice seems to be practically unanimous, as it was probably, and very wisely, considered by the committee that absolute recommendations, such as those expected from the standardization committee, were not desired. This need not prevent the association, however, from following up the subjects started by the committee and continuing the investigation further. For instance, the subject of car wiring is dismissed with the one recommendation that a fuse be installed in addition to circuit breakers, when metal conduits are used. The frequency of trolley apparatus inspection is considered without reference to the class of service, although the trolley which will operate 1000 miles in some classes of city service will not stand 50 miles of heavy, high speed, interurban work.

The committee finds that 18.2 per cent of commutator trouble is due to the quality of brushes, and also reports that the widest variety of opinion is expressed in describing the most satisfactory quality of brush—regarding hardness from soft to hard, regarding price from cheapest to the “very best,” regarding conductivity from high to low, regarding beveling and boiling, both for and against. It is evident that all of these opinions cannot be right unless the conditions vary widely. The committee has not had the time nor opportunity to investigate these and other similar matters to the point of determining the exact answer for

any one set of conditions, with modifications to suit various classes of service. The one subject of “quality of brush” alone would probably involve more experimental work than a committee of the association could well put into it. But this or similar subjects might well be taken up by the association or its committees in cooperation with the technical schools, with good results. Their experimental laboratories, working in conjunction with the practical men on the association's committees, might do good work on problems such as these, and judging by expressions made by representatives of three technical schools at Atlantic City, they would be glad so to cooperate with the association.

Gas Engines

Mr. Winsor's experience of a year with gas engines is given in a paper which was presented before the Engineering Association. Although the Boston Elevated now has two gas engine plants in operation, the paper deals with but one, the Somerville power station, which is of 700 kw rated capacity and has been operating since May, 1906, with soft coal fuel, the same as used in the company's steam stations. That the plant has proved absolutely reliable should be most gratifying to advocates of gas power. It is stated that the engine can be put into service at any time in less than five minutes, confirming the claim of quick starting. The overload capability has been found good, the 350 kw units having carried 450 kw for an hour, with swings to 495 kw. Back fires and pre-ignitions have been a rarity, and practically no interruptions have been experienced.

With regard to economy, the average coal consumption per kw-hour for seven months has been 2.034 lbs., or 1.404 lbs. per brake hp-hour. This is on a station load factor of 41.6 per cent, or an engine load factor of 83.3 per cent. The steam operated stations of the same company, for the same time, average 3.477 lbs. of coal per kw-hour, showing a saving of 41.5 per cent in favor of the gas engine plant. Mr. Winsor states in conclusion that the gas engine plant will operate at least as reliably as the steam engine plant and will use from 30 per cent to 60 per cent less fuel, depending upon the relative capacities.

Fuel economy is but one element, though a most important one, in the total cost of power production. The cost of labor per kilowatt-hour, repair and supply expenses must be known before the selection of a given equipment can be intelligently made. Given fuel economy in small sized plants, however, it is reasonably certain that all things else will follow in due course. There is no reason to expect a poorer economy in the large sized units of several thousand horse-power rating which will before long be employed in railway service, and it is certain that much will be gained in the enlargement of capacity per man which can be handled in the engine room. The disadvantage of having at first to buy water for scrubbing the gas and for cooling purposes was well emphasized by the writer of the paper, and it is significant that during the early days at the Somerville plant the water cost almost double the coal bill. A point which Mr. Winsor might have touched upon is the cleanliness and quietness of such a plant in a residential district, remote from the main tide-water stations of the company. For work in such a section these features and the high efficiency of even a small installation can be made very advantageous. The high economy secured in the fuel con-

sumption means so much less hauling of coal through streets where it might be considered an annoyance if practiced on a very large scale. The absence of a large disfiguring chimney and the freedom from annoyances by smoke are also important in such a location.

In order to secure economy and moderate maintenance expenses month after month in a small gas plant the utmost vigilance is essential on the part of the station attendants. No greater mistake could be made than to assume that a producer gas plant will give high economy automatically. Mr. Winsor touched upon the value of actual operating experience in suppressing difficulties, and it is worth realizing that the problem of operating a gas engine plant is a very different one from that in a reciprocating engine or a turbine station. Fewer men are required to operate a gas plant of given capacity than would be needed in a reciprocating steam station of the same output, and it is safe to say that in a small installation like the Somerville plant, at least double the number of men would be needed if steam were the motive power. The responsibility per employe is somewhat greater in a gas engine plant, and the machinery must be operated from an entirely different viewpoint than obtains in steam stations. The supply of the proper quality of gas; the determination of the best mixtures of air; the control of lubrication within very close limits; the maintenance of good ignition; adjustment of the firing point and compression to prevent premature ignition and late ignition; and the maintenance of a steady flow of cooling water in jackets are the fundamental points to be insured in securing good performance from internal combustion engines. Leaks in the piping and general cleanliness should be handled as promptly and regularly as in steam practice, but in gas engine work the cylinder actions are the focal points. Observation of cooling water temperatures, constant watchfulness to detect unusual conditions by changes in the sound of the engines, the use of electric indicators in the sparking circuits and frequent feeling of bearings and jackets is desirable in the interests of economy, no less in the small plant than in the large installation.

The Technically Trained Man and the Electric Railway Profession

The paper by Professor Norris on "The Technically Trained Man and the Electric Railway Profession" indicates a desire for cooperation between the technical schools and electric railway companies which we hope may prove to be mutual and grow stronger as the necessities and benefits of such cooperation may become better understood. The paper points out that the present managers of railway properties have largely grown up with the business, the experience of many dating back to horse car days. These men must be succeeded by others who are now in training, and this natural succession, together with the growth and expansion of the business, calls for men with the necessary characteristics and training, which class of men the technical schools are expected to supply. As the training of the schools requires to be finished and rounded off by practical experience, Professor Norris suggests an apprenticeship course which he outlines, giving from one to three months' experience in each of various departments.

The course suggested is evidently planned in general idea from the apprenticeship courses of the large electrical manufacturing companies, which annually receive several

thousand technical graduates into their shops, allowing them a few weeks or months in each of a number of departments of their factories and offices. Thus a technical graduate is given a few weeks as a helper in a coil winding section, a few weeks in a testing department, a few weeks in the designing room—not for the purpose of making him a finished expert in all of these and other lines of the business and to fit him for a general manager of the works at the end of his two years, but for entirely different purposes. One of these is to give him a general idea of the methods used in the various departments, which his education makes him particularly apt at acquiring. Another is to enable the company to determine in what particular department it can best use the apprentice; that is, to what part of the business he is best fitted by natural qualities as well as education, or whether it wishes to retain him in its employ in any capacity.

Lack of knowledge of the details of such practice by the manufacturing companies, and of the good results obtained by it, probably lay behind some of the adverse criticisms of the paper as expressed on the floor at the convention.

Such a system as suggested by Professor Norris, if adopted by a fair-sized railway property, would simply mean a substitution of technical graduates for six or eight common laborers or clerks. That there would be a rotation from month to month would in some departments be a disadvantage, but it would be more than offset by the capabilities of these men, who have had the benefit of four to six years of college training. Not one in fifty would expect to be competent to manage the smallest road at the expiration of his eighteen months' or two years' apprenticeship, but a few might be found so fitted. Nor should any expect to be advanced from one department to another unless he continued to "make good" in his work. On the other hand, the company would have under the eye of its officials a number of young men who are endeavoring to fit themselves for some branch of its business. None of the men could make himself an expert in any one department, but each will have gained a general experience in all and an opportunity to demonstrate his general capabilities and his peculiar fitness for some one department. As the apprentices "graduate" from the company's "course," some may be allowed to leave, but if the experience of the manufacturers, to quote again from other lines of the electrical industry, is to be relied upon, it will be found that places will present themselves for these men as fast as they complete their courses. Better still, as vacancies and openings in the service occur, technically trained men, with some practical experience, are already on the company's pay roll ready to fill them. This at no expense to the company, for the apprentices have earned all they have received.

The technically trained men are beginning to show themselves in the high places in electric railroading, in spite of the fact that most of them thus far have received their practical experience in a haphazard method by the rough rule of "starting at the bottom." The scheme proposed by Professor Norris is still starting at the bottom, but with a method, based on the fact that the candidate has the solid foundation of a specialized education. We should like to see the plan tried out by some of our companies. The exact time scheme as suggested may not be advisable, but could be modified by the ideas of the individual managements.

A Review of the Accountants' Convention

The eleventh annual convention of the Accountants' Association, just finished at Atlantic City, was in keeping with the high standards of previous meetings, and added to the reputation which the association already possesses as a business-like organization. The conventions of this association have been marked each year by an increasing attendance, and that at Atlantic City formed no exception to the rule. The programme, though not long in the actual number of papers and reports scheduled for presentation, was rich in topics requiring discussion and action, and of such a character as to appeal alike to urban and interurban operators. For instance, the papers upon "Depreciation," "Amusement Park Accounts" and "Mechanical Office Appliances" are equally pertinent to both urban and interurban roads, while the changes adopted in the classification of operating expense accounts were intended principally to supply the latter with a classification of operating accounts more suited to their needs than the previous standard, which was formulated before the development of the modern interurban railway. These facts are sufficient answer to the criticism, mentioned by President Tingley in his annual address, occasionally brought against the association, that it might be giving too much attention to accounting questions affecting city roads only.

Without doubt the most important topic considered by the Accountants' Association at its Atlantic City convention was the "Report on Tentative Classification of Operating Expense Accounts," presented by the committee on standard classification of accounts and form of report. It was undoubtedly knowledge that this report was to be presented at the Atlantic City convention which led to the attendance at that convention of representatives from the Census Bureau and Interstate Commerce departments of the national government and of the Public Service Commission of New York State, to all of whom any changes in the standard classification of operating expense is of vital interest. The new classification proposed by the committee, and in some measure amended at the convention by the other members present, was intended, among other objects, to provide a certain elasticity in its application so that it could be satisfactorily used, not only by the urban and interurban electric roads of the country, but so that it would be equally well adapted to the needs of electrified steam railroads. This object has been accomplished, and the classification, in its present form, is of such universal application to all electric railway operation that it is suitable for adoption for such use by the Interstate Commerce Commission and the various State Boards of Railroad Commissioners if they should see fit. Under these circumstances a brief review of some of its most important features may not be out of place.

In the first place, the new classification departs from the old by reducing the general or administrative accounts to a minimum by spreading into maintenance and transportation some of the items which have heretofore been charged to general expenses. For instance, injuries and damages and the legal expense connected with them have been assigned under transportation or maintenance, according to the cause of the injury or damage. By this classification, the department of transportation, which causes by far the

greater part of the expenses of this nature, will be charged with the expenditure applicable to its service only. This change will make possible a more exact statement of the cost of transporting the business of the company than has heretofore been available and will permit the investor or student of financial values more easily to compare the results of operation of two different classes of roads, steam and electrified steam roads for example. Stationery and printing expense has also been distributed between the departments using the material, and the cost of stables and store-rooms, after charging to the general account bearing their names, are entirely wiped out and distributed to the accounts benefited.

The classification also recognizes that all of the power manufactured at the power station is not used in transportation, and that all of the steam provided by the boilers of the power house may not be applied to the generation of electricity; that is to say, work cars and construction cars are operating over the property constantly and machinery in the shops may use part of the current manufactured. Under the new classification, construction and maintenance will be charged with the cost of producing this current. Similarly, if exhaust or live steam is being taken from the power house for the purpose of heating car houses or other contiguous buildings belonging to the company or outside interests, the power house expense will be credited with the value of the steam thus diverted.

Of course everyone recognizes that one of the principal advantages of a standard classification of accounts is the opportunity to compare the results secured on any property during different periods as time elapses. Theory would dictate, therefore, that after any form of classification which is fairly adequate to the needs of a property has been adopted, radical changes in it should be introduced only for overpowering reasons. In the opinion of the accountants assembled at Atlantic City, however, the time had arrived when such changes ought to be made in the interests of the entire industry. This conclusion was reached only after most mature thought, and is undoubtedly justified by the existing conditions. Conservatism can be carried too far, and we have no doubt that the inherent merits of the new classification of expense accounts, approved at Atlantic City, will be generally recognized and the new form adopted. We further believe that its general acceptance will follow much more quickly than was the case with the previous classification decided upon nine or ten years ago. At that time the classification, while simple and efficient, was somewhat of a revolution of operating customs. During the interim the merits of standards in this direction have become so apparent that the new classification will fall on much more fertile ground. Finally, the changes are not many, and practically no important company will find it difficult to introduce the new scheme in its accounting department. But few accounts would require to be analyzed for the year following its adoption to obtain a proper comparison of all accounts with those of the previous year. Indeed, we are told that one of the largest companies in the United States will adopt the new classification beginning Nov. 1. Coming as this classification does from accountants who have become experts in the logical allocation of the different accounts, we hope and believe that the differ-

ent State and national authorities upon whom devolves the duty of providing a classification of operating accounts for electric railways under their several jurisdictions will recognize that it is based on sound accounting principles and will adopt it accordingly.

The paper prepared by J. H. Neal, of the Boston Elevated Railway Company, upon the subject of "Where Maintenance Ends and Depreciation Begins" will bear careful study. It was unfortunate that the author considered that the subject assigned to him required his omission of a discussion on supercession, appreciation and amortisation. These three conditions belong broadly to the subject of depreciation of electric railways, and it is to be hoped that the association will at an early date consider these phases of depreciation. One important point brought out in Mr. Neal's paper is that no general percentages can be applied to all companies in all places to show the length to which maintenance can be carried or where depreciation begins. This is an exceedingly important fact and must be kept in mind because if a set of percentages used by one property is applied to another it may be either too large or is equally apt to be insufficient for the needs of the second company.

Mr. Neal's paper, which was printed in full on page 700 of our last week's issue, outlines seven methods of providing a fund for depreciation. Of these seven methods that of periodic revaluation is admittedly impracticable. Of the six methods which remain, it seems to us those dependent upon a fixed percentage of gross earnings or net earnings, and that providing for a proportion of betterments to be charged to operating expenses, are not based upon scientific and correct principles of accounting, although they may be better than nothing at all and in experience may work out to approximately accurate results. The method to be adopted should be more exact than either of these plans provides: for instance, an equal proportion of the original cost charged out annually, a fixed percentage on a gradually diminishing balance of original cost, an annuity plan, or some plan based upon the car mileage for tracks and cars, and kilowatt output of the station would be more logical from the standpoint of the real facts. There is so much to say, consider and understand in the subject of depreciation that a most careful consideration and study must be given to it before a universal plan of action can be recommended. The problem is further complicated by the comparative youth of the industry and other vital conditions. Nevertheless, the association has before it no subject of greater importance to the whole industry, and is to be congratulated that it has taken it up in the thorough manner which it has, and which is characteristic of the organization.

The paper on "Amusement Park Accounts," read by Frank J. Pryor, Jr., of the American Railways Company, will be particularly valuable to those companies operating parks for the promotion of traffic, and will serve to guide the managers of these promoters of travel to a correct understanding of the real conditions of their properties.

Another very practical effort made by the association to be useful to its members is the paper on "Mechanical Devices and Other Office Appliances," read by F. E. Smith, of the Chicago Union Traction Company. To many this

paper will prove a revelation of the very wide extent to which mechanical devices have become a part of office work. One cannot read the list of appliances described in this paper without realizing that the efficiency and output of the clerical force in the accounting offices of a street railway company have been greatly increased the last few years. Many of these devices are so precise in their action as to be a positive safeguard to correct work. Machines for typewriting and others for listing and adding items or for adding only have become very common, but it is probable that the remarkable field filled by the calculating machines is not fully understood outside of a comparatively few engineering and accounting offices. Mr. Smith's paper does not aim to cover every device which can be applied to office use, but the list which he gives is so long and so varied that it can hardly help but bring new ideas into those offices where the use of such machines is not now common. Papers such as this have been read before other associations, and they appear to us to be very proper, even though the fact that the names of the manufacturers and prices of the machines are quoted might at first thought appear to be somewhat of an advertisement. But we see no reason why an association cannot discuss such matters along the line of effort for improving the conditions and lightening the work of its members. It is also evident that such discussions must aid in promptly eliminating inaccurate machinery.

A point raised by one of the members in discussing this paper should be given serious attention by manufacturers of these appliances. We refer to the noise made by the operation of the machines. One of them, when operated singly, will not be a source of serious disturbance, but to place in an office a half-dozen or more machines operated in a rapid manner will result in a noise which is often very distracting to others who have work to do other than mere routine, and who are within hearing distance. We believe that manufacturers of these appliances will some day be able to reach an approximately noiseless method of obtaining the same results, and it is surely to be hoped this time is not far distant.

The nominating committee reported an excellent ticket for officers for the ensuing year and those which now hold the reins of government of the association should add to the already high prestige of the association. All have done important work for the organization and the elevation of Mr. Henry to the presidency was an honor particularly deserved. In connection with its report the nominating committee called attention to the fact that all of the new members, who have become a part of the association through the reorganization of all the associations, had not made their presence and personality felt. The committee expressed itself as being anxious to utilize this new material by placing some of these new members upon its ticket. Owing to the conditions as they exist, however, the committee found its desire to nominate the newer men a difficult task, because (much to the credit of this association) the names placed yearly upon its tickets have always been the subject of very serious consideration, in which work for the association itself, either in committees or on the floor of the convention, has been regarded as an important factor. We have no doubt this matter will regulate itself in time,

and that the newer members will more generally take advantage of the opportunity to participate in the discussions and thus make their personality felt. The Accountants' Association has been an important agency in making more generally known the existence of accounting talent among its members, and will no doubt continue to do so. It is in these ways that the association is demonstrating its efficiency and the value of the plan of a separate organization for each of the sections of the street railway business.

The Timber Problem

Mr. Weihe's paper in our issue of Oct. 12 calls up one of the gravest questions of the present time. Each year sees the supply of suitable wood for poles and ties grow less and the price more. The general scarcity of timber for all purposes is bad enough, but in railway work particular kinds of wood have been in the past regarded as necessary, and these kinds, none of them any too common at the start, are being rapidly exhausted. In all kinds of railroading the scarcity is felt, in electric railroading rather more than elsewhere on account of special requirements for heavy poles. The costs of replacements are yearly getting more serious and it behooves one to cast about and see what can be done. The three steps which may be taken in escaping the difficulty may be roughly specified as follows: First, substitution of materials; second, replenishment of material; third, reduction of the replacement demand. With a steadily increasing call for materials of construction it is clear that if something is not soon done the railroad interests must suffer. So far as substitution of materials goes it may take two forms, the use of materials of a new kind or those akin to the old kind. Into the first category falls the rapidly increasing use of steel, into the latter the substitution of wood generally regarded as inferior for the better sorts ordinarily used.

The use of steel in railway construction is bound to give at least temporary relief in certain directions. Steel poles, either lattice or tubular, have come already into large use on electric roads. On the high tension lines now common the steel tower construction seems to have been highly successful. The chief danger feared has been from lightning, but the operating reports which we have recently published seem to show that, perhaps owing to the greatly reduced number of the points to be insulated, the total trouble from lightning has been of very moderate extent. The scarcity of large cedar and chestnut poles is therefore less to be feared than it was, say, five years ago. On the other hand, the use of steel for ties, or, in fact, of any other material than wood, has thus far been of very questionable utility. Here, therefore, if anything of material value is to be done in the way of substitution it will be in using timber hitherto passed by as of dubious quality. This leads generally to increased renewals and therefore to added cost and the further depletion of the supply. As to the possible replenishing of material, this means reforestation, which is a slow process that cannot yield immediate relief. We wish we could make every reader of the *STREET RAILWAY JOURNAL* an apostle of forest replacement if only on ever so modest a scale. In the present state of affairs determined action by every far-sighted man is a necessity if the country is not to come to an evil pass for lack of wood. It has ceased

to be a question confronting only posterity, for the penalty of ruthless greed will fall upon the generations now living. For present help one must look elsewhere than to reforestation, not forgetting that this must be begun now to be of use a quarter of a century hence.

Mr. Weihe's paper deals especially with the questions pertaining to the use of cheap woods and to such employment of them as may tend to keep down replacements. It is a striking conception to think of timber-rot as an organism to be starved or poisoned, but it is nevertheless in strict accordance with facts. Given means to prevent rotting and one can get good service from woods which are not at all satisfactory in their natural state. A list of such woods Mr. Weihe gives, and though some of them are scarce and others are bad from a mechanical standpoint, there is hope in the very length of the list. Considering the well known good effects of preservatives, it is altogether remarkable that they are not more extensively used. The added length of service gained is important not only in delaying the time of replacement, but in lessening the care required prior to that time. The open tank treatment with coal tar creosote is so simple and relatively cheap that it would seem particularly adapted to railway work. It may very likely, however, turn out when a large number of varieties of wood are considered that the preserving process may have to be somewhat specialized. In treating cross arms and pins, for example, there is much to be said in favor of the vacuum process, since the insulating compounds used penetrate the wood less readily than does creosote. It is quite likely, too, that with rather soft woods a special kind of preservative with more "body" than usual would be desirable. However this may be there is not any doubt that careful treatment with preservatives will practically double the life of wood exposed to the weather, and that it pays, especially if one takes into account the increasing cost of replacements.

Acquainting Shopmen and Foremen with Costs of Materials

As a general rule shopmen and even foremen have very little idea of the costs of materials and of the cost of doing work in the shop. From this lack of knowledge an increased cost of doing work cannot help but result through the use of expensive materials where cheaper ones would answer just as well. In many cases also workmen in general would be more economical in the use of materials if they had definite ideas of their costs. An electrical repair man, for example, in taping a joint for a temporary connection will frequently use as much tape as if the joint were to be permanent. Again through not realizing the money value of the waste, he is likely to use tape for a variety of purposes when cord or wire or some other much cheaper material would serve this purpose equally well. Oil is another article which it is economical to employ freely to reduce bearing friction, but with which careless use constitutes a source of considerable loss. Of course in the employment of all supplies there is apt to be some waste, but no reasonable employee will object to instructions which tend to keep it at a minimum. The trouble is that many employees have a hazy idea regarding the cost of many of the supplies which they use, but this can often be corrected by frequent personal reminds, or by the posting of proper notices.

REHABILITATING THE TRACKS OF THE CHICAGO CITY RAILWAY

An ordinance passed by the City Council of Chicago early in this year requires the interests controlling the street railways of that city to rehabilitate practically their entire systems within three years from the time this ordinance became effective. This immediate rehabilitation includes the complete reconstruction of the tracks of a large percentage of the total mileage in the city, the provision of an adequate number of modern cars to handle traffic properly and the installation of sufficient additional electrical generating equipment so power to operate the various lines satisfactorily can be furnished. After the expiration of the first three years the remaining lines are to be similarly rehabilitated until the street railways in the whole city have been placed in a satisfactory operating condition. The same ordinance also covers a number of features concerning the franchises under which the street railways are to be operated and other relations between the street railway interests and the city.

The ordinance has been accepted by the Chicago City Railway, which owns and operates the lines on the south side of the city, and this company has already carried on a large amount of work according to requirements set forth. The Chicago Union Traction Company, which operates the systems on the north and west sides, will doubtless also accept the ordinance as soon as the interests controlling that company can adjust their finances satisfactorily.

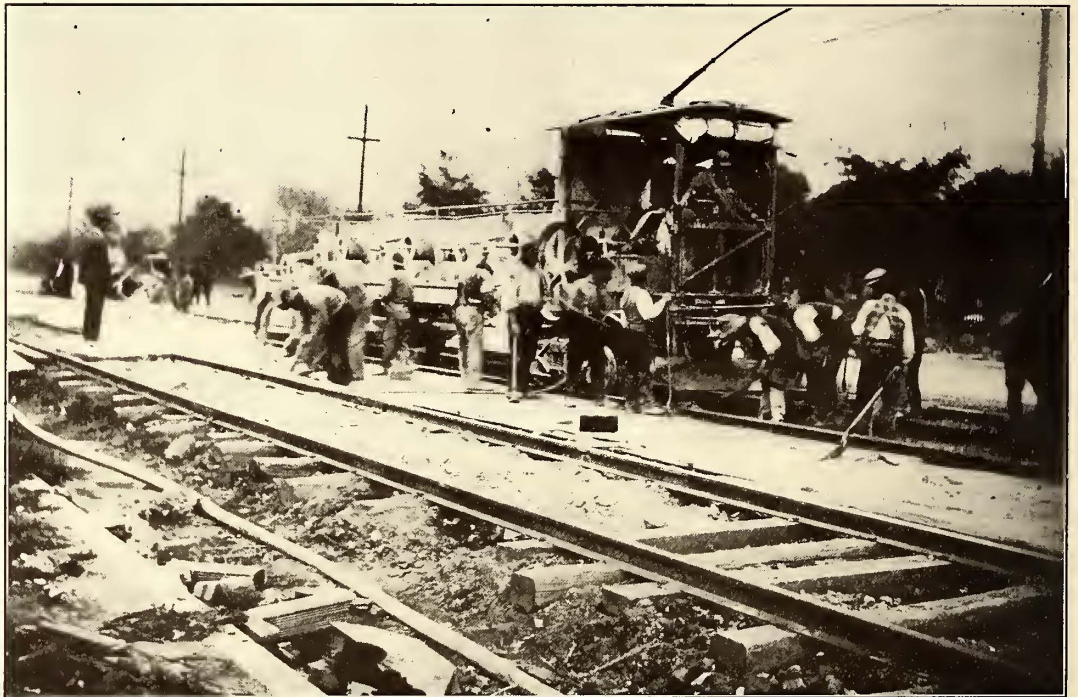
This rehabilitation of the three systems which embrace all the lines in the city is being done by and at the expense of the street railway interests, under the direction of a board of supervising engineers consisting of Bion J. Arnold, chairman; Charles V. Weston, representing the city; Harvey B. Fleming, representing the Chicago City Railway Company, and John Z. Murphy, acting for the Chicago Union Traction Company. Mr. Arnold is chief engineer and George Weston is assistant chief engineer of this board.

The Chicago City Railway Company had built about six miles of track on Oct. 1, and had over ten miles of track reconstruction under way at that time. An average of about one-third of a mile of single track is being laid each day by this company, and with favorable weather one-third of the total mileage to be reconstructed in the first three years will be finished in 1907, although the work was not started until late this season. The Chicago Union Traction Company is also carrying on a large amount of track reconstruction according to the standards specified by the board of supervising engineers, in order that this work will be

properly done in case the interests of this company are adjusted so the ordinances can be accepted by it.

Three types of track construction have been adopted by the board of supervising engineers for use under different conditions. Although these have been practically standardized, a few minor changes are to be made in them, so the board has decided not to make public the details of the different types. At the same time, the general features of the latter have been supplied to this journal. A standard girder rail, the cross-section of which is shown on page 844, is used in all three types. In one type the rails are laid on steel cross-ties, imbedded in concrete, and in the other two on wooden cross-ties, also imbedded in concrete; the difference between the two types in which wooden cross-ties are used appears largely in the construction of the sub-base on which the track is laid.

The steel ties are of the standard $4\frac{1}{2}$ -in. Carnegie girder section. They are placed on a heavy sub-base of concrete and are imbedded in a layer of concrete, which is continued $2\frac{1}{2}$ ins. above the base of the rails. In some of the work



CONCRETE MIXING OUTFIT USED IN PLACING TRACK SUBSTRUCTURE

that has been done these ties were spaced 5 ft. apart on centers, but in most cases they are 4 ft. apart on centers, and it is probable that the shorter spacing will be adopted as the standard. Sawed wooden ties, 6 ins. x 8 ins. in cross section and 7 ft. or 8 ft. long, are used. They are also imbedded in a layer of concrete, which for one type of track is laid on a sub-base of crushed stone, and for the other on a sub-base of concrete. These ties are spaced 4 ft. on centers.

The chief feature of all of the track construction is that the sub-structure is designed to be unusually permanent, and is built so the rails may be renewed with comparatively little difficulty and without disturbing the sub-structure. Tie plates are used on both the steel and the wooden cross-ties. The rails are attached to the steel ties by a clip, which can be removed and replaced readily, and which was designed for use in connection with this work. Screw spikes are used to attach the rails to the wooden ties, with the belief that the life of the latter will thus be considerably prolonged.

The standard grooved rail used in all of the track reconstruction was designed specially for the conditions existing in Chicago. This rail weighs 129 lbs. per yard and is rolled by the Lorain Steel Company. Although the section of the rail is generally the same as that of several grooved girder rails which have been used in various cities in this country, it differs essentially in several important features. After making a long series of studies of the effect of wear on previous rails of this type, considerable metal was added to the outside of the head just above the top of the web, as these studies indicated that an increase in section at that point would add materially to the serviceable life of the rail. The thickness of the metal directly under the groove has also been increased for the same reason. The outer edge of the rail is beveled and the pavement is finished $\frac{1}{4}$ in. below the top of the rail on that side. The head of the rail can thus be worn down until the flange of the car wheels ride on the groove before the treads of the car wheels reach the pavement. The slope on the outside edge of the head of the rail thus increases the permissible wear

ily enter and leave the tracks, while the shape of the groove is such that it will be nearly free from dirt.

TRACK CONSTRUCTION METHODS

The methods followed in the reconstruction of the two tracks of the line on Cottage Grove Avenue are more or less typical of the manner in which work has to be handled on the heavy traffic lines. This line is one of the most important in the system of the Chicago City Railway, extending southeast from the downtown business district for about nine miles to a connection with a line leading to South Chicago. Throughout practically its entire length it passes through a densely built-up residence district and connects with numerous important cross-town lines. It was completed prior to 1890 and was operated as a cable road until last year, when an overhead trolley was installed. As is common with a very large percentage of the total mileage in the city, the old rails on this line had not been renewed for years and scarcely any repairs, other than those which were absolutely essential, had been made during the long period that the city held the settlement of the

various street railway franchises in abeyance. These conditions, combined with the use of the long, heavy cars which were installed last year after the line was electrified, had put the tracks in very bad shape, so the track and the upper part of the sub-structure are being removed and replaced by the type of track having steel cross-ties that has been recommended by the board of supervising engineers.

The reconstruction work is handled in sections, a single track of each section being rebuilt at a time. On this particular

line the traffic is so heavy that it is impracticable to divert it all over one track, even for short distances, so a third temporary track, laid on the pavement at one side, is used to carry the cars of the regular track that is out of service. On some other lines traffic from one track has been diverted over a parallel line, but on Cottage Grove Avenue several conditions combine to make that arrangement also impracticable, so the temporary third-track is essentially necessary.

The cable formerly used to haul the cars over this line operated in a concrete conduit under the center line of each track. The rails were carried by chairs on iron brackets, or yokes, cantilevered out on each side of the heavy concrete conduit. The rails, chairs and part of the yokes have to be removed and a considerable part of the conduit has to be cut away before the new track can be built. This preliminary work is handled with considerable difficulty, particularly the cutting out of the concrete, which has been done thus far by hand with cold chisels, picks and so forth. Arrangements have been made, however, to install a num-



A STRETCH OF TRACK WITH STEEL TIES READY FOR SUBSTRUCTURE

to a maximum, with a wheel tread not exceeding $2\frac{7}{8}$ ins. The groove has been designed for cars with wheels having $\frac{5}{8}$ -in. flanges, with a possibility of an increase to $\frac{3}{4}$ in. While flanges of this width are scarcely suited for high-speed interurban cars, and some criticism has been offered against the adopted type of groove, the latter was designed strictly for traffic conditions in Chicago, where few, if any, high-speed interurban cars enter the city.

Two other conditions also had to be met in designing the grooved portion of the head of the rail, first, a groove which would prevent the wheels of vehicles entering it, and second, a groove which would be self-cleaning was desired. As both of these conditions cannot be perfectly fulfilled by the same groove, a compromise has been made between them in this case. The rail is rolled so the extreme outer lip of the groove is $\frac{1}{4}$ in. below the top of the head of rail. The granite paving blocks used between the rails are laid so their tops are $\frac{1}{8}$ in. higher than the outer lip of the groove, with the result that the paving will hardly wear below this lip. The wheels of vehicles can therefore read-

gang. These assistant engineers are all under W. F. Graves, who is division engineer in charge of track reconstruction for the Chicago City Railway.

Each assistant engineer reports daily to the division engineer the general features of his work. One of the blanks used for these reports is shown in accompanying illustration, from which the method of recording the location of the construction gang on any street for any day and of indicating the amount and kind of work done each day is evident.

The organization of the board of supervising engineers is separated into several divisions, R. F. Kelker, Jr., being division engineer, and C. E. Thomas assistant division engineer of track and roadway. Under this division is a corps of engineer inspectors, who follow closely the construction and report daily to the division engineer the progress and other features of the work.

Although the track reconstruction, as well as all the other rehabilitation work, is carried on at the expense of the street railway company, the cost of this work is to be added

THE NEW YORK CARS OF THE PAY-AS-YOU-ENTER TYPE

The New York City Railway Company has just announced that it proposes to begin on Dec. 1, on the Madison Avenue line, a service in which the new pay-as-you-enter car will be used exclusively, with the idea in mind of acquainting the public with its working and of learning what modifications, if any, are necessary before equipping other lines with the new rolling stock. In its effort thus to better conditions on its lines the company has the support of the Public Service Commission of the First District of New York, and expects to receive the cooperation of the city authorities to the extent of regulating street traffic by supervising vehicle traffic so as to assist the company in the free movement of cars.

In all 155 of the new cars have been ordered, and they will all go into service at the same time. In their essen-

CHICAGO CITY RAILWAY COMPANY
DAILY REPORT OF TRACK REHABILITATION.

NOTE.—TO BE IN DIVISION ENGINEER'S OFFICE IN DUPLICATE NOT LATER THAN 6:30 P. M. EACH DAY.

STREET _____ TYPE OF TRACK _____ SPECIAL ACCT. _____
DATE _____

GENERAL FOREMEN, TIMEKEEPER & CLERKS	
GANG FOREMAN	
LABORERS	
NO. OF TEAMS	
NO. OF WORK CARS	
ROLLER	HOURS

REMARKS.

+

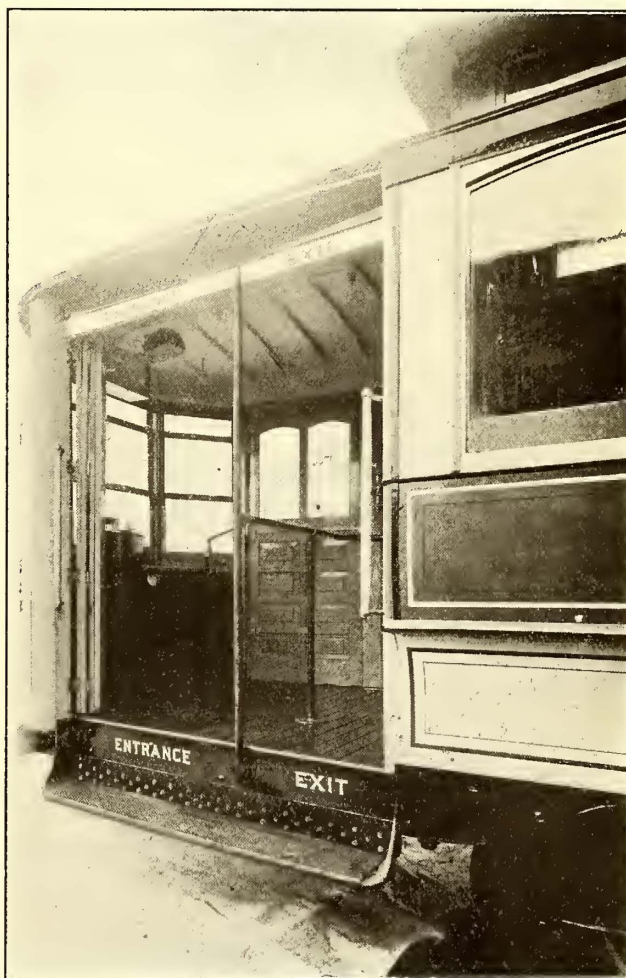
LEGEND.

- RAILS DISTRIBUTED
- EXCAVATION MADE
- BALLAST IN
- TRACK LAID & SURFACED
- CONCRETE
- PAVING COMPLETED
- JOINTS WELDED

TEMPORARY CROSSOVERS WILL BE NOTED WHEN PUT IN.

M. T. LEWIS

DAILY REPORT BLANK



VIEW OF PLATFORM, SHOWING THE DIVIDING RAIL

to a previously agreed valuation of the whole street railway system, and the city will have to pay this total value if it eventually acquires the systems, as maintenance, depreciation, repairs and renewals are provided for in the meantime by special funds supplied from the gross earnings. The detailed cost of the reconstruction is therefore very carefully kept independently by the company and by the board of supervising engineers. A large amount of cost data is thus obtained, which, aside from its value as a means of arriving at the total outlay, furnishes an excellent basis for estimating the expense of future work and for checking operations from day to day.

The Trolley Express Company, of New Haven, is trying out a delivery vehicle which is a combination of a delivery wagon and motor car. It is adapted to use power from the line when on the rails and has a storage battery equipment enabling it to make 10-mile runs on trackless streets.

tials they do not differ materially from the pay-as-you-enter cars in use in Montreal except that the cars are double enders, and the platform is 1½ ft. shorter than the rear platform of the Montreal car.

The interior of the car conforms to present New York City Company standards, in that longitudinal seats are used. The length of the cars has been increased, however, for the new ones will be 48 ft. over all, or nearly 11 ft. longer than the present standard equipment, while the body will be 40 ft. 6 ins. long, or 4 ft. longer than at present.

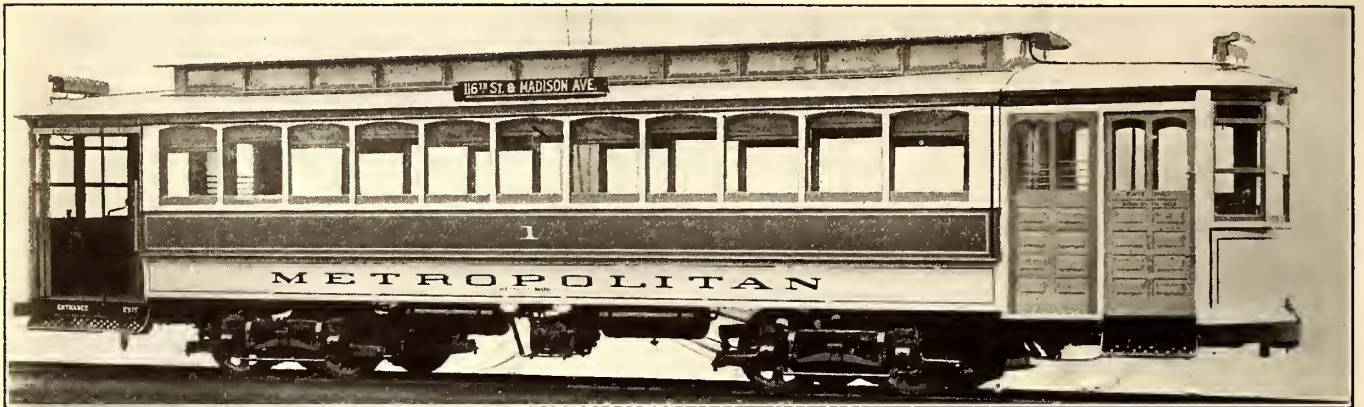
The old cars carried 4-ft. platforms having two outside wooden knees and two center knees of wood. The new cars have 7-ft. 6-in. platforms, the outside knees of which are composed of 8-in. Z-bars with a 2½-in. wooden filler

and also reinforced with 7 in. x $\frac{5}{8}$ in. plate, which Z-bars run under the side sill back to the body bolster. The two center knees are reinforced by 4-in. x 5-in. angle irons, which extend back beyond the body bolster. Supporting the platform are also two $2\frac{3}{4}$ -in. pull knees of wood.

The cars as noted are not single enders, but have the large platforms at both ends. As in the Montreal and

hold more than twenty people, but no one will be permitted to stand on the platform all the time, the idea being to keep it free from obstructions and ready to receive passengers at every stop.

Beside each window, on both sides of the car, will be a push button, by means of which a passenger who desires to alight can signal both the conductor and motorman as



ONE OF THE PAY-AS-YOU-ENTER CARS, DESIGNED FOR NEW YORK CITY SERVICE

Chicago types, the platforms will be divided by a railing to separate the incoming from the outgoing passengers, but the arrangement of the doors will be such that entrance will be restricted to the rear platform. There will be a swinging door for entrance and

the car approaches his destination. Passengers may leave the car through the sliding door at the rear or through the swinging and sliding doors at the front end.

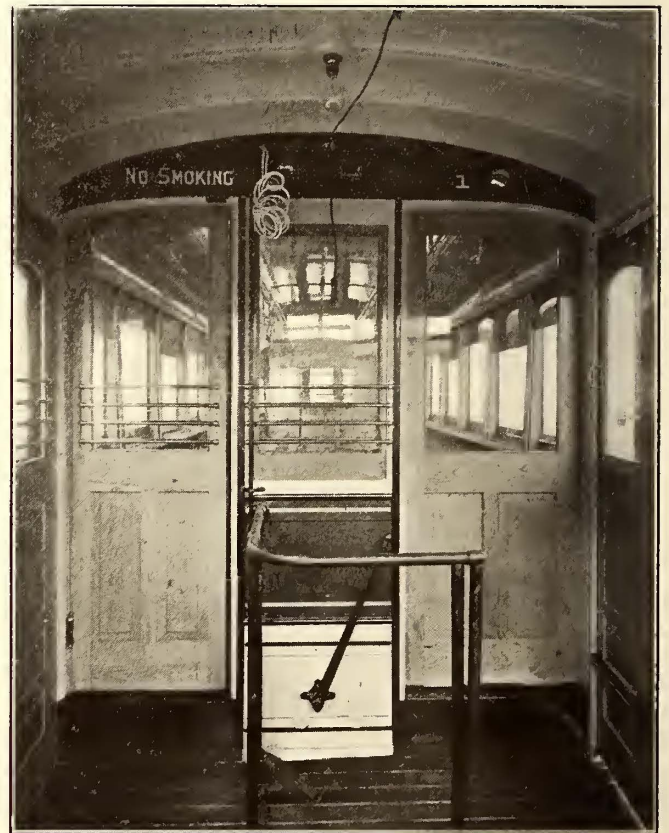
The conductor will never leave his station on the rear platform and will be at all times in full command of his



VIEW OF UNOBSTRUCTED EXIT OF MOTORMAN'S PLATFORM WITH ENTRANCE DOOR CLOSED

a sliding door for egress. The conductor will stand between the doors and behind a railing which extends to the edge of the running board and separates the passengers who are getting on from those who are getting off.

Passengers boarding the car will give the conductor their fare and pass into the car, where they can ride in comfort, free from the annoyance of the conductor forcing his way through continually to collect fares. The platform will



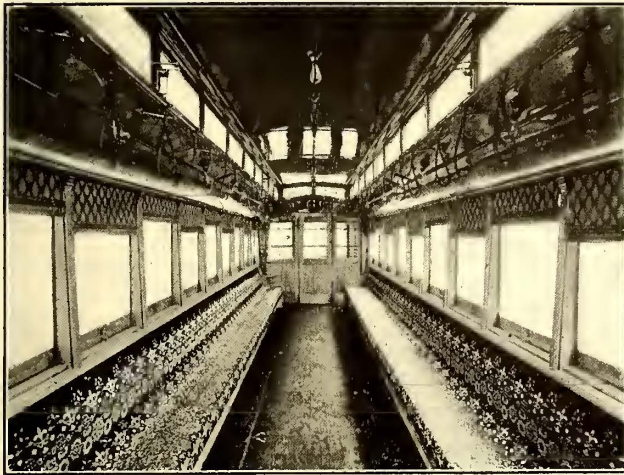
PLATFORM VIEW, SHOWING WHERE THE CONDUCTOR STANDS TO COLLECT FARES AND OPERATE THE DOORS

car. He will not give the starting signal until the running board at both ends, which he will be in a position plainly to see, is clear, and danger of a premature starting signal being given by some impatient passenger, as now frequently happens, will practically be entirely eliminated.

Plate glass will be placed on both doors and in the stationary part of the end of the car between the doors, so there will be a clear view forward and backward along the

street. Illumination will be furnished by three rows of incandescent lights in the ceiling, one row in the center and one on each side. For the greater convenience of the public an experiment will be made with a signal of colored lights displayed on the front of the car, which will indicate its destination.

The new cars will seat thirty-six people and it is proposed, if the city will cooperate in the effort to make them a success, to limit their carrying capacity to sixty-five people. This will prevent overcrowding during the rush hours, and during the non-rush hours it is intended to run enough cars so that there will be no crowding. If the city will give the street railroad company the reasonable use of its tracks, along lines which have been suggested, the company will run enough cars to handle the people promptly and rapidly. When a car has reached its capacity it will make no stops until some of its passengers have alighted.



INTERIOR, SHOWING THE LONGITUDINAL SEATING

The principal dimensions of the new type of car are: Length over end panels, 32 ft.; length over crown pieces, 47 ft.; width over sills, including sheathing, 7 ft. 4 ins.; width over posts at belt, 8 ft.; sweep of posts, $4\frac{1}{2}$ ins.; center of posts, 2 ft. 9 $\frac{9}{32}$ ins.; height from floor to ceiling, 8 ft. $\frac{5}{8}$ in.; height from track to under side of sills, 2 ft. $7\frac{1}{2}$ ins.; height from under side of sills over roof boards, 8 ft. $9\frac{1}{2}$ ins.; height from track to platform step, 1 ft. $4\frac{5}{8}$ ins.; size of side sills, 4 ins. x $6\frac{7}{8}$ ins.; size of center sills, $3\frac{1}{2}$ ins. x $4\frac{3}{4}$ ins.; size of end sills, $5\frac{1}{4}$ ins. x $6\frac{7}{8}$ ins.; size of inside sill plates, $15\frac{1}{2}$ ins. x $\frac{3}{8}$ in.; thickness of corner posts, $3\frac{5}{8}$ ins.; thickness of side posts, $2\frac{1}{4}$ ins. The wheel base of the trucks is 4 ft. and the diameter of the wheels 31 ins. There will be 4 G. E. 80 motors to a car. The inside finish is in ash, with the ceiling in bird's-eye maple. The cars were built by the J. G. Brill Company.

THE SOUTHERNERS GET TOGETHER

The representatives of southern railways at the convention last week met at the Marlborough-Blenheim on Thursday evening at the invitation of F. L. Markham of The J. G. Brill Company, J. L. Thurston of the Hildreth Varnish Company, Frank Gregg of the Adams & Westlake Company, Frank Archibald of the National Lock Washer Company, W. M. Bisel of the National Brake & Electric Company, J. E. Slimp of the Ohio Brass Company, J. L. Stayman of the Gold Car Heating Company, and N. B. Trist of the Schoen Steel Wheel Company, who are members of the Manufacturers' Association, and enjoyed an informal dinner and social evening, the object of which was to promote good fellowship among operating officials south of the Mason and Dixon line, who knew each other at present only

by reputation, so to speak. The representatives of the companies named appointed themselves an entertainment committee and saw to it that each guest was introduced to all the others present. T. H. Tutweiler, president of the Memphis Street Railway Company, accepted the post of toastmaster and called on a number of the guests for talks on different subjects. The meeting was a great success and it was therefore planned to meet again next year. A committee was appointed to attend to the arrangements.

The following is a list of the guests invited to the dinner: J. H. Wilson, president Mobile Light & R. R. Company, Mobile; S. W. Huff, general manager Virginia Passenger & Power Company, Richmond; H. N. Hurt, general superintendent Georgia Railway & Electric Company, Atlanta; A. M. Moore, master mechanic Georgia Railway & Electric Company, Atlanta; T. B. Ogle, superintendent Norfolk & Southern Railway, Norfolk; R. D. Apperson, president Lynchburg Traction Company, Lynchburg, Va.; A. B. Skelding, general manager Consolidated Railway Light & Power Company, Wilmington, N. C.; E. D. Latta, Jr., general manager Charlotte Electric Railway Company, Charlotte, N. C.; W. C. De Vane, master mechanic, Savannah Electric Company, Savannah, Ga.; Percy Warner, president Nashville Railway & Light Company; W. A. McWhorter, master mechanic Birmingham Railway & Light Company, Birmingham; Theo. Passalaigue, superintendent Charleston Consolidated Electric Railway & Light Company; D. J. Duncan, manager Chattanooga Electric Railway Company; John R. McGiveny, purchasing agent New Orleans Railway & Light Company; R. W. King, manager Lookout Mountain Railway Company, Chattanooga; E. A. Longmire, master mechanic Norfolk & Portsmouth Traction Company; F. J. Duffy, manager Beaumont Traction Company, Beaumont, Tex.; T. H. Tutweiler, president Memphis Street Railway Company; E. C. Hathaway, general superintendent Norfolk & Portsmouth Traction Company, Norfolk; J. W. Leadley, manager Pensacola Electric Company; Chas. Doerr, purchasing agent Birmingham Railway Light & Power Company; D. C. Frost, general superintendent, Lynchburg Traction Company; S. M. Coffin, master mechanic Mobile Light & Railroad Company; Wm. Glenn, Georgia Railway & Electric Company, Atlanta; A. D. McWhorter, master mechanic Memphis Street Railway Company; D. A. Hegarty, general manager Little Rock Railway & Electric Company, Little Rock, Ark.

RAILWAY STATISTICS FROM HOLLAND

The Railroad Commission of the Netherlands Government has just issued its manual of statistics of the steam and street railways in Holland for the year ending Dec. 31, 1905. The report shows that the total length of steam and street railways in operation at that time was 1979,291-km (1237.05 miles). Of these twenty-six, with a total length of 273,772-km (117.10 miles), were operated by horses; thirty-five, with a total length of 953,556-km (583.47 miles), were operated by steam; seven, with a total length of 644,475-km (402.8 miles), had a combined service of horse and steam; one, with a length of 61.6-km (48.5 miles), a combined service of horse, steam and electricity; one, with a length of 44.59-km (27.87 miles), by horses and electricity, and three, with a length of 37,315-km (233.22 miles), were operated entirely by electricity. The companies had a total of 1789,588-km (1118.49 miles) of single track and 189,708-km (118.57 miles) of double track. There were 411 locomotives, 1010 horses, 1926 passenger cars and 1642 freight cars. The number of passengers carried was 90,745,793; the receipts were 8,026,696 gulden from passengers and 1,107,670 gulden from freight.

FIFTEEN CYCLE, SEVENTY-TWO TON ELECTRIC LOCOMOTIVE AT ATLANTIC CITY.

One of the most interesting exhibits at the Atlantic City convention of the American Street and Interurban Railway Association was the 15-cycle, single-phase electric locomotive built by the Westinghouse Electric & Manufacturing Company and shown on the switch on Virginia Avenue, near the Board Walk. This locomotive was built for demonstration purposes under an agreement with the Pennsylvania Railroad, as described on page 92 of the *STREET RAILWAY JOURNAL* for July 20, 1907, and is No. 10,003, the other two locomotives built under the agreement having been of the direct-current type.

The locomotive is of the articulated type and consists of two separate halves, each of which, however, is complete in itself and each half has a maximum draw-bar pull of 20,000 lbs. Only one of these halves has been built and that one formed the exhibit at Atlantic City and is illustrated in the accompanying engraving.



A.C. LOCOMOTIVE SHOWN AT ATLANTIC CITY

The underframing of the locomotive is of the Atlantic type, of cast-steel with cast-steel end sills and gross girders, and provides for two driving axles with wheels 72 ins. in diameter and a pilot truck with wheels 36 ins. in diameter. The total wheel base of the half-locomotive illustrated is 20 ft. 7 ins.; the rigid wheel base is 7 ft. 6 ins. and the wheel base of the pony truck is 6 ft. 2 ins. The motors are mounted on the driving axles with the same sort of suspension as employed in the New Haven locomotives, but are more powerful, having a capacity on one-hour rating of 500 hp with a maximum of 800 hp and a continuous capacity rating of 375 hp. This gives a tractive effort for the total locomotive, maximum, 40,000 lbs., or on the one-hour rating of 14,700 lbs., or a continuous capacity of 9200 lbs.

An inspection of the interior of the locomotive shows great simplicity as compared with the New Haven locomotive, owing principally to the fact that no provision had to be made for d. c. operation. Moreover, the main transformer, the most bulky of all the auxiliaries, is carried under the floor on the bolster over the pony truck, where it is entirely out of the way. The rest of the auxiliaries are mounted on a raised platform extending down the center of

the car with passage ways on each side, and at this height are capable of easy inspection. The end of this raised platform nearest the motorman's position is given up to the unit switches, fifteen in number, for the transformer taps, and directly in the rear of these switches are the three compensating coils used in passing from one tap to another. These are followed by the electric blower with air ducts leading to the transformer and motor casings. Directly in the rear of the blower are the air reservoir and reverser, the latter provided with four pneumatic switches. These switches are of the standard pneumatic type but larger than those used in ordinary car control. The rest of the apparatus on the platform consists of the air sanders, the compressor motor, and the 20-volt storage battery with small-motor generator for charging. Space is left for a flash boiler for heating, if desired.

All control wiring is overhead and the interior walls of the upper part of the locomotive are lined with ground cork and white lead to prevent sweating and to act as a heat insulator.

The center of gravity of the locomotive is about 55 ins. above the heads of the rails.

The following are some general data of the complete locomotive:

Total weight, tons	140
Weight on each driver, pounds...	50,000
Weight on each of the two pony trucks, pounds.....	40,000
Weight of each motor, pounds ..	19,500
Length over-all (half-locomotive)	31 ft.
Height of locomotive	13 ft. 4 ins.
Width of locomotive	10 ft.

The locomotive is designed to operate with a voltage of 11,000 on the trolley wire and 275 on each motor.

A sign mounted on the locomotive shown at Atlantic City stated that during the past two and a half years 630 Westinghouse single-phase locomotives had been shipped to eighteen railway companies in America and Europe. These motors range from 40 to 250 nominal hp each, and make a total of 79,380 nominal hp. There are now on order 310 Westinghouse single-phase railway motors for shipment to 11 different railway companies, totaling 34,135 nominal hp. This makes a grand total of 940 Westinghouse single-phase motors delivered to or on order for 25 different railway companies, and aggregating 113,515 nominal hp.

CORRECTION ON CURTIS TURBINE TEST.

On page 452 of the Sept. 28 issue an article was published on the results of tests on several Curtis turbines. Through an unfortunate transposition of figures in printing, however, a 2000-kw turbine was stated to have carried 5915 kw; the actual rating of the turbine was 5000 kw and the load carried in the test 5195 kw.

In connection with the subject of college men for railroad work, it is interesting to note that Vice-president Thornwell Fay, of the Harriman lines in Texas, has written to the Texas Agricultural and Mechanical College asking for the names of graduates or students who want to learn railroading from the ground up. These students will be placed in every department necessary to give them a thorough education in railroading.

PROCEEDINGS OF THE AMERICAN STREET AND INTERURBAN RAILWAY
ASSOCIATION, OCTOBER 17 AND 18, 1907

An account was published last week of the meeting on Wednesday, Oct. 16, of the American Street & Interurban Railway Association. Other meetings were held Oct. 17 and Oct. 18.

THURSDAY'S SESSION

President Beggs called the meeting to order at 10:10 o'clock and said that the first order of business was the appointment of a nominating committee. He announced his intention of appointing as members of this committee as many of the past presidents of the association as were present at the convention. He then named Hon. W. Caryl Ely as chairman of the committee. Mr. Beggs explained that his purpose in appointing the past presidents as the members of the nominating committee was partly because they had no aspiration for office and they cannot consequently be charged with promoting their own interests, possibly, by being put on the committee; and also because they know what the requirements of the association are, and the responsibilities which devolve upon the officers of the association. Mr. Beggs said that he made this explanation in deference to the great number of very active members of the Association who were present. He then called for the report of the committee on rules for the government of motormen and conductors, of which committee E. G. Connette, of Worcester, was chairman.

Mr. Connette presented the following report:

REPORT OF COMMITTEE ON RULES

WORCESTER, MASS., Oct. 14, 1907.

GENTLEMEN: Your committee on Standard Code of Rules respectfully reports that data sheet No. 18 was sent out to the various members of the association, as well as to companies which are not members, asking for the following information:

1. Company.
2. City.
3. State.
4. Urban or interurban system.
5. Have you read the report of the Standard Rules Committee which was submitted to the convention at Columbus, Ohio, October, 1906?
6. If so, have you adopted these rules as standard on your lines?
7. If you have not adopted these rules as standard, would you kindly give the committee your reason for not doing so?
8. If you have not read the report of the committee, will you please send for a copy of the report to the secretary of the association?
9. Have you any suggestions for the consideration of the committee relative to the report submitted at Columbus?
10. Remarks.

A large number of these data sheets were filled out and returned, and your committee is pleased to report that a large number of the members of this association have adopted the standard rules, with such additions as local conditions required. A few companies have used the standard rules as a basis, but have not followed the recommendations of the committee in regard to preserving the integrity of the number, as recommended in the report submitted at the Columbus convention. Three of the larger companies report that they have not adopted the standard rules. One of them does not give any reason. Another gives as a reason that it has its own book of rules. Another says that it has a supply of rule books on hand and considers that its rules are suitable to local conditions, but favors the standard rules as far as practical. Another company reports that it has not adopted the rules, because they do not provide for a joint use of tracks by steam and electric trains. This, of course, is an unusual condition, which the committee has not yet considered.

Very few suggestions have been submitted for consideration. The committee, therefore, can only report progress as to further recommendations and that the matters now under consideration be taken up by the committee for the ensuing year.

Continuing, Mr. Connette said that there is one street railway company which controls a large number of properties which has its own book of rules, and that book of rules has been adopted on all its properties. There is another holding company which controls perhaps six or eight different properties. They are members of this association, but they have adopted their own book of rules, and do not seem inclined to change. The Central Electric Railway Association has taken the national book of standard rules practically as a basis for its rules, and has used them to a considerable extent, but the association has also gotten up a book of its own, claiming that there are a great many conditions on their systems which the national book of rules does not cover. The New York State Street Railway Association has practically adopted the national standard rules, and they are in effect in nearly all the cities in the State of New York. It seemed to the speaker, therefore, that the work of this committee for the ensuing year should be to make an effort to have a conference with representatives of the two companies mentioned, and also with representatives from the Central Electric Railway Association, and see if there is some way by which one book of rules which could be used by all of these different companies could be adopted.

President Beggs said he would like to supplement what the chairman of the committee had said. While Mr. Connette did not refer to the companies represented by the president of the association, he might have had them in mind. Mr. Beggs said his own companies, while urgently desiring a set of standard rules, had not adopted the national rules, nor had they had any new rules printed for the last two or three years, anticipating just such a result as Mr. Connette had mentioned. It is a very serious matter, if a company puts into effect a printed code of rules to change them within a short time, perhaps radically. Therefore, he had felt for the companies for which he was responsible in St. Louis and Milwaukee and in a number of smaller cities, that these rules were not in such condition that they could be adopted in their entirety. He had been waiting until the rules might possibly have become more thoroughly digested, and until the time that these other organizations to which Mr. Connette had referred might agree on something which they would all adopt as standard. When that conference is held, he would be glad to have his companies represented at that conference. It should be promotive of great good.

As there were no further remarks the report of the committee was accepted with the thanks of the association and ordered to be published in the proceedings.

HANDLING OF FREIGHT ON ELECTRIC LINES

Mr. Beggs then called for the paper entitled "Light Freight Handling by Electric Lines," by P. P. Crafts, general manager Iowa & Illinois Railway Company, Clinton, Ia., and general manager Joplin & Pittsburg Railway Company, Pittsburg, Kan. Mr. Crafts presented the paper which is published on page 872 of this issue.

After reading the paper Mr. Crafts said that of his company's receipts from freight, 71 per cent were from local

traffic and 29 per cent from transfer, and that percentage practically corresponds to the tonnage carried. He then exhibited various forms used in carrying on the business, and explained their purpose.

H. H. Polk, president of the Inter-Urban Railway Company of Des Moines then read his paper entitled, "Freight Service on Electric Railways." This paper appears on page 877.

Vice-President Brady, who occupied the chair, called upon C. Loomis Allen, of Utica, for some remarks.

Mr. Allen said that his observations had been the opposite of the views presented in the two papers. On his roads the handling of express or freight had been confined to what is known as package or light freight; in fact, this term had not been applied to the business, it was called "electric express." He thought that the majority of the roads in New York State which are transacting an electric express or freight business are doing so at the expense of their regular passenger business. Not only that, he believed that for every dollar they are putting in they are taking out only 90 cents. That was a pretty broad statement to make, but he believed when the accounts were analyzed and the proper charges made to the cost of conducting this department, these results have been produced in the past. At a meeting of the New York State Railway Association, held last month at Kingston, a committee was appointed to collect from the roads in New York State complete data as to the class of consignments, which are transported, and the cost of conducting the business. The New York Association hopes to have before another year passes some results that will be tabulated and will be valuable information to those located in that territory. He knew of but two roads in Central New York that are handling the freight business in carload lots. With one of these properties he is familiar and knows that for every dollar which comes in as receipts on this class of business the company is spending one dollar and a half to get the business.

C. D. Emmons, general manager of the Fort Wayne & Wabash Valley Traction Company of Ft. Wayne, Ind., said that the experience of that road in the freight handling business has not been as disastrous as that described by Mr. Allen. All must realize in starting a business of this kind that it must be developed. His company had been in the business for the past two years, and had had to increase its facilities largely. It started with earnings of from \$5 to \$10 a day for running a car a short time, until at present the receipts of the company's freight cars are averaging between \$75 and \$100 a day for ten hours' service. Last year's expense account, in which the investment, proportion of track labor, and all other items are included, according to the mileage of the cars, shows expenses about 60 per cent of the gross receipts from the business. The company has recently been obliged to attach a trailer car to its motor freight cars, and it expects by the development of the trailer business to reduce the percentage of operating expenses. In the speaker's territory the companies feel that the freight business is a large factor in the development of their properties, especially along the lines presented in the paper. The farmers along the line are already beginning to ask for sidings, to get coal in, to ship cattle and for other purposes.

E. F. Peck said that the Schenectady Railway Company is operating a freight and express business under a separate corporation, and thinks it is making money. All items of expense in connection with the freight business are

charged independently, and are not mixed with the company's passenger expenses. In its operation of the express and freight business last year the company showed 20 per cent profit, and it certainly intends to continue that line of business.

J. H. Pardee, of J. G. White & Company, New York, believed the question of the desirability of an express and freight service to depend largely upon the locality. If the electric railway company is in competition with good service on a steam road, it is at a great disadvantage in competing for heavy and carload freight. The steam railroad hauls freight in comparatively inexpensive cars, while the electric railway attempts to compete with cars costing at least seven or eight times as much. The interest and depreciation from these costly cars should not be lost sight of in estimating expenses. The profit in the express business depends very largely upon the classification. The speaker thought for this reason that the classifications of the steam roads and of the old line express companies should not be followed, but that each road or each class of road operating under similar conditions must decide upon its own classification. If this was properly done the business would be profitable. The reason that a great many people ship by electric express instead of steam express is that the electric railway company delivers the goods more quickly and in better condition and that the service is more satisfactory. An electric railway with an express business and quick delivery can therefore get the business at a higher price. At one time the speaker thought it was necessary to go below the steam railroad rate. He does not now think it is necessary to do so. The business can now be got at a rate on which there will be a profit.

Mr. Allen said that his original remarks might be misunderstood without an explanation. The papers under discussion referred to the carrying of freight, which did not seem to be profitable under many conditions. There is little doubt, however, but that an electric express proposition can be made successful. The Detroit companies were the pioneers in that business and he would like to hear their experience.

George W. Parker, of the Detroit United Railway Company, said that company had been in the electric express business since 1891. At first it adopted tariffs corresponding to those of the steam railroads, but as the company's experience in the handling of freight and express broadened, changes have been made in the tariffs. On some of the company's properties the business has been profitable, on others it has not been so profitable. On at least one line it will have to be abandoned. He doubted whether an attempt to do car load business in electric cars was a good thing if it required the supply of high class equipment for low class traffic.

Mr. Polk explained that his paper was on carload freight and that the freight is handled in box cars without any motor equipment whatever and pulled by an electric locomotive. He claimed there was a profit when \$15 to \$25 or \$35 could be earned per car and eight or ten cars were hauled in a train. The freight department of his company is kept entirely separate from the passenger department, and his line is built entirely on a private right of way. The company is not bothered by any franchise restrictions and is permitted to conduct its business with any kind of equipment. The company is charging the Iowa distance tariff.

G. B. Hippee, of Des Moines, also bore testimony to the profit of the freight business. He said no investment is

required in the rolling stock to haul the freight. The cars are furnished by the steam railroad companies, to whom they are afterwards delivered. He thought the freight business more desirable than the passenger business, if for no other reason than the question of hazard.

W. S. Dimmock, of Seattle and Tacoma, believed his company did a larger freight business than any other company which had been mentioned. His company has in service between 300 and 400 freight cars and is operating some twelve to fourteen freight trains per day. Some of those trains haul as high as 700 and 800 tons per train at a speed of fifteen to eighteen miles per hour. The freight service on other lines is operated by single cars, or with cars that are equipped with motors and are not run as a train. The amount of business handled has increased so fast that the company wishes it had about 200 more cars to take care of it. In fact, the State Commissioners now consider the company is on a par with steam railroads as to the business carried and the importance of it, and has placed the company under its control, as has also the Interstate Commerce Commission. It might be interesting to mention the different classes of freight handled. The company is carrying daily between Seattle and Tacoma some 2000 to 3000 gallons of milk which are picked up through the valley and taken into Seattle each morning on a special train. It has two or three trains per day of ten or twelve cars of coal—60,000 lbs. capacity cars—pulled with a locomotive or an ordinary box car, each car equipped with four type G-66 motors. The company also has a refrigerator line. It was fortunate in having some packing houses located in Seattle and some in Tacoma. Each one of them desires to ship its product to the other city, so the company gets the freight going and coming. The cars operated on those trains are built on purpose for the hauling of beef, which is hung in the cars by halves; in other words, the beef is not quartered after it is killed. The cars are about 14 ft. high and operate around 8-deg. curves and at high speed. The beef is killed in the afternoon at 3 o'clock and at 5:30 it is hung in the refrigerator cars. At 6 o'clock the cars pull out of Tacoma or Seattle, as the case may be, for the opposite city, are gotten in there in the course of a couple of hours and are unloaded. While the train is being unloaded the same motor car is at the local freight stations picking up other freight, and the cars are hauled back and ready for service the next day. This business is conducted on the interurban line between Seattle and Tacoma. In addition the company operates two local freight trains out of each city per day, and has all the business, both in carload lots and local freight, that it can possibly handle. The expense of conducting this freight business, including the depreciation of the cars, averages 45 to 52 per cent of the gross receipts. Very desirable flat cars can be purchased for from \$450 to \$550, delivered on the coast. The company also has some 12 miles of sidings on its suburban lines, where it is hauling lumber in trains of five and six cars, in many places over 5 and 6 per cent grade. This service brings in a very handsome revenue. The company does perhaps \$20,000 freight business, gross, per annum. These 12 miles of sidings mentioned extend into the private property of people owning timber and woodlands. The siding is generally built at the expense of the man owning the ground or the timber, the rails being leased by the railway company for that purpose. In addition to the wood business the company has found that its small package freight business is increasing very rapidly. For instance, upon one line about 7 miles

long, on which no business had ever been done, the company's traffic manager thought such traffic could be made profitable. During the first two or three months the business was practically nothing. Now, at the end of one year, the company has one freight car running constantly and is thinking of putting on a second one, and the local package freight is so heavy that it is impossible to take care of it without additional equipment. All this was upon a line where it was impossible to see any business a year ago. The company also loads heavy standard steam cars with lumber, shipping it into the Middle West over such lines as the Northern Pacific and the Great Northern; these roads furnish the cars. A number of mills are located upon the electric lines and the shipper has the steam road freight cars turned over to the electric line at the transfer point.

In answer to questions Mr. Dimmock said his line had steam road competition. There are two steam lines paralleling the electric line between Seattle and Tacoma. There is also a heavy competition by boats. The freight traffic is not allowed to interfere in any manner with the passenger traffic. Trains are dispatched under the standard rules of the steam roads, with telegraph operators and station agents. The total operating expense of handling this freight service, which does not in any way interfere with the passenger traffic, will be somewhere between 45 and 50 per cent. Speaking of the passenger traffic Mr. Dimmock said that the company has passenger trains operating between Seattle and Tacoma every hour, both ways, and at a speed of sixty-five miles per hour. Most of the freight business is done at night. Motormen are paid at the rate of 33 1/3 cents per hour, conductors at 30 cents per hour and brakemen at from 22 to 23 cents per hour.

Mr. Crafts added some more details in connection with the freight business done by his company and which he said was small in comparison to that mentioned by Mr. Dimmock and Mr. Polk. It is not strictly package freight. The company started in to call it "express," but decided later upon the term "freight." The rates charged are those given in the standard classification distance tariff permitted by the Iowa Railway Commission. The company averaged last year each week approximately 550 individual shipments, of which 60 per cent, or 333, were local shipments. Of the local shipments 50 per cent are minimum shipments for which 25 cents each are paid. This freight is carried in a \$10,000 38-ton car, which is filled day in and day out. As to the expenses: The company charges in to its freight operating expenses the salary of a solicitor, a portion of whose time is devoted to developing passenger traffic, but a very small portion. The company maintains an extra clerk at each end of the line. It also charges to its freight business the rent, light and telephones that are required outside of the passenger business, all books, stationery, etc. It also charges off 3 per cent of the gross receipts for damages and claims, etc. It charges to the car the same power cost per car mile that is charged to the passenger coaches, and the same proportion of expense of maintenance for the roadway and car. Motormen and conductors are paid 22 cents per hour for all platform time. The company has found that the service develops traffic. For instance, a storekeeper is enabled to carry a very much smaller stock of goods because he is certain that he can get a supply at almost any moment within two or three hours of the time he notifies the railway agent to send in an order. His carrying cost is reduced and the railway receipts per ton are increased. The company has steam road competition and for some time had boat competition also.

Mr. Hegarty, of Little Rock, moved that the Accountants' Association be requested to take up the question of a classification of freight accounts to comply with the requirements of the Interstate Commerce Commission. The motion was seconded and unanimously carried.

OTHER PAPERS

The following papers were then read: "A Department of Publicity," by J. Harvey White, publicity manager, Boston Elevated Railway Company, Boston, Mass.; "Advertising from the Standpoint of the Street Railway Company," by E. W. Warnock, general passenger agent, Twin City Railway Company, Minneapolis and St. Paul; "The Problems of the Small Electric Road," by H. S. Cooper, manager, Galveston Electric Company, Galveston, Texas. These papers and reports are printed in this issue.

The meeting then adjourned until Friday morning at 9:30 o'clock.

FRIDAY'S SESSION

President Beggs called the meeting to order at 10 a. m. and read several acknowledgments of the invitation to attend the convention sent out from the secretary's office. They included letters from Henry M. Watson, of Buffalo, past president of this association; Randall Morgan, of the United Gas Improvement Company of Philadelphia; William M. Carroll, a member of the Public Service Commission for the First District of New York; Governor Hughes, of New York, and others. The president then appointed as a committee on resolutions C. D. Wyman of Seattle, H. G. Davies of Cleveland, and C. S. Sergeant. He then called upon H. G. Davies, of the Cleveland Railway Company, chairman of the insurance committee, to present the report of that committee. This report is published on page 890 in this issue.

FIRE INSURANCE

President Beggs said he desired to emphasize what Mr. Davies has said as to the importance to most companies of the insurance question. It is usually left with some subordinate, or the head of some department, usually the accounting department, and goes along from year to year as a matter of form, without much attention being given to it. In President Beggs' own companies it is one of the matters which has always received the personal attention of the president. That may be due to the fact that a long time ago he was engaged in the fire insurance business for some years. He attaches so much importance to this matter of fire insurance that the Milwaukee Company has in its fire insurance reserve fund \$450,000 of high-grade 5 per cent bonds; in other words, for ten or eleven years it has been getting in condition each year to secure what it was entitled to receive from an insurance standpoint, for a company that took care to keep its properties in such condition as to reduce the fire hazard to a minimum. The company is looking forward to the time when it may carry its own insurance and save a very large proportion of this 55 per cent. The delegates should not think from this that the fire insurance companies make 55 per cent profit. That is not the case. Under no circumstances can over 50 per cent of the amount paid by the insuring public in any line of business—except in the case of some great catastrophe—be returned to the insured. The first draft on every insurance premium paid is probably 25 per cent, which goes to the state agent as the commission. That can never come back. Then the tax on fire insurance premiums in the State of Wisconsin is about 7 per cent of the entire amount of premiums paid. Then there is all the expense of the advertising which must be paid for out of the premiums, and

in every case the advertising runs into a very considerable amount of money. The history of the companies some years ago was that there had not gone back to the insured in this country quite 50 per cent. The balance is that which the insured, if they were in position to do it, could save. If a company can carry its own insurance it can save the expense of maintaining the organization and the taxes which must be paid. Therefore, a company which will put itself in position to carry its own insurance is performing a service to the entire insuring community, because the employes, knowing that fact, are unconsciously just a little more careful around the car house and other properties. The speaker said he was most rigid in inspecting fire insurance matters. He would go through the shops and into every out-of-the-way corner, around the belt drive and lockers and cupboards, and under the benches where the men throw old overalls, greasy rags and things of that kind. A great mass of people who pay for insurance know nothing about the great hazard which arises from these conditions, and in very many cases there is no proper inspection by the company of these things. He also inspects very carefully the matter of car wiring. He has been able, therefore, possibly because of dealing with the insurance matter in this way for the past ten years, to get a lower rate on insurance than many others do, at least during part of the time. The Fire Underwriters now have a wholesome respect for the \$450,000 of 5 per cent bonds mentioned, because he is in a position to say unless he gets what is a reasonable rate of insurance he will not carry the insurance with any company which will not give a reasonable rate. In the city of St. Louis the railway company is doing the same thing. It has 1000 shares of the company's preferred stock, par value \$100, as an insurance reserve fund. The interest goes into the general fund. In that case the speaker pursued the policy of carrying a fixed percentage of the company's gross receipts to its fire insurance reserve fund, and from that pay every expense incident to carrying the insurance. He believes that a railroad company having its car houses in the outskirts of the city to a very great extent, and spreading over a large area, can afford to carry its own insurance, if it has accumulated enough reserve fund to pay for one large fire, but to do this requires years of preparation.

H. N. Staats said that about three years ago he received an invitation from Mr. Davies, of the Cleveland Electric Company, to attend the convention of the American Street Railway Association, to bring to the attention of the executive committee of the association the advisability of appointing an insurance committee. That was the first step taken. Great encouragement was received from Mr. Ely, then president of the association. They returned to Cleveland, and at once took steps to organize what is known as the American Railway Insurance Company, the Electric Mutual Insurance Company, and the Traction Mutual Insurance Company, with the end in view of interesting the members of this association in carrying their own insurance at actual cost. Insurance is a fixed charge—no one can get away from it. The idea is to make that fixed charge as low as may be practicable, and the speaker claimed that can be done better through a mutual organization than through an organization of companies whose only interest is to make the largest amount of money out of the capital invested. When a company deals with the old-line companies it is dealing with companies who put up their money for a specific object. The old-line companies have a very necessary place in the community and are needed, but through co-operation on the part of this association

with other associations, the companies can carry their insurance at actual cost, and that cost will be less than that at which the old-line or stock-insurance companies can carry it.

Bruce E. Loomis, speaking for the insurance companies, said that the latter would always be pleased to take up any insurance questions with the railway companies and meet all requests so far as they could. Mr. Sweetland spoke along the same lines. Mr. Beggs referred to the important assistance which the underwriters had given to the committees of the association during the previous year. He then asked for the report of the committee on the construction of modern car houses. This report was presented by E. J. Cook, of Rochester, and appears on page 880.

MUNICIPAL OWNERSHIP

The next report was that of the committee on municipal ownership, which is printed on page 893. C. D. Wyman, the chairman of the committee, presented the report.

A. E. Lang, of Toledo, called attention to the reference in the report to the attitude of the labor unions on the subject of municipal ownership, which he thought should be modified. While some labor organizations do favor municipal ownership, there are a great many men who are reluctant members of such bodies. The recent vote on this subject in Chicago made it clear to his mind that when the subject is properly presented to a labor union, the more intelligent of them will act wisely. While he was ready to vote to approve the report and spread it upon the records in full, he thought that sentence might wisely be modified.

Gen. G. H. Harries agreed with Mr. Lang. He said that there are in a few places labor leaders who are strongly socialistic, and who thoughtlessly—because all the leaders are not necessarily thoughtful men—have favored municipal ownership; but the big strong men of the labor movement realize that municipal ownership, if it ever should be an accomplished fact, will mean death to unionism, and they oppose it. In the inner workings of the strong labor organizations, there is opposition to municipal ownership, because if it should be carried out there would not be any unions of trainmen, as there are no unions of policemen, firemen or of any other municipal organization. That seems to be the only thing in the report that ought not to be universally endorsed.

Mr. Wyman thought that had not been the position of the labor unions in Seattle, Chicago and elsewhere where contests had arisen. He was glad to know that the labor unions are coming around to a right view of the situation.

President Beggs said that in Milwaukee there had been a referendum three times upon the question of installing a municipal electric lighting plant for the city. Since the passage of the law placing all public utilities under a State Commission, every civic body in the city of Milwaukee, some five of them, the Chamber of Commerce, the Merchants & Manufacturers' Association, the Business Men's League, and every commercial organization, had by special resolution memorialized the Common Council to drop the question of a municipally-installed plant, upon the ground that now having a public commission they are assured of fair rates and that there is no necessity for the city spending a million and a half dollars to put in a municipal electric lighting plant with the abuses possible and which they recognize. But the labor unions had taken directly the opposite course by specific resolutions, and if it were not for them the matter would be dropped, notwithstanding that certain politicians are still attempting to foist themselves

upon the public as the champions of a municipal plant.

Upon vote the wording of the sentence referred to was left to the committee.

ATLANTIC CITY AS A PERMANENT MEETING PLACE

President Beggs then introduced A. T. Bell, president of the Atlantic City Hotel Men's Association, who discussed the proposition to select Atlantic City as the place of meeting of the association for a period of five years. The proposition of the Hotel Men's Association in this connection was printed on page 811 of the STREET RAILWAY JOURNAL for last week. Mr. Bell, in setting forth the merits of this plan said that since the organization of the Hotel Men's Association, which is now in its third year, special effort had been made to provide such facilities as would induce such gatherings as those of the association to go to Atlantic City. It was found that first, the transportation facilities were good from all the large centers of population; second, the hotels were there with private bath rooms and plenty of first-class accommodations, but there was lacking what might be called an ideal place for exhibits. As a makeshift, however, the exhibits had been placed on Steel Pier, and with the kind assistance of the United States Weather Department, it had been a success. Mr. Bell admitted, however, that in the event of a storm the pier would not have been an ideal place. Drop curtains had been provided which would all have been spread out at an angle and the passageways would have been protected as well as possible. Nevertheless, it would not have been comfortable, and everyone must realize that fact. To overcome that, and provide some other facilities that are necessary, the Hotel Men's Association has taken the subject up with the owners of the next large pier below, known as Young's Ocean Pier. Those gentlemen have at the solicitation of the hotel men made the proposition contained in the circular. Their proposition involves the building of what would be an ideal permanent exhibit hall. The proposed building is a long, narrow one, with two aisles, spaces on each side of the aisles and double spaces in the center, a building which would be in all perhaps two-thirds of a mile long. At the end of this would be meeting rooms for the association and its affiliated and allied associations. It would have a place for the storage of crates, boxes and the paraphernalia that come with the exhibit. In addition to those more permanent facilities there would also be live steam at suitable pressures, electric feeder wires at all the different commercial voltages, and in a general way everything else that is usually so expensive and troublesome to get. It is proposed to connect the pier with the steam railroads so trains of exhibits could be brought on and the cars run through these aisles on the tracks, which would be depressed and could be covered after the exhibits were in place. A large traveling crane passing over the center would take the heaviest exhibit right out of a car and put it in position. In fact, so far as the handling of exhibits and large machinery is concerned, it would be a large first-class machine shop. On each side of the building would be a long porch, about 20 ft. wide, on which there would be a set of tracks 3000 ft. long. The track exhibits could be placed on those tracks to have not only the manufacturing exhibit, but also the track exhibit together. In addition to that, on this ocean pier, they would not be hampered by what is known in Atlantic City as the restrictions of easement deed. In reference to the latter he said that to have the ocean side of the boardwalk clear, all the property owners had signed covenants granting to the city the right to restrict the placing of buildings outside of the pier,

the sale of commodities outside of the pier, and against other things, among which is this—they are not permitted to restrict the public from coming in. On the Ocean Pier, however, which was built before the signing of these deeds and the forming of these covenants, these restrictions do not lie, which fact has been determined by carrying the matter through the highest courts. It would therefore be possible, if it were so desired, to exclude the public entirely from this exhibit structure during the time of the convention, which is a matter that some of the exhibitors think very important. The idea, further, is to manage this exhibit hall on something like what is called the American plan of a hotel. If one goes to any of our large hotels and engages a room, he is shown to the room and finds not only the room there, but a carpet, beds, mattresses, bureau, a piece of soap and everything else needed, and when going to the dining-room, the meals are found. In the case of an exhibitor bringing his exhibit to the Steel Pier, so far as he knew, as soon as he engages his space he has to go out and buy everything essential. Their idea is to provide all these essentials and include them in one cost. It is not intended, however, to restrict individual exhibitors from using their own taste in some individual decoration, and of course they must provide their own exhibits and make them as attractive as they can.

This corporation has in mind the expenditure for this purpose of about \$1,500,000. Should it be found later on that the sum necessary would be \$2,000,000, that sum will be forthcoming provided the financial plan, which would have to be considered more in detail by the individual exhibitors, is agreeable to them. The question that comes up to the association was whether in a broad general way it would be advisable for the association to determine upon Atlantic City as a meeting place for five years, which is the term the pier people feel they should be assured as a starter for the enterprise. There are, of course, some large questions which the association must answer for itself. He would, however, say that the consideration of this proposition must be taken up from three points of view: First, whether the erection of such a building is of sufficient advantage to determine its use for five years; second, the Manufacturers' Association must determine in a general way that these proposed facilities are satisfactory; and then the individual exhibitor must be asked whether he sees in it a good business proposition. The financial interests connected with this pier are determined to make an improvement. They must make it in the immediate future. If favorable action were taken at once they would go ahead along these lines, and if the action taken is unfavorable, or postponed, they felt they must go ahead along other lines. Therefore, some action either on the part of the association favoring the plan or placing the authority in the hands of a committee with full power to take definite action later, would be entirely acceptable.

President Beggs said without attempting to determine what the association will do or should do, it would be his judgment that the association was not prepared to take definite action immediately whether it would be justified in committing the American Street and Interurban Railway Association and its affiliates to locating its conventions for a period of five years. It seemed to him it would be better to refer the entire matter to the incoming officers and executive committee, giving them full power to go ahead in the premises, so if it was found to be desirable they could act upon the suggestions made by Mr. Bell without postponing it for another twelve months. The officers and executive committee members of necessity act in entire harmony with

the Manufacturers' Association. At the same time, not forgetting that, if the association chose to determine to meet at any one particular point for five years, he knew the loyalty of the Manufacturers' Association is such that they would cheerfully acquiesce. Yet, because of that disposition, he felt strongly that whatever is done should be in concert and after full consultation with the officers and executive committee of the Manufacturers' Association. Mr. Beggs pointed out that between 3000 and 4000 members of the various associations and their guests are present at the meetings. Nearly all of them wish a room with a bath, but there are very few cities in the United States that would give that. The Jamestown Exposition, for example, would have been favorably considered, as satisfactory accommodations could have been made in temporary structures for the exhibits, but the executive committee knew Norfolk could not accommodate the representatives properly. If the Jamestown Exposition had been chosen, instead of the officers of the affiliated associations being the objects of congratulations on every hand by those who came to Atlantic City for the admirable accommodations and the arrangements made for their entertainment, they would have been subject to denunciation. Although at Columbus, the best elements of the society of that city turned out en masse to receive the association and their entertainment had been most hospitable, the hotel accommodations had not been anywhere near so ample as at Atlantic City; yet Columbus compared favorably in hotel accommodations with other cities of the same size anywhere. He would be perfectly satisfied always to come to Atlantic City with the conventions, but that question must be decided for the best interests of the association. Mr. Shaw then took the chair, as Mr. Beggs was obliged to leave for another engagement.

A. H. Classen, of Oklahoma City, said he came some 3000 miles from Atlantic City and would like to have the conventions further toward the center of the United States. It ought to be St. Louis, Cleveland, or some other point of that kind, but he thought the executive committee and the manufacturers' committee were eminently fitted to decide the matter. He therefore moved that the matter be referred to the executive committee. The motion was carried.

HEAVY ELECTRIC TRACTION AND CARRYING MAIL

The next business was the report of the committee on "Heavy Electric Traction," presented by Calvert Townley, of New Haven, as chairman. The report, which will be found on page 889 of this issue, was approved. It was followed by the report of the committee on compensation for carrying mail. In the absence of G. Tracy Rogers, of Binghamton, N. Y., chairman of the committee, the report was presented by Gen. G. H. Harries, of Washington, D. C.

Mr. Harries said he had no formal report and had not consulted with Chairman Rogers, who might want to submit the material on hand in a more definite manner. An effort was made by the chairman of the committee and Secretary Swenson to interest the Postoffice Department and the House Committee on Postoffices and Post Roads in the matter of increased compensation for carrying the mails on electric cars. The committee had already succeeded in securing legislation to increase the maximum compensation for carrying pouch mail from 3 cents to 4 cents. At the same time, Congress has placed a very serious restriction in the law, by providing that on electric railways, outside of cities exceeding a length of 20 miles, the compensation received by such roads should not exceed the rates paid to the steam railroads. This was an unfair discrimination,

causing many railway managements more or less distress because the price paid must necessarily be less than the actual cost of rendering the service. It was agreed some time ago with the then Second Assistant Postmaster-General, Mr. Shalkenberg, that the service on the electric cars was very good and the compensation very small, much less than it ought to be. Since that time he had spoken with the new Second Assistant Postmaster-General, James T. McCleary, and with the Postmaster General himself, incidentally bringing this out. While no organized campaign is yet in progress, still the new committee should be instructed to make an effort to secure the maximum of 6 cents for the pouch service, and not less than 25 cents a car-mile on the postal car service at the next session. The 20-mile limitation should be extended to 50 miles. The Department is friendly, and in spite of the fact that there has been a desire on the part of Congress to decrease the compensation for carrying the mail, that desire will not extend to the electric suburban and interurban service.

He believed if the committee will go to work at once upon the Postoffice Department it will not have to do very much to secure favorable recommendation for a proper increase and the removal of the serious disability caused by the 20-mile limit. With the Department's recommendation, and in view of the report of the Postmaster General now being written for presentation to Congress, the committee on Postoffices and post roads will be likely to give the association's committee a hearing, at least. They might get some concessions, if not everything. He therefore moved that the committee be instructed to proceed immediately before the Postoffice Department, so the report of the Second Assistant Postmaster-General and the report of the Postmaster-General himself may each contain recommendations satisfactory to the association. Mr. Harries said in conclusion that the committee would present a more formal report later.

T-RAIL CONSTRUCTION

The paper on "The Use of the T-rail in Cities" was then read by C. Gordon Reel, vice-president Kingston Consolidated Railway Company, Kingston, N. Y. This paper is printed on page 883 of this issue.

P. P. Crafts asked Mr. Reel what was the particular object in using the 90-lb. rail, over, say, 70-lb. rail.

Mr. Reel said his idea was that he would be putting in something very much more substantial. The standard 90-lb. T-rail is sold up at \$28 a gross ton, and the 70-lb. T-rail on the basis of \$36 a ton. As four times 9 is 36 and four times 7 is 28, he received 20 lbs. of good steel as a present.

Mr. Crafts replied he referred to the standard A. S. C. E. section, but Mr. Reel said there would hardly be room enough, as he thought the 70-lb. T-rail is only 5 ins. high.

Mr. Crafts said it was $4\frac{3}{4}$ ins. high.

Referring to an illustration in his paper, Mr. Reel pointed out the difficulty of getting the paving bricks over the heads of the spikes with the 70-lb. rail. There would be no room for a sand cushion. The 100-lb. section looked ideal for eastern railroads to use.

Mr. Crafts said his company has just taken over a road with 2 miles of double track equipped with 70-lb. standard section, and that the matter of height is the trouble anticipated. They are going to operate seven-ton cars over the track, and find there seems to be little space for the sand cushion.

Mr. Reel said that a $\frac{1}{2}$ -in. sand cushion would be sufficient.

Mr. Crafts asked if any one had any experience with the 70-lb. section. Mr. Reel replied that Mr. Peck, of Schenec-

tady, had made some 80-lb. rails which he believed have been entirely satisfactory.

F. W. Coen said the experience which the Lake Shore Electric Railway Company has had with 70-lb. T-rail in paved streets is unsatisfactory. The brick will not stay. It has abandoned that construction entirely, except on some streets where there is little service or very light cars. With heavy cars the rail is absolutely unsatisfactory. If a brick is used with the nose under the rail the other end of the brick will turn out.

Mr. Crafts thought that to be the trouble. His company purchased cars with wheel flanges of the standard M C B dimensions, $1\frac{1}{4}$ ins. each way, and anticipating something of the kind has been obliged to reduce the height of the flange.

P. E. Mitchell said that on the Knoxville Railway 2 miles of double track was paved with 70-lb. T-rail, but the company uses a special brick with the corner hollowed off, the same fitting under the rail. This brick comes in half and whole lengths, placed alternately. The brick is manufactured by the Southern Brick Company. About every seven or eight feet an extension joint of pitch is put in and the balance cemented. The brick is tapered as it goes under the ball of the rail, leaving a groove small enough for the cars.

Mr. Crafts feared that to get a sand cushion he would have to taper the brick where they go under the rail.

Mr. Mitchell said he got a $\frac{1}{2}$ -in. or $\frac{3}{4}$ -in. sand cushion. There is no turning up, because it is one solid mass across the pavement.

Theodore Stebbins then presented his paper on "Interurban Railway Fares," printed on page 866 in this number.

This was followed by the paper on "Municipal Ownership in Great Britain and in the United States," by William J. Clark. Mr. Clark's paper will be found on page 885 of this issue.

MUNICIPAL OWNERSHIP AND PUBLIC RELATIONS

Mr. Clark said he would not read his paper because it was composed principally of statistics which convey more meaning in print than if spoken. However, he would take the opportunity of making a few off-hand remarks as regards the attitude of the labor leaders in this country and abroad on this great question. Dealing more directly with the labor leaders in this country, in the work of the Civic Federation, of which he has been a member for the last two years, he said no class of men work more thoroughly and earnestly on the investigation than the labor leaders. He believed the most valuable contribution to the literature on this great subject is that which will soon appear by Prof. John R. Common and J. W. Sullivan, both eminent labor leaders. (Mr. Clark then read two or three pages at the termination of his report.)

Vice-President Shaw then called for the report of the committee on public relations, of which W. Caryl Ely is chairman.

Mr. Ely said the report of the committee had been read and considered the day before at the executive session. Mr. Wyman's committee had covered considerable ground covered by the report of the public relations committee and the members had heard several papers along the same lines. Therefore the reading could be dispensed with. The burden of the report deals with the important movement all over this country in the way of regulation and control through Public Service Commissions, and is suggestive of possible desirable action on the part of the association. This report is printed on page 891 of this issue.

Mr. Ely added that a short time ago while considering

this subject and the kindred subject of municipal ownership, it occurred to the committee that a paper upon municipal ownership by W. J. Clark would be a very desirable thing. Mr. Clark was communicated with only a short time ago, but with the proverbial willingness to undertake labor in the general good so characteristic of him, he had prepared the paper already mentioned. Under the circumstances it seemed to Mr. Ely that a special vote of thanks should be extended to Mr. Clark for his kindness in preparing the paper. This motion was carried.

NOMINATIONS

W. Caryl Ely as chairman of the nominating committee presented an entirely unanimous report and suggested the following gentlemen for election to the respective offices in the association: President, Calvin G. Goodrich, of Minneapolis; first vice-president, James F. Shaw, of Boston; second vice-president, Arthur W. Brady, of Anderson, Ind.; third vice-president, Thomas N. McCarter, president The

hibit of railway appliances for the inspection of the members of this association; and

Whereas, The arrangement of the exhibits with respect to artistic effects as well as with regard to convenience and facility for examining them gives evidence of the most careful and painstaking thought; and

Whereas, The social and entertainment features provided by the American Street & Interurban Railway Manufacturers' Association have been most carefully planned and carried out.

Now, therefore, Be it resolved that the American Street & Interurban Railway Association place on record its appreciation and thanks to the American Street & Interurban Railway Manufacturers' Association, its officers, executive committee and its members collectively and individually, for their energetic and tireless efforts in producing these most successful results.



CALVIN G. GOODRICH,
PRESIDENT,
American Association.



JAMES F. SHAW,
FIRST VICE-PRESIDENT,
American Association.



ARTHUR W. BRADY,
SECOND VICE-PRESIDENT,
American Association.



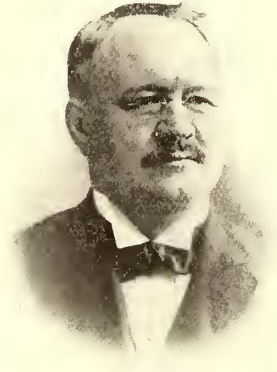
THOMAS N. McCARTER,
THIRD VICE-PRESIDENT,
American Association.



FRED G. SIMMONS,
PRESIDENT,
Engineering Association.



F. R. HENRY,
PRESIDENT,
Accountants' Association.



H. R. GOSHORN,
PRESIDENT,
Claim Agents' Association.



BERNARD V. SWENSON,
SECRETARY,
American Association.

OFFICERS AND EXECUTIVE COMMITTEE, AMERICAN STREET & INTERURBAN RAILWAY ASSOCIATION

Public Service Corporation, Newark, N. J. Members of the executive committee: the president, vice-presidents, Frank R. Henry, of St. Louis, president of the Accountants' Association; Frederick G. Simmons, of Milwaukee, president of the Engineering Association; H. R. Goshorn, of Philadelphia, president of the Claim Agents' Association.

On motion of Mr. Harries the report was adopted.

The report of the committee on resolutions, of which C. D. Wyman was chairman, was presented by H. J. Davies as follows:

REPORT OF COMMITTEE ON RESOLUTIONS

I. *Whereas*, The American Street & Interurban Railway Manufacturers' Association has assembled and placed for examination a very complete, excellent and interesting ex-

II. *Whereas*, The members and guests of the American Street & Interurban Railway Association are under very great obligations to the Mayor of Atlantic City, the Atlantic City Business Men's Association, the Atlantic City Hotel Men's Association, the Atlantic City Bureau of Publicity, the telephone and telegraph companies and the technical and local press, for numberless courtesies and attentions, including facilities for exhibiting street railway materials and appliances and other privileges and attentions.

Now, therefore, Be it resolved that the thankful acknowledgments of this association be tendered therefor.

III. Resolved also, That the association is indebted to its officers for their faithful work during the year to the authors of the papers that have been read and to the standing

and special committees of the association for their carefully prepared and valuable reports.

C. D. WYMAN,
C. S. SERGEANT,
H. J. DAVIES,
Committee.

The report of the committee on resolutions was adopted.

W. Caryl Ely offered the following resolution as the outcome of the discussion at the executive session the preceding day:

Whereas, Experience has demonstrated the desirability and usefulness of our existing affiliated organizations; and

Whereas, It has appeared from discussion that another organization of similar character should be organized, to which should be committed lines of work pertaining to transportation, traffic and general operation.

Now, therefore, Be it resolved, that the executive committee be and hereby is requested to take such steps as it may deem desirable to encourage the formation of such an organization.

Mr. Ely stated that this resolution had received the unanimous approval of the executive committee. The resolution was unanimously adopted.

MISCELLANEOUS BUSINESS

Ralph Sweetland, as the representative of the National Fire Protection Association, wished to thank the association for inviting it to be present and extending it the privilege of the floor.

L. T. Peck, of the Honolulu Street Railway Company, gave some interesting information regarding the correction of the abuse of transfer privileges. In Honolulu under his company's franchise there was a provision that for one fare a passenger could go from any point on the system to any other point on the system. Under the franchise he was

rejection, but if he attempts to get back to his starting point when he presents his original transfer ticket to the conductor of the original line, the conductor sees not only a transfer ticket punched for his own line but a transfer ticket in which the zone on the line is marked, showing the beginning of the passenger's journey. If he comes back to some point on that zone, he cannot go through as the courts have held that to go over the same rails in either direction a second time constitutes an attempted fraud on the corporation. This system has been used successfully for two years.

Mr. Beggs, who returned to the meeting at the conclusion of Mr. Peck's remarks, made a farewell talk in which he heartily thanked the entire membership of all the associations for their uniform courtesy and consideration during his term as president. He could not bespeak for the new officers and executive committee greater consideration, or give them greater assurance of the continued successful administration of the affairs of the association than to be able to assure them of continued and united support from the affiliated associations. He would always look back to his administration as president of this association as one of the greatest honors he had received in the street railway business. Without reservation or qualification he pledged to the incoming officers and executive committee of the annexed and affiliated associations as earnest work as he had given in the past. Mr. Beggs was heartily applauded, after which the meeting adjourned.

FOREST HILLS STATION PLANS FILED

Plans for a temporary terminal station at Forest Hills have been filed by the Boston Elevated Railway Company with the Massachusetts Railroad Commission for approval. The new drawings cover the elevated structure over Washington Street from the vicinity of Burnett Street to the New Haven crossing over Washington Street. A new type of structure is shown where the line is to cross the Arborway, consisting of seven steel and concrete arches, four of which are over roadways and three over bridle paths. These will require a single line of columns at this point, with masonry coping above. The whole structure will harmonize in appearance with the masonry arches which carry the steam railroad tracks across the parkway.

The station will consist of two platforms, with a line of double track between them for elevated trains, and a similar arrangement in the street for surface cars. The whole structure roofed in will be about 360 ft. long. On the steam railroad side will be a platform 20 ft. wide with four exit stairways in two groups. The loading platform for elevated trains will be 45 ft. wide, and in addition to two stairways is to have two escalators connecting the surface-car platforms and the elevated level. An office, waiting room and toilet rooms will be located at the north end of the elevated loading platform.

For reversing the elevated trains a double cross-over is provided beyond the station. A spur track is also provided, on the south side, leading into the company's land and available as a connection to car houses or shops. Surface cars are to be run beneath the elevated platforms, where cross-overs are provided for reversing them if desired. The layout also allows the movement of surface cars through the station. The entire station location is held to be on a temporary basis, pending developments in proposed interurban connections, which may make necessary a large terminal station on private land.

TRANSFER ISSUED BY PUNAHOU LINE Good for This Day & Trip Only	HONOLULU RAPID TRANSIT & LAND COMPANY.																A.M.	MIN.	P.M.
	NOT A STOP-OVER * - * NOT TRANSFERABLE																1	0	1
	Good Only for a single continuous trip from meeting point with transfer line for passenger for whose exclusive use this Transfer is issued, by the FIRST CAR of the line indicated by the punch mark, going in the direction indicated.																2	5	2
	<i>L. T. Peck</i> MANAGER																3	10	3
	Jan. | Feb. | Mar. | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec.																4	15	4
	1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16																5	20	5
	17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31																6	25	6
	S. Nuuanu N																7	30	7
	S. Alakea St. N																8	35	8
	W. Hotel St. E																9	40	9
King St. E																10	45	10	
MANOA VAL.																11	50	11	
W. ALAKEA RD.																12	55	12	
TRANSFER TO																			
SPECIAL																			
WEST																			
EAST																			
SOUTH																			
NORTH																			

HONOLULU TRANSFER DESIGNED TO PREVENT CIRCLE RIDING

not compelled to take the shortest route, neither could the company select the route for the passenger. The result of this law was that the transfer privilege was abused. The company has a number of parallel lines and several cross lines intersecting them, and soon found that by the use of the ordinary transfer system there was a great deal of around-the-circle riding. After standing several lawsuits, being worsted every time and losing a good deal of money for suits for the ejection of apparent circle riders, the company adopted a through transfer—that is, when the passenger pays his fare he is given a transfer which he keeps to the end of the journey. It not only identifies the line on which his journey originated but the zone of the line on which he started. On line No. 1, if a passenger gets on between zone A and zone B, it is punched on the ticket to show that he got on line No. 1 between zone A and B. The passenger holds this ticket and can go in a certain di-

RECENT IMPROVEMENTS IN CATENARY LINE CONSTRUCTION AND METHODS OF INSTALLATION

The important developments now going on in both the single-phase and high-voltage direct-current railway fields lend considerable interest to the following details which the General Electric Company has just made available of its latest work in catenary construction. This information includes not only a description of the latest designs but also of the methods of installation.

DIFFERENCES BETWEEN THE OLD AND NEW OVERHEAD SYSTEMS IN POLE SPACING, FLEXIBILITY, ETC.

In the older types of line construction in which the trolley wire is supported directly from a bracket or cross span, the limit for pole spacing with reasonable sag in the trolley wire is approximately 100 ft. The minimum deflection attainable with this spacing necessitates heavy upward tension on the trolley to maintain contact with the wire. In the catenary construction, however, the spacing of the poles is only a matter of weight of span which each pole can carry, and of sag permissible in the messenger cable. It has been found that, without unduly increasing the height and the weight of the poles, the spacing may be 150 ft. on tangents.

The catenary system which is equally applicable to bracket or cross-span construction, consists essentially of an arrangement of a slack messenger cable and suitable hangers so distributed as to maintain the trolley wire practically without sag between suspension points, or to limit the sag as may be necessary for various conditions of operation. The blow of a collector passing suspension points at high speed is thus greatly reduced. The shorter distance between hangers necessitates less stress in the trolley wire and reduces danger of break in the line.

The catenary system, therefore, offers the mechanical advantages of a longer pole spacing and a flatter trolley wire; flexibility in the line to obviate the hammer blow of the collector at suspension points; and reduction of danger of mechanical breakage.

The insulating surfaces practicable with the molded insulating devices used in the older type of construction, while ample for 500-volt direct-current work, are inadequate for the higher potentials of alternating-current distribution, and an entirely new system of insulation has been adopted. In bracket construction, the messenger is carried by porcelain petticoat insulators on the bracket arms, and in cross-span construction the messenger is insulated either by strain insulators introduced in the span wire or by an insulated messenger hanger or support. The strain insulators for this purpose and for all pull-offs and anchorages for voltages up to and including 3300 volts are of specially treated wood, while those for higher voltages are of porcelain under compression. The entire insulating system is designed for three times the normal working voltage under the severest weather conditions.

The three-point suspension in which, with 150 ft. pole spacing, the hangers are 50 ft. apart has been found ample to maintain a sufficiently level trolley wire for operation with wheel collector at speeds up to sixty-five miles per hour. A new element, however, is introduced by the sliding pantograph or bow trolley which, on account of its great inertia, requires a closer spacing of the trolley support.

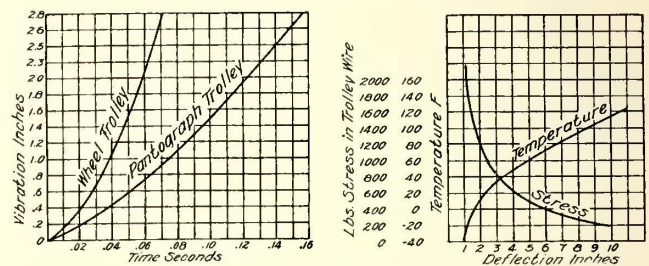
Fig. 1 shows comparative curves of time required for vertical vibration of wheel and pantograph trolley respectively. It has been found that an eleven-point suspension renders the trolley wire sufficiently level for the relatively

sluggish action of the pantograph collector. This brings the hangers 13.6 ft. apart, and for all operative conditions with sliding collectors the eleven-point suspension is recommended. Fig. 2 shows the effect of temperature variation on sag and stress in trolley wire with the three-point construction.

The standard hangers for supporting the trolley wire from the messenger consist of screw clamp ears adapted for grooved trolley wire, and interchangeable on Nos. 00, 000 and 0000 wires. These hangers have sister hooks or clamps for engagement with the messenger wire. The ear and sister hook grip are slotted to receive the flat steel connecting strip or stem to which they are riveted.

In span construction, and also generally in bracket construction where the pole line is on the outside of the curve, the alignment of the trolley wire with respect to the center line of the track is maintained by bridle pull-offs acting upon both trolley wire and messenger. In bracket construction the alignment of the trolley wire may be maintained either by the use of pull-off guys between poles in conjunction with bridle pull-offs or by the closer spacing of poles and the use of steady braces.

In double track, center pole, bracket construction, the setting of special pull-off poles may in some cases be



FIGS. 1 AND 2, TIME CURVES OF VERTICAL VIBRATION AND TEMPERATURE VARIATION OF THREE-POINT CONSTRUCTION

avoided by the use of spreaders which maintain the distance between the two trolley wires. The pull-offs are lead from the inner end of the spreader to a bridle between the poles. The steady brace is also employed for "staggering" the trolley wire on tangents, where a sliding collector is used, to avoid wearing grooves in the contact surface of the collector.

With catenary construction a special method of anchoring has been adopted, differing somewhat from that used with ordinary direct-current trolley construction, to avoid the possibility of a sliding collector catching on the anchor cables. Both the trolley and the messenger wires are anchored to the point of support of the messenger by a bridle pull-off and strain insulator located directly over the trolley wire. The point of suspension which may be either bracket or cross span, is in turn anchored to adjacent poles.

All pull-off and anchorage devices allow ample clearance for the bow trolley when tipped out of normal horizontal position by super-elevation of the track or uneven loading of the car.

MATERIALS

The angle iron bracket, by reason of its horizontal stiffness, greatly facilitates initial adjustment of the messenger during installation and insures maintaining uniform sag in messenger span throughout the length of the tangent.

The angle bracket consists of two 2-in. x 1½-in. x ¼-in. angle irons joined at the extreme end by a space block and rivet, and by a second space block approximately 2 ft. nearer the pole. The guy rod which supports the bracket from the pole top is attached to this second space block, and the slot

formed between the angles by the space blocks through which the insulator pin bolt passes provides means for transverse adjustment of the messenger with respect to the track. The inner ends of the angles are sprung apart to span the pole to which they are lagged or bolted.

For double track pole construction a bracket arm having two guy rods and two sets of fittings may be used. These double brackets are riveted at one end and bolted at the other to allow for spanning the pole in installation, these are 16 ft. over all and suitable for 14-ft. track centers.

The T iron bracket arm has all of the advantages of the angle iron bracket, excepting its stiffness in the horizontal plane, which is regarded as fully warranting its higher cost. The guy rod is attached to the arm approximately 2 ft. from the end and the extension beyond the guy rod attachment provides for transverse adjustment of the messenger.

The insulator pin for the angle iron bracket arm is of malleable iron and engages the slot in the end of the bracket, and is clamped by a bolt passing upward through this slot. The insulator pin for the T iron bracket arm is of malleable iron with a hook bolt.

The insulators for messenger insulation are for voltages up to and including 3300, and for voltages above 3300 up to and including 11,000 volts, respectively. The upper shell of the 11,000-volt insulator is grooved to limit fractures from missiles and leave sufficient porcelain for insulation against normal stress even after the edges have been broken off. This grooving of the petticoat affords considerable insurance against grounding of the line.

The strain insulator for potentials up to and including 11,000 volts was first described in the STREET RAILWAY JOURNAL of Jan. 19, 1907, on page 115. In this insulator, the material under mechanical stress is entirely in compression and the crushing strength of the material is considerably above the maximum stress to which it can be subjected in service. The ultimate strength of this insulator exceeds 7500 lbs.

For voltages not exceeding 3300, specially treated wood strain insulators are used on account of their lower cost. These insulators are of hickory split into sticks before being turned to insure straight grain, and treated to exclude moisture.

Steady braces or strains are used for maintaining transverse alignment of a trolley wire on bracket line construction and for staggering the line on tangents where sliding collectors are used. Transverse adjustment of the trolley wire is obtained by adjusting the clamp on the bracket arm.

Spreaders are used for transverse pull-off for double track, center pole, bracket construction, where special pull-off poles on the outside of the curve are not available. A bridle is run between the line poles, and the end of the spreader on the inner side of the curve is pulled off to this bridle, the thrust of the spreader pushing the line on the outer side of curve into proper alignment.

The Form CA hanger, for supporting the trolley wire from the messenger cable, is attached to the messenger cable by a malleable iron sister hook, and to the trolley wire by a device similar to the screw-clamp grooved wire ear. The ear and sister hook are connected by a stem of flat steel strip riveted to both sister hook and ear. The flat steel stem has the advantage of lightness, which is important for the avoidance of hammer blow from the trolley. It also presents minimum resistance to wind stresses, and if bent by accident, as in breakage of the line, may be readily straightened.

The company's standard hangers are non-adjustable, so proper installation of the line may be insured. The messenger wire supporting the trolley wire must have a uniform tension throughout its length to prevent unbalancing of the pull in the cable which would result in distortion of the spans and require an unreasonable amount of maintenance to keep a line up properly.

The standard span and conditions for tangent track, are as follows: For sliding collectors—Pole spacing, 150; number of hangers per span, 11; sag of messenger wire, 16 ins.; and distance from point of support of messenger to trolley, 20 ins. Conditions are the same for a wheel collector excepting that there are three hangers per span. Special hangers are made to accommodate conditions.

To provide clearance for sliding collectors and to avoid "pockets" or angles between trolley wire and pull-off wire, in which the collector may catch, the anchorage devices are designed to raise the anchor guys above the plane of the trolley wire. In the Form CA anchor hanger, the strip connecting stem of the Form CA intermediate hanger is replaced by a solid rod, and the sister hook by a clamp which holds the messenger against longitudinal movement. Both ear and clamp are provided with rings for attachment of the span wires. The anchor eyes are devices fastened to the bracket arms to which the main anchor guys and the bridles from the anchor hangers are attached. The anchor clamp is inserted in the span wire in cross span construction in place of the regular span wire messenger hanger. The anchor turnbuckles are for the adjustment of the strain wires between the anchor hangers and the eyes for clamps.

The span wire messenger hanger is for the attachment of the messenger to the cross span, and is used throughout tangents and curves in cross span construction, excepting where replaced at anchorages by the span wire anchor clamp. The feeder ears are of bronze with tinned lips for soldering to the trolley wire. The short distance between supports prevents any danger of the ear turning over and obstructing the passage of the collector.

The splicing sleeves are made in hard drawn brass, hard drawn copper and also in a special bronze which is particularly recommended for conditions of congested traffic. In installing them it is important that the grooved wire be held upright and not allowed to tip over on one side. The ends of the wires to be joined should be brought out through the milled slot in the top of the sleeve and hammered down to form hooks engaging with the ends of the slots. The joint should be carefully soldered and the ends of the wire cut off flush with the surface of the sleeve.

The section insulators are for use with both wheel and sliding collectors on potentials of 3300 volts or over. The insulation of the trolley is effected by two porcelain strain insulators, and the trolley wire is held in its normal horizontal position by petticoat insulators and clamps. These clamps form the approaches for the wheel collector in its transition from the trolley wire to the runway. The runway consists of wooden cross pieces with metal grooves on the lower side which are separated by small air gaps and bolted to the frame. The lower surface of the frame forms the runway for the sliding collector. The strain is taken by a cable made up in an eye on the approach clamps and with a threaded eye bolt passing through a casting on the upper center cross bolt of the frame. A nut on this eye bolt allows adjustment for the maintenance of the horizontal position of the approaches. For lower potentials, the section insulators are similar to standard section insulators with the addition of strain insulators in the messenger.

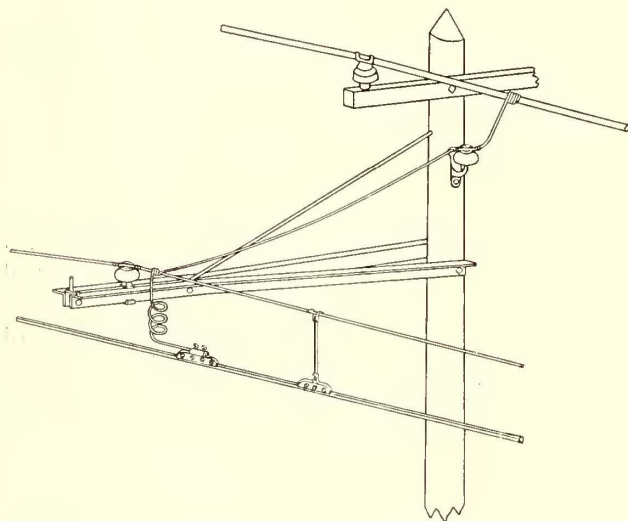
Frogs for use with both wheel and sliding collectors are similar to the company's Form G trolley frogs, excepting the addition of runways for the sliding collector. For use with wheel collectors only, crossings are the standard Form G.

The crossings for use with sliding and wheel collectors are composed of light structural steel sections having a dip at the center point to provide clearance for the passage of the sliding collector.

Deflectors are for use with sliding collectors and are designed to depress the collector when a car is turning from a siding to the main line, or crossing from one track to another. They will not interfere with the operation of wheel collectors.

For ordinary conditions the messenger cable should be of 7/16-in. extra galvanized Siemens-Martin steel. For pull-offs 1/4-in. cable is satisfactory, and for general guying purposes 3/8-in. extra galvanized Siemens-Martin strand is generally recommended. Special conditions may call for "high strength" cable but as this cable requires mechanical fastenings on account of its stiffness, it should be used only where absolutely necessary.

For curve work, either steady brace or pull-off construction may be adopted. The steady braces are recommended for all curves not sharper than 4 degs., or 1433 ft. radius. It will generally be found that curves sharper than 10 degs.,



ARRANGEMENT OF FEEDER TAP IN BRACKET CONSTRUCTION

or 574 ft. radius, can be more cheaply installed by the use of pull-offs on account of the greater pole spacing allowable with this class of construction.

The pole spacings are planned to keep the trolley wire within from 4 to 6 ins. of the track center, as it is believed that a greater variation than this will give excessive strains for wooden poles.

Where a sliding collector is to be used, the tangent line should be staggered by steady braces in bracket construction, or pull-offs, in span construction, to avoid wearing grooves in the collector contact surface. For this purpose the trolley wire should be displaced approximately 8 ins. on each side of the center line of the track every 1000 ft., i. e., there should be one complete wave from the extreme position on one side across the track and back to the extreme position on the same side in each 2000 ft. of line.

As there are in this construction two wires to be provided for instead of one, it is necessary to make suitable

provisions for two wires in special work, pull-offs and anchors.

BRACKET CONSTRUCTION

In bracket construction after the poles are installed, the brackets should be located at a height of 16 ins. more than the required distance between the top of the rail and the trolley wire. This allows for 2 ins. sag of the bracket, due to the yielding of the pole when loaded, in single track construction. For double construction this distance should be 14 ins. greater than the desired height of trolley above the top of rail. Generally no back guys are required for this construction on tangent track, but all poles on curves should be properly guyed.

When brackets and insulators are in place the line is ready for the trolley and messenger wires. The foreman doing the construction work can soon determine what method of running out the trolley and messenger wires is best suited to the conditions under which he has to work. The following method of installation is suggested and is known from experience to be efficient and practicable.

The trolley and messenger wire may both be run out at once and hung over the brackets, except at curves where the trolley wire should be supported below the bracket arms. The trolley wire should then be pulled up tight and temporarily anchored while resting on the bracket arm.

In ordinary construction it is generally inconvenient to measure the tension on the trolley wire. For this reason it is recommended to obtain the desired tension of about 1000 lbs. for No. 0000 trolley wire, that the pull be made with a pair of three-sheave blocks, and a "luff" or purchase with a pair of two-sheave blocks. Three men can pull a trolley to about the right tension with this combination.

The messenger wire should next be adjusted for tension to give a sag between supports of about 9 ins. at 30 degs. F., 10 ins. at 60 degs. F., and 11 ins. at 85 degs. F., after which it may be lifted in position on the insulators and tied in. The trolley wire should then be dropped and temporarily supported by hooks from the brackets and from the messenger wire at the center of the span. The line will then be ready for the hangers. Both messenger and trolley wires should be anchored every 1/2 mile on tangent track, and at the ends of tangent track approaching a curve. Sufficient slack should be left in the curves to allow the trolley and messenger wires to be pulled over to the center of the track. Where bridles for pull-offs and anchors are used, care should be taken to see that no wires are allowed within a space 6 ins. above the plane of the trolley wire at a distance of 3 ft. from the trolley wire. This clearance is necessary to avoid interference with sliding contacts. The same clearance should also be maintained where steady braces are installed.

SPAN CONSTRUCTION

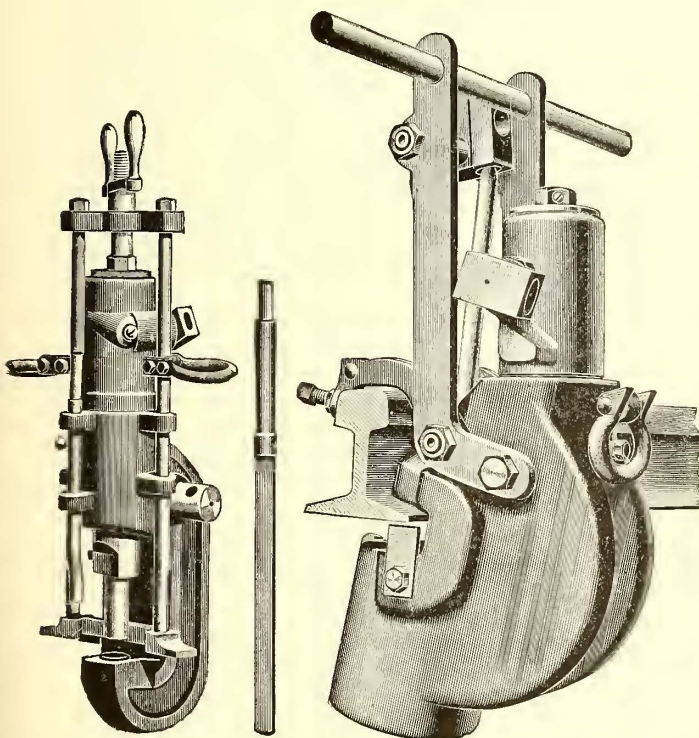
In span construction the span wire should be installed so that, when the weight of the messenger and trolley is put on it, there will be a sag of at least three or four feet between a straight line drawn through the points of support of the span wire and the point on the span wire where the messenger hanger is attached. When unusually long distances are necessary between the poles the sag should be greater. The back guys should be insulated for full-line potential.

After the poles are guyed and the spans in place the messenger and trolley wires are run out and hung temporarily from the span wires by hooks. The tension on the trolley and messenger wires and the installation of hangers may then proceed as in bracket construction.

HYDRAULIC RAIL BONDING

In the construction of high-speed interurban roads requiring extra heavy rails, the joint plates frequently used rarely leave enough room under them to place bonds of sufficient capacity, and to meet the requirements of this situation the Electric Service Supplies Company, of Philadelphia and Chicago, has perfected a full line of hydraulic tools with which to install rail bonds underneath and through the base of the rail. In applying the bonds by the hydraulic method a tapered hole is punched in the base of the rail by the hydraulic punch illustrated herewith, which has an indicated power of 100 tons, the axis of the hole being at right angle to the top surface of the rail base, while the small end of the hole is underneath. The hole is clean, with bright, clear walls, and a crew of one mechanic and one helper can punch 200 holes per day sufficient for 100 bonds, assuming there is no material interference from traffic.

The form of bond used is the company's well-known "Protected" type L-3, with three crimps or tucks in the body portion to provide flexibility. The company estimates that this bond, when straight, should be made 1½ ins. longer than the final set length to provide the proper flexibility. The terminal heads of the bond are beveled to compensate for the tapered shape of the rail base and to give the compressing tool firm hold on the copper and a bearing underneath equivalent to a right angle with the axis of the compressing ram.



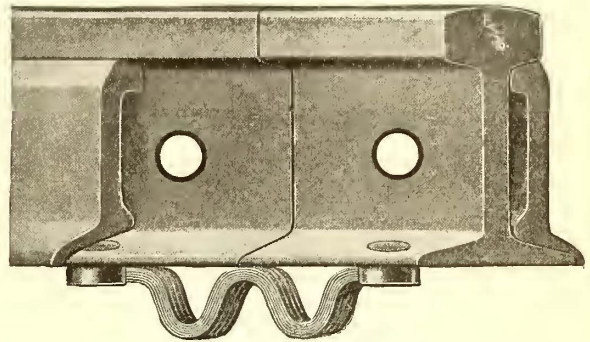
THE COMPRESSOR USED TO ATTACH THE BOND

HYDRAULIC PUNCH FOR PREPARING HOLES IN RAIL

An hydraulic compressor is used in attaching the bond. It has an indicated power of 35 tons, and is self aligning on the rail, so as to permit the compressing ram to operate in a line parallel with the axis of the bond terminal. The beveled shape of the bond head gives the tool a flat and solid grip on the terminal. The hole for the terminal being punched tapered with the small aperture underneath, the compressing ram forces the copper down against the taper until flush with the rail, producing a dry contact in the first

instance, and absolutely sealing the connection so that it is moisture proof. This operation so densifies and kneads the copper into close relation with the sides of the hole that the union cannot be ruptured by any action in service. With this compressing tool, a crew of two men can apply 300 terminals, or 150 bonds per day, if there is no interference from traffic.

The company says that with this method of bonding, the union between rail and copper is so perfect, both when first made and after years of service, as to test practically nil in resistance. While this method of bonding was originally designed for extra heavy work, where space under the joint plate did not permit sufficient capacity, the company is now supplying these bonds in lighter capacities, and recommends the method as one of the most perfect for 4/0 bonding. If the bonds are painted black, as they should be, they are not conspicuous, and do not attract the copper thief, nor is



THE BOND APPLIED

there enough material in them to make removal worth while. The bond is sufficiently exposed to permit of easy inspection, and being made to lie close against the rail, ballasting material will not interfere with it. Nearly 1,000,000 bonds are in service that were installed by this method.

A LIGHT, TAPERED STEEL POLE

An extremely light and durable steel trolley pole, known as the Pittsburg standard trolley pole, is being manufactured by the Pittsburg Pole & Forge Company, of Verona, Pa., which manufactures steel poles and forgings of every description. The pole is tapered under a special process, and it is said not to be possible to break it at the acknowledged weak places in the ordinary pole. The Pittsburg pole is made of specially rolled tubing and will stand a test of from 75 to 125 lbs. The poles are made in half-foot sizes from 10 ft. to 16 ft., with outside diameter at the base of 1½ ins. and tip diameter of 1 in. The inside diameter at the tip in each instance is 49/64 in. The weights of the plain poles are as follows: 10 ft., 16 lbs.; 10 ft. 6 ins., 16¾ lbs.; 11 ft., 17½ lbs.; 11 ft. 6 ins., 18¼ lbs.; 12 ft., 19 lbs.; 12 ft. 6 ins., 19¾ lbs.; 13 ft., 20½ lbs.; 13 ft. 6 ins., 21¼ lbs.; 14 ft., 22 lbs.; 14 ft. 6 ins., 22¾ lbs. The weights of the reinforced poles are as follows: 10 ft., 18 lbs.; 10 ft. 6 ins., 18¾ lbs.; 11 ft., 19½ lbs.; 11 ft. 6 ins., 20¼ lbs.; 12 ft., 21 lbs.; 12 ft. 6 ins., 21¾ lbs.; 13 ft., 22½ lbs.; 13 ft. 6 ins., 23¼ lbs.; 14 ft., 24 lbs.; 14 ft. 6 ins., 24¾ lbs.

The right of way for the electric railway to be built between Temple and Waco by Dr. T. M. Barnes of Fort Worth and associates has been obtained, and the construction of the line is said to be assured. The road will run from Temple east to Marlin, a distance of about twenty-five miles, and from Marlin it will run northwest to Waco, a distance of about twenty miles.

AN AUTOMATIC CUT-OFF VALVE

An excess flow safety valve for boiler service which not only acts as a "non-return" valve, but also shuts off the boilers with surety and protection if the main should be broken, acting automatically as a cut-off valve and, by the turning of a hand-wheel as an ordinary stop-valve, is being placed on the market by the Lagonda Manufacturing Company, of Springfield, Ohio.

This valve works instantly either way and does not depend upon differences in pressure for its action, but upon the actual flow of steam through the valve. If a tube in one of the boilers should give way it shuts down that boiler only, and allows all the other boilers in the battery to go on supplying steam as usual. If, on the other hand, a steam header bursts, or a joint breaks or a cylinder head blows off the engine, the cut-off valves on all the boilers close immediately before the room has been filled with steam, and repairs can proceed at once.

The valve is installed so that the lower valve disc is toward the boiler and the hand-wheel on top. Normally, when the boiler is not working the upper valve rests upon the seat and prevents steam from the main from entering the boiler. When the steam pressure in the boiler is raised slightly to exceed that in the main, the valve lifts and steam flows from the boiler into the main. The valve is very nearly counterbalanced by a weight on an external arm. The leverage of this weight may be adjusted to different rates of steam flow and boiler output. The valve is operated not by pressure, but by the actual flow of steam through it. The normal flow of steam into the main raises the discs to mid-position. The valve remains in that position as long as steam is being drawn from the boiler at the normal rate, but in case of a break on the line side of the valve the excessive rush of steam would carry the lower valve up against the seat, shutting off the boiler. Of course, when the flow reverses the upper valve drops instantly to its seat and shuts off the steam. The rate of flow at which the boiler would be shut off is determined by the weight above mentioned and by the distance between the two valve faces. This is adjusted to correspond to the greatest overload at which it is desired to operate the boiler, say, a rate over twice the normal rated capacity or when the water begins to raise in the gage glass.

A fork-and-link arrangement connects the valve discs and balancing lever positively, so that the position and condition of the valve may be determined by a glance at the balancing lever, which is provided with light springs which prevent the chattering or closing of the valve under ordinary conditions. The springs are not strong enough to prevent closing in case of accident, but will prevent closing in case of a momentary rush of steam. These springs can be adjusted to meet different quantities of flow of steam.

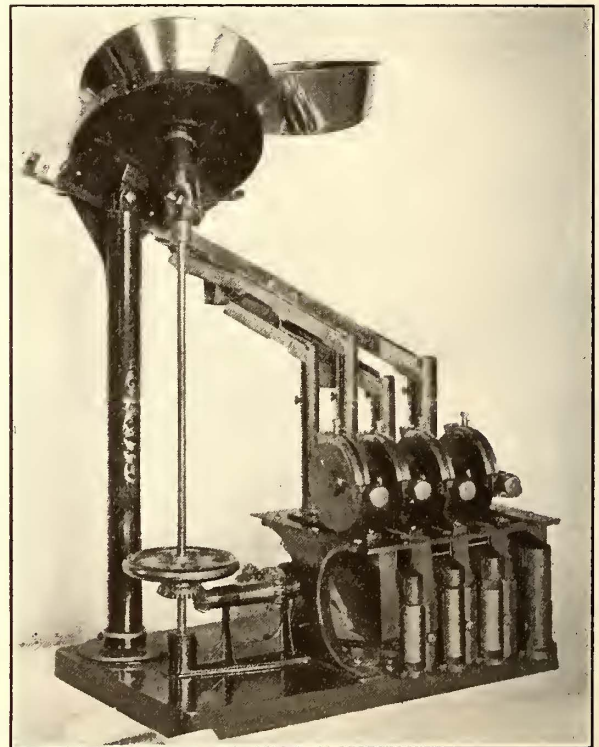
PROPOSED LINE OUT OF PHILADELPHIA

It is reported in Philadelphia that control has been secured of the Philadelphia, Delaware & Montgomery Railway Company by new interests, and that a third-rail electric railway will be built from Lafayette Station on the Schuylkill Valley division of the Pennsylvania Railroad to the Delaware River in Tinicum Township, and thence under the river to connect with the Pennsylvania Company's electric line to Woodbridge, and that a separate line will be built to Atlantic City. A survey has been completed

for the proposed line from Lafayette Station southward past the Philadelphia Rapid Transit Company's terminal at Sixty-Ninth Street to the Delaware River. Estimates made of the cost of constructing a two-track tunnel under the Delaware place the figures at \$2,000,000.

A NEW COIN COUNTER

Street railway companies generally will be interested in a new coin counting device just perfected and placed on the market by the Dolt Coin Handling Machine Company, of Portland, Me., which it is said possesses several advantages not now found in the ordinary coin counting machine. Briefly, the new coin counter, of which a picture is presented, sorts, counts and delivers in regulation bank package amounts, nickels, dimes, quarters and half dollars with accuracy, and in one-fifth to one-tenth the time necessary to do the same work by hand, so it is said. The counting, sorting and wrapping, by the way, are carried on simultaneously. The machine is made in many different models, and in extreme cases will be built to suit individual requirements. The regulation machines, however, are built along liberal lines with the end in view of making them readily available for different classes of service and so are adjustable as to the number of coins delivered. In this way the package amounts may be varied from time to time. Another feature of the device is that the operator can keep in touch with each and every coin from the time it enters



COIN COUNTER FOR HANDLING NICKELS, DIMES, QUARTERS AND HALF DOLLARS

the machine until it is delivered and counted. It is said for the coin counter that it automatically eliminates Canadian nickels, 20-cent pieces and quarters and rejects badly mutilated coins. The machine is complete in itself, no extra parts being needed for the manufacture of wrappers, or for any other portion of the work. The output of the machine can be considerably increased by operating it with a motor.

PAPERS AND REPORTS PRESENTED AT THE ATLANTIC CITY CONVENTION OF
THE AMERICAN STREET AND INTERURBAN RAILWAY ASSOCIATION,
OCTOBER 17 AND 18, 1907

REPORT OF COMMITTEE ON PROMOTION OF TRAFFIC

BY W. E. HARRINGTON (Chairman), H. J. CROWLEY, H. E. REYNOLDS, H. F. GRANT, G. W. PARKER.

The committee on "Promotion of Traffic" respectfully submits this, its second report. The committee feels that the subject matter in its first report, submitted at the last annual convention at Columbus, Ohio, in 1906 is so full and complete that little is left to enlarge upon. There are a few subjects of interest which the committee herewith submits:

PARK AND AMUSEMENT FEATURES

Just so long as street railway companies own, control or have an interest in parks along their lines, the much mooted question as to their desirability from a purely financial point of view will continue to be debated. Last year this committee in the course of a minute investigation into the general subject of "Promotion of Traffic" went into the park proposition thoroughly. Among the questions asked the street railway managers of the country was this: "If you had it to do over again, would you equip and operate a park?" Seventy-four per cent of the replies were in the affirmative.

While the preponderance of sentiment is thus shown to be in favor of the operation of the parks, it does not by any means necessarily mean that this 74 per cent of street railway park managers have found that the parks themselves, of themselves, and in themselves, have shown a balance on the right side of the ledger. As nearly as can be ascertained a very small percentage of the parks actually pay in their receipts from various sources the cost of operation. What profit exists must be due to the increased traffic on the company's lines in consequence of the exploitation of the park, and the exact difference between the additional receipts from this source and the additional cost of the extra transportation facilities that must be provided is still a matter for individual computation.

As to the actual, practical lay-out, construction and operation of a street railway park, much, almost all, depends upon the local conditions existing in the community in which the park is to be operated. The class of people, their average wage, their hours of labor, their predilections for certain forms of amusement, all must be reckoned with. Therefore no matter how much may be learned from the experience of others, the final test as to the success of a park must lie in the shrewdness of the park manager in adapting his offerings to the wants of his patrons.

As to the question of whether a park should be owned and operated directly by the street railway company management, or should be leased outright, there seems to be a prevalence of opinion that, conditions being favorable, it is more satisfactory in the long run to lease the park outright on a flat rental basis. Where conditions make it unwise to do this the next most satisfactory method seems to be to let as many concessions in the park on a flat rental or percentage basis as is wise.

In some sections of this country it is claimed by some park managers that a park cannot be successfully operated unless liquor is allowed to be sold on the grounds. This is not, however, the experience of the majority, who find that the moment a license of this kind is granted in a park, the general class of patrons and the general tone of the place is lowered. In a short time the better class of people keep away entirely and the park, no matter how well its grounds and attractions are kept up, literally runs down.

The distance that a park should be located from the center of a community, in order to draw the greatest number from that community, has been the subject of much discussion and varying opinions. The majority of managers, however, are of the opinion, and results seem to indicate, that from 2.5 to 6 miles, or a half-hour ride at a 5-cent fare is about the most advisable. Of course, in some sections it is possible to draw people from a greater distance, but they are few in comparison.

As to just what form of amusement enterprises should be included as attractions in the parks, experience has shown quite

an unanimity. First of all, it is a strong asset to a park to have it located on the banks of an attractive river, lake or small pond where the public may enjoy boating and such features. There must be a good up-to-date carousel, a dancing pavilion and some sort of an athletic field. There must be the usual candy, cigar and other booths with a good restaurant, where the inner man may be appeased at a small cost. Swings are universally popular, and it must not be forgotten that while the older folks and the male population may crowd the park in the evening, there are some good long hours during the day when business might be done to advantage. For this reason as many features as possible to make it comfortable for the ladies and pleasant for the children should be installed. If you can get the children interested you can get their mothers and sisters and aunts. They, all make riding during a portion of the day when they can be handled very nicely. There should also be some sort of accommodations for picnic parties. The ideal accommodations of this character would include a covered pavilion with tables and chairs where lunches might be comfortably eaten, whatever the weather, and some means of warming up coffee, cocoa or other auxiliaries to a lunch would be well received, although regarding this, fire dangers must be considered and perhaps a watchful attendant might be necessary.

As many different sorts of concessions are advisable as the patronage and tastes of the patrons seem to justify. This is another thing that local conditions will have to govern.

Theaters have been found to be about the best of the what might be called special attractions. The majority of the parks have open theaters, as far as the seating space is concerned, but it would undoubtedly be better if a theater combining the airy coolness of the open theater and the safety in case of rain of a covered or closed theater could be used. It would be more expensive, but in the long run would probably justify itself.

The character of the shows presented in these theaters depends upon the community, what they like and what they are most in the habit of seeing during the winter months. It is advisable, if possible, to give them something different from their regular theatrical entertainment. In the majority of parks it has been found that the strong popular preference is for vaudeville shows of five or six good acts. The price of admission varies in these theaters, but it is generally considered that reserved seats should not be over 25 cents, and the majority considerably less.

Bands are essential to the full enjoyment of people of this country when seeking out-of-door amusement, and they should be made use of as often as the conditions will permit, Sundays and holidays, or certain days during the week, or every day if the patronage would make it possible to stand the expense. It is also wise to introduce during the season a number of unusual special features free and in addition to those that the regular park attractions afford. Of these the most popular seems to be balloon ascensions, but there are baby shows, animal hunts, driving horses and a wide diversity of thrillers that draw crowds at these times and keep people in the habit of looking to the park for their pleasure.

Whatever the attractions and whatever the location and general make-up of the park may be there is one thing that must not be forgotten and cannot be expressed and emphasized too strongly and that is, that the best of order should be maintained at the park, whether by the regular city or town police or by special park officers sworn in as deputies. Nothing gives a park a knock-out blow so quickly as disorder, and the management should go to any length to see that it is quelled in its incipency.

The general management of a park when operated by a street railway company itself should be vested in one of the company's operating staff, although he may have an assistant manager directly in charge. The final decision, however, should be his.

There is another point which cannot be too strongly considered in the operation of an amusement park by street railway companies or any one else, and that is the advertising of the

park. A first-class, well-kept park, nicely located and with an abundance of good attractions will, of itself, attract some people, but only by the most strenuous kind of publicity will it attract enough people to make the venture possible.

How to advertise is the question. How to spend the least money and get the most results. The most expensive advertising is not always the most profitable. Many a business concern has spent millions in advertising and then gone into the hands of its creditors. The advertising which counts is of the character that is seen by the people who are most likely to be attracted by it. That may sound like a self-evident fact, but it is not so self-evident but that it is often disregarded.

Of all forms of advertising in these modern days it is universally conceded that newspaper advertising stands at the head. This applies to parks as well as to everything else. It must be sharp and to the point, not too niggardly, and must be supplemented with attractive reading notices in the regular news columns. Whether all this matter is paid for and how much of it is used depends, of course, on the attitude of the newspapers toward the park management and the cleverness of the advertising man. It must not be forgotten in this matter, as in all others, that newspaper men are a bright, intelligent, self-respecting lot of workers, very sensitive about being used fairly and squarely, as one gentleman should use another, and they will do more in return for courteous, fair-minded treatment than money can ever procure.

Next to the newspapers and standing almost beside them in importance in park advertising are the cars of the park operating company. The first people to be reached are the people who are in the habit of riding on the trolleys, and nowhere may they be better reached than in the cars upon which they ride. These cars also traverse the entire district tributary to the park. It must be found profitable advertising to hang dasher signs upon these cars, signs that have very little reading matter, but which bring out the main attractive features plainly so that all may read.

Another splendid way in which to make use of the company's own facilities is to fix up an old car with billboards on each side, and cover them with big stands of advertising paper advertising the park, with a proper arrangement of lights so that they may be used at night and then run them continuously over the lines. Advertising cards are also valuable when tacked in the ends of the cars or suspended in frames, where it is possible to do this without infringing on the contract of any advertising concerns. Billboard advertising is valuable in some sections, but it is doubtful if it is as strong as any of the other methods suggested, and, as a rule, should be used merely in a supplementary way.

In this matter of advertising on and in the cars, it may be well to lay special stress on the fact that if this advertising matter is printed it should be religiously used—not on one car, but on all. There is a habit among operating men, who feel that their first and almost only duty is to see that the cars are run according to schedule as nearly as possible, of letting a lot of this paper lie around loose in car barns, instead of plastering the cars over with it. It is needless, perhaps, to speak of this, but only the most constant and eagle-eyed attention to this matter is sure to bring the results. It must be followed up assiduously or the expenditure will be for naught.

On the whole, investigation seems to show that, given a good park in a good location, in a community capable, if sufficiently interested, to support a park of this size and character, with good attractions, good order and proper advertising, there should be no reason why the incentive it gives to travel should not make it a profitable venture for a street railway company to promote.

Many small railway properties are not financially able to make large expenditures for parks upon the lines practiced by the larger railway properties, and it has been the experience of not only some small, but some large, railways to lease desirable, nicely wooded sites, favorably located, and to build some open-air fire-places, at a cost, say, from \$10 to \$15, and to provide neatly constructed rustic pavilions, and by this means make an attractive spot for picnics and outing parties.

BASEBALL

The matter of professional baseball as a promoter of traffic is a subject which the committee believes to be worthy of serious consideration. The interest taken by the general public in the national game during the past few years has been growing, as is evidenced by the large number of associations formed in cities varying in population of from 200,000 to 15,000 in the

Eastern, Southern and Middle West States. The information bearing upon this paper is gathered largely from the territory above named.

The large majority of electric railways either operate pleasure parks in connection with their system, or their lines extend to or pass parks of a similar nature, operated by parties interested outside of the railroad. Where the above conditions exist, and the parks are suitably located, it is found advantageous to locate the ball park either in or adjacent to the park grounds, the ball park being either owned or controlled by the railway company. There seems to be no uniform system of leasing the baseball parks, each company apparently handling the matter in the way which would seem advantageous to the road.

Assuming the railroad company controls the baseball park, one of the methods which has worked out satisfactorily is the leasing of the grounds without consideration for a period of years to a local baseball association, the railroad company maintaining it, depending entirely upon the revenue from transportation as its return.

Another method of handling this business which has proved satisfactory in some of the smaller cities is for the railroad company to form an association of parties whose interest is friendly to the railroad. The grounds are leased to the association for a nominal sum, the association to put the grounds and buildings in condition and furnish uniforms for the ball team. They in return guarantee to keep the grounds in repair, police them and play a stipulated number of games each week during the ball season, which is usually twelve weeks.

The association may be formed from all classes who care to be interested. One of their members is elected as business manager, who in turn appoints some college player as manager of the team, which team is largely made up of college students.

During the past few years a number of railroads operating in cities with a population as hereinbefore stated have taken up this subject. They provide suitable and attractive grounds and grandstand, and the financial results derived from the income, after deducting interest and depreciation, have been very gratifying. In several instances where the ball parks are located adjacent to the railroad's pleasure grounds, the income from this sport compares favorably with the best amusements operated.

The committee has given this subject careful study, and the conclusions reached are that street railways operating in a territory where the density of population will support a first-class baseball club, will find it will add considerably to their revenue if the matter is intelligently handled.

As an illustration of the method pursued by the Pottsville Union Traction Company, of Pottsville, Pa., herewith is appended the form of contract between the railway company and the representative of the Atlantic League; it is interesting to comment that the earnings from the baseball park exceeded the expectations.

ARTICLES OF AGREEMENT, made and concluded this eighteenth day of December A. D. one thousand nine hundred and six, by and between The Tumbling Run Park Association, party of the first part, and Ernest C. Landgraf, of the city of New York, State of New York, party of the second part, witnesseth that said party of the first part hereby stipulates and agrees to rent to the party of the second part a certain baseball park located near the premises of the party of the first part in the township of North Manheim, County of Schuylkill and State of Pennsylvania, which park shall be properly fenced and shall contain a grandstand with a seating capacity for five hundred persons and bleachers with seating capacity for six hundred persons. To have and to hold the said baseball park for and during the baseball seasons of 1907 and 1908, together with an option on the part of the party of the second part to renew the lease for longer season upon such terms as the parties hereto may agree upon.

In consideration of the premises, the party of the second part covenants, stipulates and agrees to pay to the party of the first part an annual rental of four hundred and fifty (\$450) dollars to be paid in manner following; that is to say, one hundred and fifty dollars on the first day of May, one hundred and fifty dollars on the fifteenth day of June, and one hundred and fifty dollars on the 15th day of July, in each of said two years. The party of the second part also covenants and agrees, as soon as the gross receipts of said park amount to ninety-five hundred dollars, to pay to the party of the first part, as an additional rent, one-half of the excess of the gross receipts over and above ninety-five hundred dollars, after deducting from said excess 10 per cent of the gate receipts for the Atlantic League treasury, and also deducting to pay each visiting club either the sum of fifty dollars or fifty per cent of the gate receipts, as each visiting club may elect. Such excess of rent shall be paid by the party of the second part to the party of the first part daily after any game or series of games shall have been played.

It is mutually understood and agreed that the baseball park shall be in the form of a rectangle, whose size shall be not less than three hundred and sixty feet by three hundred and eighty feet.

In testimony whereof, the parties hereto have set their hands and seals the day and year first above written.

TUMBLING RUN PARK ASSOCIATION,

Signed, sealed and delivered in presence of us:
 (Signed) R. H. KOCH,
 (Signed) F. A. HEWETT,
 Approved by Counsel, R. H. KOCH, 12/18/06.

W. E. HARRINGTON,
 President. (Seal.)
 ERNEST C. LANDGRAF. (Seal.)

ICE SKATING

The subject of ice skating as a promoter of traffic is one that has been given some consideration by a large number of roads in certain localities. Where rivers and lakes are within easy reach of the street railway lines, due to local conditions, ice skating has been very popular. Where facilities for skaters are located remote from highways of public travel and it is necessary to extend the lines to transport the skaters, the financial results to the road are problematical, and in such cases should be given careful thought before the investment is made. Usually places are found on some parts of the existing lines where skating can be had and, if situated in the suburbs, a sufficient number of arc lamps may be erected and operated from the trolley circuit to furnish light for evening skaters.

The cost of keeping the ice in good condition for skaters, and the result of snow, is a subject for serious consideration. In some cases where the income derived from this class of patrons has been very satisfactory, the expenses have been so great as to leave little or no profit. The committee is of the belief that a railway company is not warranted or justified in making any large investment to care for this source of travel, as the results from this traffic largely depend on weather conditions.

SPECIAL CARS, EXCURSION RATES, SPECIAL RATES

The committee is at a loss to know how to contribute anything new regarding these subjects in addition to that which was included in the report of the committee last year. It is the sense of the committee, however, for railways having heavy regular service, not to originate excursions, but to cater to special car service and excursion business planned by others.

FREIGHT AND EXPRESS

The committee has to report that the development of the trolley freight and express business is becoming quite an important factor in the earnings in railway properties in various parts of the United States.

The value of statistics is unquestionable, and in view of the large number of railways now actually carrying on this character of business, we respectfully suggest and recommend the appointment of a committee to report upon "Freight and Express" at the next annual convention; the report to treat upon, particularly, the most desirable methods to be pursued, charges to be made, methods of collection, and, above all, to collate statistics bearing upon the revenue to be obtained from such business and the operating expenses, and finally upon the character of equipment, stations, sidings and terminals.

CONCLUSION

The committee has obtained through the courtesy of the STREET RAILWAY JOURNAL and the *Electric Railway Review* most valuable indexes of articles bearing upon the various questions affecting the subject matter of your committee's work. The indexes are appended hereto.

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INTERURBAN FARES

BY THEODORE STEBBINS

The subject of interurban fares is one of immediate interest because matters connected with the transportation of persons and property by railroads have been the subject of very active and even violent popular discussion. The state legislatures have been taking blind actions and state executives have been advocating and adopting arbitrary measures with the railroads. Twenty state legislatures have passed restrictive legislation on passenger rates, and fourteen states now limit passenger rates to two cents a mile. In this situation, it is important to understand the position of the interurban railway.

All interurbans are anxious to serve the public and to earn reasonable dividends for stockholders. It is not so clear, however, how rates shall be adjusted to satisfy these ends. It is customary to measure the service and its cost on the basis of cents per passenger-mile. The charges range from three cents per mile in unsettled sections down to half a cent per mile for commuters in thickly settled districts, who use the cars twice each working day, or where excursions are handled in bulk. The ordinary range of fare, however, is between two cents and one cent per mile. We find the two cents per mile charge prevailing in the Middle West, and the one-cent rate common in thickly settled districts, mostly in the East. Tables have been published showing the charges made by various roads. For example, the convention issue of the STREET RAILWAY JOURNAL for October, 1906, on page 672, gives the rates for various classes of tickets charged in Ohio and adjoining states, and shows that the average single trip fare in this

locality is upward of two cents per mile. It will also be observed, however, that other and lower rates are made on such roads for regular daily passengers down to about one cent per mile. These western roads sell forms of tickets and make rates corresponding in a variety of forms and variation of rates with the steam roads. At the other extreme we find certain interurban roads charging one cent per mile, and the majority of such roads make this a uniform charge to all adults, and their character of travel approaches that of the ordinary street railway company.

Tables can be prepared, giving the rates charged by the various companies, but these are meaningless without knowing at the same time the conditions under which such roads are operating, and so we will seek to indicate the justification for these variations in fares.

The cost per car-mile of operation does not afford a direct measure of the rates that should be charged to passengers. The density of travel has a far greater influence on rates. The road must be built and furnish a service to suit the distribution and density of population and the fares that can be collected follow as a consequence of this environment. The cost per car-mile may not vary much between properties quite different in character, but it is the commercial and social habits of the people which determine the quantity and times of traveling as well as the percentage of the car-load (that is, passenger-miles divided by seat-miles) and thus the passenger rates are determined.

COST OF SERVICE

The seat-mile cost can be figured as shown for illustration in the following table which indicates also the effect on such cost of more frequent service:

Annual cost per mile of track	A	B	C
Headway (minutes).....	60	30	15
Car-miles (plus extras).....	15,000	30,000	60,000
Cost of operation.....	\$1,800	\$3,600	\$7,200
Interest and depreciation.....	2,700	3,600	4,500
	<u>\$4,500</u>	<u>\$7,200</u>	<u>\$11,700</u>
Cost per car-mile (cents).....	30	24	20
Car seating capacity.....	40	40	40
Car seat-mile cost (cents).....	75	6	5

The actual passenger rate per mile must be more than the car-seat cost as a minimum in proportion as the passenger-miles are less than the car-seat miles. If the passenger-load averages 40 per cent. of the seating capacity, then, on a sixty-minute headway, the average cost would be 100/40 times 0.75 cents, or 1 7/8 cents per mile. This indicates how much rates might be decreased if full loads were constantly carried and why some roads can afford to make mileage rates less than other roads.

The distribution and occupations of the population along the line are the powerful elements affecting the percentage of load. Assume two roads, each fifteen miles long; the first joining two cities of large size with little intermediate population, and the second leaving a city and traversing a succession of villages growing smaller and terminating in a hamlet. The first road may prosper on one cent per mile and the second starve on two cents even though operating the same number of cars with the same number of passengers to and from the principal terminal. In the first, the loads are carried through; in the second case, two-thirds of the load may be dropped within the first four miles. Assume a third case where a succession of towns of equal importance are traversed. The cars may load and unload several times in the course of the trip and this makes for an intermediate policy on rates.

DENSITY OF TRAVEL

To give some idea of the variation in density of travel on electric railways, the following figures are given:

Territory.	Passenger per mile.	Average fare.	Receipts per mile.
United Kingdom.....	939,658	2.26 cents	\$21,240
United States.....	333,862	3.76 "	12,553
Indiana.....	133,000	5.6 "	7,500

The above figures for the United States and Indiana include all electric railways; that is, both city and interurban. The density of travel on the Ohio interurbans is indicated in the

following table, grouping them together according to principal terminal:

Principal Terminal.	Its population.	Receipts per mile.
Cleveland	500,000	\$5,045
Columbus	200,000	3,829
Toledo	225,000	3,257
Dayton	90,000	3,137
Miscellaneous .....	.....	3,542

Twenty-eight interurbans in this same section are classified in annual receipts as follows:

0.....	\$2,000	4	8	19
2,000.....	2,500	4		
2,500.....	3,000	7	11	9
3,000.....	3,500	4		
3,500.....	4,000	1	4	9
4,000.....	4,500	3		
4,500.....	5,000	1	5	9
5,000.....	up	4		
		<u>28</u>		

Most of these roads furnish hourly service so that by making some additions for limited and excursion cars, the receipts per car-mile can be calculated and assuming the average rate to be 1.5 cents per mile, the number of passenger-miles and its relation to the car-seat mile capacity can be determined.

As indicating the variation in car-miles per mile of road, it may be stated that the elevated roads in New York operate 1,635,000 miles per mile of road, as against 15,000 or less for the ordinary interurban road in the Middle West, while the expenses per car-mile on the elevated are nine cents per mile, as compared with about fourteen cents for the Middle West interurban.

The expenses per car-mile and per seat-mile for a known service are capable of calculation with mathematical precision, but the density of the traffic can only be learned by experience and this experience indicates how much the rates charged must be increased beyond the basic seat-mile cost.

WESTERN INTERURBANS

For the average conditions prevailing throughout the Middle West and other sections of medium density of population, a large amount of testimony is available to show that the basic single-trip rate should be upwards of two cents per mile. If less is charged, not enough additional travel is secured to increase the gross receipts. If more is charged, travel is curtailed and the gross is reduced. In stating this it must be understood that mileage, commuter and other lower rates are granted and maintained at proper relation to the single trip rate.

The widest consensus of opinion on the subject is found in a resolution passed by the Ohio Interurban Railway Association on May 25, 1905. This association represented about two thousand miles of interurban roads and the matter was given earnest consideration in private discussion between the members and in the open meeting. The resolution reads as follows:

"WHEREAS, A demand for improved service on interurban roads has very largely increased the operating expenses of such roads, and many roads have met this demand; and, WHEREAS, in order to obtain their share of the business many other roads contemplate improving their service in like manner; and, WHEREAS, the prevailing low rate of fare on most interurban roads will not permit of such improvement in service, therefore, be it RESOLVED, that the Ohio Interurban Railway Association recommend a uniform base rate of two cents per mile, and a minimum charge of 10 cents."

A. H. Royce, secretary and treasurer of the Canadian Street Railway Association, writes:

"Since the reduction to two cents a mile (by legislative act) the companies have done away with all commutation tickets and charge a flat rate of two cents a mile. We find that it is

impossible to operate a road properly and keep up the rolling stock and equipment even at less rate. In the other provinces of Canada, the rates of fare are regulated by agreements with the municipalities through which they operate. There is no legislation affecting these rates, and as a rule the charge is three cents a mile."

J. McM. Smith, general manager of the Southern Michigan Railway Company, writes:

"We started out a year or two ago on the rate basis of one and one-half and one and three-quarters cents per mile, but we found this to be entirely too low, and accordingly we made a uniform raise. It is my belief, based on long years of experience in this business, that a road must be exceptionally well located if it can be made profitable on a rate less than two cents per mile."

S. Hendrie, general manager of the Grand Rapids, Holland & Chicago Railway, writes:

"I am inclined to think that all our interurban passenger fares in Michigan are too low in view of the increase in the wages and in the cost of all materials which enter into the construction and operation of electric roads to-day. In 1894-96 I took franchises for a road on the average of one cent per passenger mile, but new steel then cost \$16 per ton, copper 13 cents per pound, number one standard ties, 35 cents each, common labor \$1.50 per day, etc. At that time, conductors and motormen were paid 17.5 cents per hour, and other labor in proportion. The same road could not be built to-day for twice its cost, and although the fixed charges are low, the present owners are not satisfied with its net earnings."

H. H. Polk, president of the Inter-Urban Railway Company of Des Moines, Ia., writes:

"The rates generally charged are as follows: 2 cents a mile for single trip tickets; 1.5 cents for round trip tickets, good for one day; and 1.25 cents for mileage. (These mileage books are for any three people, and good until used.) However, I am of the opinion that our round trip and mileage rates are too low, and we are seriously considering the raising of these rates. With the universal two-cent fare now forced on the steam railroads by state legislatures, I am of the opinion that it will be rather up-hill work for interurbans to exist at the present rates."

C. N. Wilcoxon, general manager of the Cleveland & Southwestern Traction Company, writes:

"There are but very few roads in this state operating at less than two cents per mile, with the usual reduction for commuters' tickets, etc. The average rate obtained by the Ohio roads is approximately 1.65 cents per mile. To attempt to operate on a 1.25 cents per mile basis would mean bankruptcy to the interurban roads of this state."

H. A. Nicholl, of the Indiana Union Traction Company, writes:

"Our single trip tickets are 1.5 cents per mile. This is as low a rate as I believe any electric road can carry passengers with a reasonable profit."

EASTERN INTERURBANS

From the average conditions prevailing in Massachusetts, New Jersey, some parts of Pennsylvania and other sections with considerable density of population, a large amount of testimony is available to show that the heavier travel, the more frequent trips, the shorter rides, and repeated loading and unloading in a trip, make profitable and advisable no variety of tickets but only a single adult rate.

M. C. Brush, vice-president of the Newton Street Railway Company, and associated companies writes:

"I find upon careful investigation that on about 50 per cent of our lines our fares vary from 1 cent per mile to 1.5 cents per mile. On the remaining 50 per cent it varies from 0.4 to 0.9 of a cent per mile. The average New England street railway manager does not believe that under present operating conditions it is possible to carry a patron more than five or six miles for 5 cents. That is, I think you will find that the average New England manager believes that one cent per mile is a fair charge in this territory."

NOTE.—The Massachusetts law requires half rate for school tickets.

F. L. Fuller, vice-president and general manager of the New York & Queens County Railway Company, writes:

"The rates on Long Island are one cent per mile collected in five cent zones."

F. W. Bacon, general manager of the New Jersey & Hudson River Railway & Ferry Company, writes:

"I do not think the rates in New Jersey on interurban roads are in excess of 1.25 cents per mile and our average rate is 1.15 cents per mile, but we do not issue commutation tickets or other forms at any cheaper rates and make only 25 per cent reduction on school tickets."

CALIFORNIA INTERURBANS

The extremes on rates seem to exist in California. Mr. Schindler, of Chico, Calif., makes most interesting statements. His line, in the Sacramento Valley, has steam railroad conditions, and charges three cents per mile, and his patrons are well satisfied. In the southern part of the state, business is done mostly on round trip tickets at 0.6 of a cent per mile. He states:

"It is a curious fact that in the southern territory where existing rates are already extremely low, there is a strong movement toward a further reduction of rates; while here where the highest rates exist, the public is generally well satisfied."

The above quotations are taken from letters on the subject of "Rates" addressed to our secretary, Professor Swenson, to whom I am much indebted for this and some statistical information.

Examination shows a clear distinction in conditions and practice between the two and one cent rates per mile. The one cent rate applies to conditions approaching those of the city railway, five cent zones, no tickets, a succession of towns, with contiguous population limits. The two cent rate applies to cities and towns considerably separated, where passengers may travel, 25, 50, 100 or 200 miles, and this rate applies to occasional travelers on single trip or interline tickets. Tickets are also sold and gradations of adult rates for commuter and school travel are made down to one cent per mile. For interurbans of this character, we will describe the kind of tickets sold.

KIND OF TICKETS

1. The single trip ticket (good between specified points for an adult) is the basis of maximum charge on each interurban line. Occasionally, a higher rate is charged for fare paid on the cars, but this practice is diminishing, because it entails a greater variety of fares and discriminates against the farm community boarding the cars where ticket offices cannot be maintained, and this farm community is often the most important class of customers for the road. To increase the sale of tickets in order that cash may be taken at the offices and not by conductors, it has been proposed to charge higher cash fares on the cars and give receipts with a redeemable value to any ticket office the same as some steam railroads do, but this is impracticable for interurban conditions and in one case only to my knowledge has been adopted.

2. The round trip ticket good for an adult, is the most common form of ticket, in fact is sold by some roads where single trip tickets are not sold, and is ordinarily sold at a 10 per cent reduction over double the single trip rate. In a few cases the reduction is 20 per cent.

3. Interline tickets are those sold by one road for transportation over its own line and one or more connecting lines, usually not more than three. Such a ticket, when sold for a round trip may be nearly a yard long and practically correspond in form and appearance to the familiar steam railroad ticket. The interurbans of the Central West sell large numbers of these tickets and they are essential in competition with the steam railroads.

4. Mileage books, so-called, are sold at 16 2/3 per cent to 33 1/3 per cent reduction from the base rate. If such books are good for a specified number of miles, 500 or 1000, then the conductor must carry a sheet of mileage distances between points and detach coupons accordingly. The reservation is commonly made that no less than five coupons shall be detached. Since the rates per mile charged on different roads and often on various sections of the same road vary for franchise or other reasons, it has therefore been found expedient to issue "Mileage Books" not for a specified number of miles but containing a certain number of five cent coupons. This avoids the necessity of conductors carrying mileage cards, permits detaching coupons of a face value equal to the single trip ticket; reduces the complexity of accounting and in general is practical where mileage coupons are impracticable. Properly these are

called coupon ticket books and if good on one road "Local;" if good on a group of roads, "Interchangeable;" but we continue to speak of them in common parlance, as "Mileage Books." Such interchangeable books issued by certain members of the Central Electric Railway Association contains 240 five-cent coupons, face value \$12, sold at a net price of \$10. These books are good for use over some thirty-seven railways and their underlying companies all operating several thousand miles of track. This book is good for one person only, usable within one year and not less than two five-cent coupons are detached for any ride, no matter how short. Each individual company is free to issue, also, mileage books good over its own line under such conditions as it may see fit. In some cases these are good for use without restriction as to name and number of persons and at a slightly lower rate.

5. Commuter books are also sold, good commonly only for either thirty days or a calendar month, and containing forty, fifty or sixty rides, each book limited to one name. Such books are not in as common use now as the writer believes they will be in the future, as they form a means of building up a steady suburban travel, the same as steam roads operate so profitably out of our large cities and without interfering with higher charges for occasional travelers.

6. Book tickets are sold for ten, twenty, thirty, forty, fifty, or one hundred rides with or without limitation as to name or family, or length of use and on some roads serve the same purpose as commuter books.

7. Excursion tickets are sold by almost all roads for special occasions, usually limited to one day and issued for summer riding to parks, church picnics, political meetings, city shopping, and a great variety of purposes.

8. Half rate tickets are sold for single and round trips of children from five to twelve years of age.

9. Party tickets are sold for a specified number of persons traveling together between specified points within a time limit.

10. Special car-load rates are made for excursions at the lowest rates. The car is permitted to carry a full seated load and usually a limited additional number of standing persons.

Twenty-six interurbans in Ohio, Indiana and Michigan are reported by the STREET RAILWAY JOURNAL to sell these kinds:

Tickets.	No. of Companies.
Single trip.....	24
Round trip.....	24
Commutation (individual).....	13
Commutation (family).....	11
School tickets.....	14
Mileage books.....	10
Interchangeable coupons.....	15
Sunday.....	7
Week-end.....	4
Not selling tickets.....	2

All the above and many more forms of paid transportation are used in the development of the interurban business. The writer, on undertaking the management of an interurban system, found in use tickets of as many as 400 kinds; that is, differing in form and points between which they were usable.

GRADATION OF RATES

The gradation of price between these various forms of tickets must follow a consistent sequence in order that each ticket may find its proper use. To illustrate: If the mileage book price is less than the commuter rate there would be no sale for commuter books. The gradation is commonly something like this: Assume the base rate for a single trip ticket is two cents per mile, round trip ticket will be 10 per cent off, or 1 8/10 cents; the interline single trip ticket will be the sum of the single trip rates of the connecting roads and the interline round trip ticket will likewise be the sum of the round trip rates of the connecting roads, or less if there is a competitive route; the mileage book will be 16 2/3 per cent off or 1 2/3 cents per mile net; the commuter book ticket rates will be about 1.25 cents; the school rate will be one cent and the excursion rate and party rate will vary from 0.5 cent to 1.5 cents, according to distance, size of excursion and other conditions. This gives a general idea of the consistent relationship between these various rates, but, of course, there are considerable departures from this practice in individual cases.

The average gradation of rates in cents per mile, in three

western states is shown in figures from the STREET RAILWAY JOURNAL, May 5, 1905, as follows:

	Ohio		Michigan		Indiana	
	Issued by.		Issued by.		Issued by.	
Cash fare.....	1.84	23	1.58	5	1.68	8
Single trips.....	1.77	17	1.48	4	1.68	6
Round trip.....	1.63	20	1.34	4	1.45	6
Commuters (family)...	1.45	12	1.10	2	1.23	3
Commuters (individual)	1.09	17	1.00	2	1.20	5
Mileage.....	1.37	6	1.25	1	1.22	2
Interline coupons.....	1.48	10	1.30	1	1.67	1
School.....	1.03	12	0.87	2	0.94	4

THE ESTABLISHMENT OF RATES

C. L. S. Tingley, vice-president of the American Railways Company of Philadelphia, speaking of Pennsylvania conditions states:

"The whole thing is a matter of ordinance regulation and not a question of scientific rate making."

This is true for many roads elsewhere. For the short interurban, with the dense traffic, five cent zones and no tickets are clearly indicated. For the long interurban, experience has clearly indicated the expediency of a mileage basis of charge with tickets and a graduation of rates for different classes of travel. The western interurban connection with other interurbans and having steam or electric competitors will need (a) cash receipts for use on the car; (b) single and round trip tickets; (c) interline single and round trip tickets; (d) interchangeable coupon books; (e) commuter or book tickets; (f) school tickets; (g) excursion tickets. A consistent relation in rates for each kind of ticket has been specified in the preceding sections.

The interline tickets and interchangeable coupon books are required for steam competitors. The commuter tickets are required to build up a travel of wage earners working in one place and living in another. Excursion tickets are required for those who might not otherwise ride, and school tickets are ordinarily an unprofitable concession to education.

The profit from traffic should not be estimated too narrowly on a cents per passenger-mile basis. If a car receives all its load at the terminal and does not pick up passengers along the way, the space taken by the passenger is worth as much whether he rides all or part of the trip; or to make specific application, commuter rates should be determined more by what the passenger can afford from his daily wage and by seat-trip cost than by mileage rates.

Excursion rates and car-load rates are subject to the greatest variation and the cost of such business may be figured progressively lower as one in turn omits interest, depreciation, general expense, track maintenance and other items that are not affected sensibly by the operation of an additional car over the road. If platform wages, power and car repairs are figured as the only cost of the additional service very low mileage rates may be made. Such reduction of excursion rates is justified within limits to the extent upon which the largest annual receipts may be secured.

A company may make money on excursions at half a cent a mile where it is losing on regular travel at two cents a mile. For the same reason, commuter travel at a cent may be a desirable addition to the business where general travel will hardly yield a profit at a cent and a half. By commuters we mean those persons traveling back and forth between work and home every working day. The lower rate enables certain people to take employment in the city when they could not afford to pay fares at full rates out of their daily wage, and enables workmen in the city to move to the country when otherwise they would locate along some city line reached by a five cent fare.

Roads differ greatly in regard to the possibilities of commuter travel. On some a large feature can be made of this business; on others, it is not worth while even to put the books on sale. In conclusion, we may state the rate which may be profitable for one road may be unprofitable for another and, in each case, the distribution of the population along the road and the character of the travel must be studied carefully to determine the rates charged. The heavier the travel and the more miscellaneous its character, the greater reason for making a uniform and low rate for all classes of travel. On the other hand, the less the density of the population, the greater reason for making an initial single trip high rate for the occasional

traveler and creating in addition, a large regular travel by other forms of lower rate tickets

In conclusion we may state, that before attempting to fix rates, the first thing is to study the density of the population along the line, and its location, to estimate how much will be through travel, how much short ride travel out of the terminals, how much loading and reloading of passengers will occur in the course of the trip, what pleasure resorts exist, or may be built up, what commuter travel will be created, that is, working people in the city drawn into the country to live, and country people secure employment in the city, and all of these and other elements are more vital in determining the rates of fare than the car-mile cost, trip-seat cost, or the seat-mile cost. In fact, the character of the travel, should determine the kind of road built, and the choice of rolling stock. After a study of all the conditions a determination must be made of various kinds of tickets to be sold and the gradation of rates between them.

Ticket offices should be established wherever ticket sales will justify it, and in the Middle West, about 60 per cent of receipts are collected through such offices. Reasonable care will insure that such receipts reach the treasury of the company. Tickets have the advantage of keeping money out of the conductors' hands, but, as a considerable amount will be collected by the conductors, it is of vast importance to secure a proper account of it.

Large sums remain to be collected by the conductors on the cars from passengers boarding them where ticket offices cannot be maintained, and from passengers failing to buy tickets where they are sold. Every safeguard should be provided for such collections in order to check fully the work of the conductors.

The cash fare receipts issued on the cars should show at least from what point to what point fare is paid and the auditor's stub must give corresponding information. The tickets and stubs turned in by the conductor will then show how many passengers should be in the car at each point along its trip. An actual count of passengers at one or more points thus affords an exact check on the conductor's returns.

ADVERTISING FROM THE STANDPOINT OF THE STREET RAILWAY COMPANY

BY A. W. WARNOCK.

General Passenger Agent, Twin City Rapid Transit Company,
Minneapolis, Minn.

This is the age of advertising! No one who wishes his business to grow and develop neglects the important feature of publicity.

One of the last industries to adopt this modern business force was the street railway, but these carriers are appreciating that printer's ink, judiciously used is the power to encourage trolley travel and assist in the delightful work of paying dividends. It is such an axiomatic and proverbial saying, "Advertising Pays." I will not take any time to discuss that question. I shall try to suggest some practical means for advertising street railways that may prove interesting.

When I say that advertising pays, of course I mean—it depends. Depends on what you have to offer and how you offer it. But granted you apply the same reasonable business rules to the problem that you would to any other feature of operation, there is no question but that returns will be satisfactory.

I take it what one company thinks and what one company has done will be a far more interesting story to hear than a long line of glittering generalities. So with that end in view, I want to tell you what the Twin City Rapid Transit Company, or the "Twin City Lines," as we are now calling our system, has recently done in the line of publicity.

Two years ago the "Twin City Lines," completed and opened for travel the famous "Great White Way" electric line of eighteen miles from Minneapolis to Lake Minnetonka. This line is now one of the really celebrated electric lines in the United States and has been the means of revolutionizing cottage and picnic life at Lake Minnetonka, "The Lake Beautiful" of the Northwest. With the opening of this line, the company found a great many opportunities for expansion. The fleet of four large steamboats already operated on Lake Minnetonka was purchased and rebuilt. The company also built in its own shops six fast express boats, each 70 ft. long and capable of a speed of fifteen miles an hour. The idea of this fleet was to encircle the shores of the lake and build up a summer cottage business for the electric line, as well as to offer transient tourists and excursion parties an opportunity to cruise the lake.

To supply the demand of picnic parties, sixty-five acres on beautiful Big Island were purchased and converted into a most attractive picnic and amusement resort. This island is two miles from the terminus of the electric line, and three large ferry boats which the company built, with a carrying capacity each of a thousand passengers, were put on to perform a shuttle service between the electric line and the park. One of the steam roads which had furnished service between Minneapolis and the lake was leased and electrified, giving the "Twin City Lines" two first-class routes between Minneapolis and the lake. In view of such broad development there was urgent need for the widest publicity to secure business, and the general passenger department was formally launched. This department had for its function the development of business for the two lines to Lake Minnetonka, for the fleet of a dozen steamboats, and for Big Island Park, as well as for many other parks and resorts, such as Minnehaha Falls and Lake Harriet in Minneapolis; Phalen and Como Parks and Indian Mounds in St. Paul; Wildwood, on White Bear Lake.

Having outlined our necessity and appreciating that our lines offered unique and magnificent opportunities for exploitation such as are possessed by few electric transportation companies, we undertook a vigorous campaign with the central idea of letting the public know what we had for sale. Our advertising has been along four general lines: Newspapers, folders and pamphlets, car window cards, special advertising, and I will briefly relate our experience with each of these methods of advertising.

NEWSPAPERS

There has always been a good sentiment existing between the "Twin City Lines" and the local newspapers. The time will probably never come when street railways or any other public service corporation will be immune from criticism on the part of the press, and this is a good healthy sign, both for the press and for the roads. I am making a temperate remark when I say that, through and through, by and large, our newspapers, as well as our public, entertain a fine feeling of regard for our company. I think this is due in large part to the high personnel of our management which is broad, progressive and always disposed to do the fair thing. Our company has anticipated what the public wants instead of being urged by them to fulfill their wants, and I think as you travel the country over, you will find no street car patrons more loyal or more prone to express superlative praise for their home system than the people of the cities of Minneapolis, St. Paul and Stillwater. I emphasize strongly the feeling between the press and the road because I think it a strong asset that every road should have. The good-will of the newspapers is of incalculable value and a road should utilize every fair means to secure the support of its newspapers. I mean by this that the relation of the company to the public should be of such a character that in all fairness the newspapers will have a friendly feeling for the company. Criticisms, of course, will be made on the best of service, but the general trend of sentiment should be favorable. There is nothing that appeals to newspapers so strongly as the practice on the part of a public service corporation of taking the public into its confidence, and we have always taken our public into our confidence.

Our newspapers do not accept tickets or transportation of any kind from us, and all the advertising we receive from them is paid for by us in cash at full standard rates. We make contracts with all the papers at the beginning of each year for a good round sum, sufficient to tell the public all about our attractions, as well as sufficient to impress the newspapers that we are eager to give practical expression of our friendship for them by buying liberally of their product. It depends largely on what we have to say as to the amount of space we use. We have used as much as a page in each of the papers to tell of some new feature of our service, and we have taken as small a space as four inches. Our advertising campaign is on practically from May to October, and during those five months we plan to use our entire yearly contract with each paper. Before we systematically undertook advertising, our company would spasmodically give a page advertisement possibly in the middle of the winter to the various papers for their special edition, which, of course, had no advertising value as far as our company was concerned. Since we have adopted a business basis for advertising, we absolutely eschew the special edition and the newspapers are eminently satisfied with the basis we have established.

It is a difficult thing to measure the returns for a transportation company from newspaper advertising. The department

store which offers a list of articles in its advertisements one day, can the next day, by actual sales, tell very closely the net result of the advertisement, but in advertising any transportation feature, it is difficult to check up exactly by the general volume of business that is developing. I am quite convinced, however, that our newspaper advertisements have not only educated people as to what we have to offer, but by exploiting what we are doing and are trying to do, a warm confidence in us and our intention to serve them has developed.

The good-will of reporters, paragraphers, editorial writers and jokesters on a paper, it seems to me, is of inestimable value to a street railway, and if they poke good natured fun at your company, it is good advertising. I would sooner have our announcements printed in the columns of good, clean newspapers and carried into the homes of our patrons, than any other means of educating the people direct. Such advertising can scarcely be properly estimated or appreciated. Beyond question, the more intelligent newspaper advertising you do, the better will be your business. I am making these statements on the assumption that the service you are advertising is as good and possibly better than what you say it is. Personally I feel that our company offers such good service under all conditions that superlative language is warranted and still be absolutely within the realm of actual truth. If you do not have a good proposition to offer, then make it a good proposition or do not advertise it. The same rules apply to advertising a street railway as to advertising a theater, a department store or any other enterprise. A good article can stand unlimited advertising, a poor one cannot win out in the long run, no matter how much or how good the advertising may be.

FOLDERS AND PAMPHLETS

Our company had never issued a folder of its own until we decided to issue the Twin City Trolley Trips folder. We planned to produce the best electric folder that had then been issued. We adopted the regular standard railroad folder as to shape, nine by four inches, and it was to comprise forty-eight pages. The best paper was selected and the best printing company was given the work. We went to a great deal of pains to have an attractive birds'-eye view map of our system engraved for four colors. We devoted the entire folder to outlining suggestive trips on our lines, and we neglected no opportunity of indicating to the reader where he might go and what he might see by traveling on our cars. Small charts indicating exactly where to get on cars and where to get off, and a wealth of pictures with reading matter boiled down as much as possible, was the material we put into this publication and enclosed in a most attractive cover, we launched our first edition of fifty thousand copies on a breathlessly waiting public. This year we issued the second edition of fifty thousand copies. Our folder has been the model for at least ten other electric folders. Speaking purely from a mechanical standpoint, it was said to be the finest trolley folder ever issued, and we have something like a bushel of letters from prominent officials of steam and electric companies in the United States endorsing this judgment. Wonder was expressed that we issued such a good folder, but there is no wonder about the matter. We have a wonderful proposition of splendid car and boat lines and glorious places to tell about, and the story should be told in the best possible way. Had we not used as good paper or employed as good mechanical means to turn out a folder that would be appreciated and kept by the recipient, I think we would have fallen short of doing something first-class as it should be done.

We instituted a practical campaign of distribution. By advertising to send the folder to any address on receipt of four cents in stamps, we started an avalanche of mail and inquiries that has been coming upon us ever since. I think we have received requests for our folders from prospective visitors living in nearly every state in the Union, as well as a number of foreign countries. We have the folders on distribution at our ticket offices where copies may be had for the asking. Prospective visitors to the Twin Cities are always eager to secure copies and our large department stores are more than pleased to distribute them from their information bureaus to visitors who have just come to the cities. We have enjoyed the cooperation of not less than fourteen of the largest and best department and stationery stores in the Twin Cities in this matter, and the support and good-will of these stores is a good advertisement for us as they really constitute themselves agencies in our favor.

The returns from folders can be checked pretty closely. That

is to say, you can tell more or less accurately whether the folder is a good advertisement or not. On the cars day after day I see patrons perusing the pages of these folders and following up special trips which are outlined. Day after day people come into our office to ask advice as to certain desirable trips marked out which they wish to make, and as some of these trips run as high as sixty cents per passenger, it can readily be seen that it is profitable to have instilled in the home body or stranger's mind the desire to make these journeys.

A trolley folder should be absolutely devoid of advertising matter, except for the company itself. It should be a story of the cities in which it operates told in such a broad way as really to be a text-book for the cities. It should accurately picture and portray the many beauty spots around the cities whether reached by the cars of the company or not, and altogether, it should breathe a spirit of boosting for the cities it represents in such a way as to command the admiration of the public and civic clubs which appreciate publicity of this character. The first cost of maps and plates may seem to the uninitiated as severe, but I do not think any money could be better spent in the publication of a folder than for the best paper, ink and engravings. It should be a tourist handbook that reflects, in a strong, clever way, the company it advertises and the cities it describes.

We have also issued an "Airship View of Big Island Park," a twenty-page folder exclusively for Big Island Park. This contains, on one side, a bird's-eye view of Lake Minnetonka and Big Island Park, and is used to create a distinct travel to Lake Minnetonka. The method of distribution is practically the same as for our trolley folder, and we also use it as a means of circularizing all prospective parties to Big Island Park.

A third folder of six pages we issue describes our "Sight-seer" car service which we have successfully operated for the past two seasons. This "Sightseer" offers a belt trip of 40 miles around the Twin Cities in three and one-half hours for fifty cents, and has been the means of educating strangers and showing them the beauties of two cities, which they could not possibly see on their own account in so short a time and in so comfortable a manner. To each passenger on the "Sightseer" we give a small twenty-four page pamphlet containing the lecture as given by the conductor on the car. This pamphlet serves in a manner to bring to pleasant memory the trip and lecture the passenger has enjoyed.

We issue a complete sixteen-page time table for all our inter-urban lines, with steamboat schedules and information which strangers need to guide them over our interurban lines. While we issue these time tables in an attractive way typographically, they are printed on inexpensive paper to permit the widest distribution.

In addition to having prominent stores in the Twin Cities hand out our printed matter, we have our publication on distribution in the folder racks of all the railroad ticket offices and hotels. These racks are controlled by an association of ticket agents of both cities. The ticket agents of all the roads entering the Twin Cities have a most friendly feeling towards our company and are always glad to suggest trips and plan little journeys over our lines for strangers who come to their offices with the inevitable inquiry: "How can I spend a few hours before my train leaves?" I have had so many direct evidences of this attention on the part of our railroad ticket friends as to feel that feature of trolley travel development worthy of special endeavor.

In the Twin Cities, the telephone companies and Union stations maintain information bureaus, and these also distribute our literature and take an active interest in telling strangers what we have to offer. With such a kindly sentiment toward us on the part of so many different agencies with which the traveling public comes in contact, it can readily be seen that we possess a good-will in a line of publicity that is of immeasurable value.

CAR WINDOW CARDS

An attractive feature of our publicity is the use of large cards for the windows of our cars. We use eight windows of each of our standard cars, four on each side. These cards are 13 ins. x 24 ins. in size and are fastened on the inside of the upper sash. They are printed in large type on both sides so that they can be read from the inside of the car as well as from the outside, and on these cards we sing the praises of all the lakes, parks and resorts on our lines. One of these cards is devoted to the telling of the adventures of Hi Jinks, the Picnic Person.

Mr. Jinks has had a really remarkable career. We tell each week with a funny cartoon and a verse, the adventures of Mr.

Jinks at Big Island Park, and the series of twelve Hi Jinks cards for the season of 1907 has made such a hit as to really be worth passing mention. The first week we had Mr. Jinks making his bow. The second he was hugging himself with delight at the idea that Big Island Park was soon to open. The third week he was packing his picnic basket to go to Big Island Park, etc. Each week he does something new.

We held a competitive contest in which artists prepared this character from the suggestion we outlined of a genial, old bachelor who was out for a good time, and who could appreciate the good things we had to offer at Lake Minnetonka. After the character was finally selected we employed the best lithographers to develop the pictures. The verses were really funny and of such easy rhyme as to be remembered. To illustrate how the Hi Jinks cards have taken with the public I may say that we have had a wealth of poems submitted by patrons from everywhere. Presidents of banks, lumber companies and other large enterprises, as well as clerks, bookkeepers, school teachers and a vast army of other trolley riders suggested verses about Mr. Jinks. Mr. Jinks has become as good an advertisement for the "Twin City Lines" as any vaudeville joke that has made a soap, or breakfast food famous. The compliment has been paid us that Mr. Jinks has Mr. Sunny Jim and Miss Phoebe Snow completely wiped off the map. This, perhaps, is fulsome praise. People have actually been on the lookout for these cards as they appeared every Saturday morning in our cars. We have kept Mr. Jinks entirely in our own cars and he has come to be recognized as one of the distinct officials of our company. Only rarely has he made his appearance in newspaper columns, although the jokesters and the rhymsters on all the daily papers have used him as a mark at which to fire many good-natured shots. The career of Mr. Jinks has quite convinced me that people like good-natured advertising with a touch of humor in it. When you get your advertising so serious and so matter of fact that it reads like a complaint in a lawsuit, I should say you were on the wrong track, but when advertising develops a good-natured and kindly feeling on the part of patrons towards you, I believe it is a sure sign that people are paying attention to what you are saying. Next year we have in mind using a sequel for Mr. Jinks, and we expect to make this character lead even a more successful life than he did this year.

While speaking about our car window cards, I should say that most companies have it in their power to use their equipment for advertising in the cheapest and most effective way possible. Street car advertising admits of much display and the use of colors, and appeals to the trolley rider. It always strikes his eye when he is in a receptive mood and this advantage is very great. Street car advertising admits of all the inventive genius one can summon to one's aid and offers an opportunity for the exploitation of new parks, lakes, resorts, opening of new lines and other trolley information which should be given to the public attractively and persistently.

Last year our company adopted an effective trade-mark. It is designed after a Spanish Mission window and is original, attractive and unique. We are using this symbol very generally on all our advertising matter, letter heads, etc. Every road ought to have a distinctive trade-mark. Right in line with our publicity we have named our famous fleet of boats after cities, towns and resorts on our lines—Como, Excelsior, Harriet, Hopkins, Minneapolis, Minnehaha, Minnetonka, Plymouth, Puritan, Saint Paul, Stillwater and White Bear. Each boat is thus a good advertisement for the place whose name it bears.

SPECIAL ADVERTISING

In special advertising, our company has followed two or three lines that have been effective. We had the best landscape photographers photograph our lines from one end to the other, and the most attractive scenes of cars, boats, parks, double-track, wooded grove, shining lake, beautiful meadows and woods have been reproduced by their cameras. These photographs are 9 ins. x 12 ins. in size and form a collection distinctly in a class by itself. In each of these photographs can be seen a bit of track or one of our cars or boats somewhere in its make-up, and this gives us an advertisement that it is impossible to miss. These photographs are so good that persons publishing books about the Twin Cities invariably come to us for the loan of them, and as all the photographs are copyrighted, we grant the loans on condition that a line of advertising for our company be printed with the picture, and this is readily done. The photographs are so good that one company issued thirty souvenir post cards in colors, absolutely without

expense to us, and they report it is the best selling series that they have in their large stock. Furthermore, each card bears a line of advertising for us which was written and put there by us. So much for the great benefit of a fine collection of photographs to any electric transportation company. These photographs have also been used for souvenir stamp books, and the publishers have reported that the sales have been large.

The two maps published by us, one being the bird's-eye view of our entire system, and the other the bird's-eye view of Lake Minnetonka and Big Island Park, are so attractive and they tell such a good story, that every hotel in the Twin Cities, as well as some of the larger business houses, have had them framed and given the best places possible in their rotundas and offices where strangers may see them.

I do not know of any business to-day that offers such strong possibilities for intelligent exploitation as street railways, or "Electric Railroads," if you prefer the term. The people generally feel a sense of proprietorship in the street railway when they see its cars running along the street, and take a pride in them that they would not think of entertaining for the commercial railroad with which they come in contact only when they go to the station to meet friends or take a trip. With this sense of proprietorship on the part of the public, it is easy to appeal effectively to your patrons. For ourselves, the "Twin City Lines," offer so many attractions in the way of parks, lakes, falls and other points of interest, that it is really a pleasure to educate the public as to where we can take them and how well we can take them there. With good feeling existing between the company and the press, with the manifold advantages we possess, and with the desire to do the fair thing on all occasions, our company offers a magnificent field for the most intelligent exploitation. We aim to make our lines the best advertised in all America.

In conclusion let me say from a close personal observation, that these statements apply with equal force to almost every electric transportation company in the country. The ground for this line of endeavor still lies fallow in many communities. That business can be developed and a fine public spirit engendered by printer's ink, properly, intelligently and enthusiastically applied, is my profound conviction.

LIGHT FREIGHT HANDLING BY ELECTRIC LINES

BY P. P. CRAFTS,

General Manager Iowa & Illinois Railway Co., Clinton, Ia.; General Manager Joplin & Pittsburg Railway Co., Pittsburg, Kan.

This subject has been discussed pro and con for a number of years; in fact, ever since the interurban railway became a reality, that is, after it branched from the confines of the so-called urban railway. Although some of the older and slower roads began to conduct a so-called express business several years ago, the freight carrying field was not entered with spirit until the modern high-speed road, built on private right-of-way with heavy construction, was developed. It was then discovered that the interurban not only could compete with the steam roads and express companies, but that, due to its frequent and reliable service, it could also develop a freight business that could not have been developed by them. To be sure, a number of the earlier roads have charters which do not admit of their carrying freight or express, but, on the other hand, the managers of many roads, although unhampered by such restrictions, have not given the subject the attention which it deserves.

As a result of the errors made by the earlier roads, coupled with their faith in the final outcome of a concentrated and careful campaign, some of the newer high-speed roads in the Middle West made a start. To-day it is a common thing to read of interurban railways financed and constructed with a view of handling freight as well as passenger traffic, as it is now becoming an important factor in the earnings.

Where parallel steam competition exists, interurban managers should not be discouraged, for shippers will favor the road which gives them good passenger service, provided, of course, rates are equalized and proper attention given to that branch of the business.

Generally speaking, it is a mistake to assume the position that freight will be carried only as an accommodation to your patrons, and then charge an exorbitant rate or neglect to ship promptly, or to take proper care of the shipment after arrival at its destination. On the other hand, many managers, in their anxiety to build up a profitable business, have overloaded their

roads with expensive handling facilities, such as costly freight depots, intricate accounting systems, free team deliveries, etc., which have eaten the profits that might otherwise have been realized.

For that reason, it is sometimes a mistake to charge a higher tariff on passenger cars than is charged on freight trains; rather say to the shipper that you will handle his small rush shipments, on passenger cars when possible, at the regular rate, as an accommodation, so long as he confines himself to the freight trains as far as possible. It is very gratifying to the average shipper to know that the road upon which he depends will accommodate him when he gets caught short of some commodity, or that his profits will be increased by being able to obtain quick shipments of perishable goods. This also induces him to carry a smaller stock of staple articles, the result being that the road gets the benefit of a larger number of shipments at the minimum rate, which is, in fact, the most profitable part of the freight business, except in car-load lots.

Whether or not a freight business will be profitable depends somewhat upon the following conditions: The population served outside of the main terminal and its dependence upon that terminal as a trading center; the proximity of other trading centers to the population served outside of the main terminal, and the railway facilities tending to attract business away from the main terminal; steam trunk line connections leading to the main arteries of commerce and the ability of interurban roads to establish joint rates with them.

A full exposition of the third condition cannot be given without consuming too much time. In general, however, an interurban road with proper freight handling and terminal facilities, which offers quick and efficient service, together with joint rates with some trunk line, in competition with other trunk lines operating between competitive points, may reasonably expect a fair division, or a greater portion, of the freight traffic. As stated earlier in this paper, shippers desire the best service with lowest rates, but, assuming rates to be even, shippers are generally favorable to the roads which provide good passenger accommodations; consequently, the interurban roads reap the reward of frequent passenger service.

Owing to the antagonistic attitude of the steam roads, however, it is generally difficult to establish joint rates except where competition does not exist between them, unless connection may be made with some competing road which disregards the pooling or territorial agreements. Let us trust that the day is rapidly approaching when the national and state commissions will take such action as will induce our larger and more powerful brothers to recognize the despised interurban. The progressive and aggressive attitude of the interurban managers, if continued, will exert more influence in that direction than anything else that can be done.

Interurban freight traffic may be properly divided into the following classes:

1. Strictly light packages, transported only in baggage rooms of passenger coaches, at express rates or at a fixed charge per package or per hundred pounds, regardless of class, and generally termed express business.
2. Less than car-load freight transported on fast baggage cars at regular freight or special tariffs under regular or special classifications, generally the former.
3. A combination of class two and the haulage of a few local car-load shipments daily at regular tariffs and classification.
4. Regular car-load tariff hauled by steam or heavy electric freight locomotives at regular tariffs and classifications. Or any combination of the above mentioned classes.

Depending upon local conditions the freight traffic of a road may be confined to any one of these classes or it may be started in the first class and grow to the fourth class. As the fourth class will be discussed in another paper, I will treat only the first three classes, particularly the second class.

A freight business of class one may be conducted at small expense and is of material assistance in the earnings of a road. The freight carried consists generally of packages easily transported in baggage compartments of passenger cars, which are usually empty except for a few trips per day. Usually no extra office force is required, the only expense being for stationery, books and possibly a small storage space at the main terminal. In some cases, when the charges are a certain rate per package, regardless of weight within reasonable limitations, a proper system of tickets dispenses with way-bills, expense bills, etc.

Inasmuch as the majority of freight-handling interurban road come under the head of class two, that part of the paper will probably be of interest to the greater number of managers, so I shall enter into greater detail in handling the subject.

Interurban roads which conduct their freight business under the head of class two more nearly approach operating conditions parallel to the time-freight business of steam railways. The ability of the interurban roads to make fast time and to deliver at highways, farm crossings and warehouse or store doors is an inducement to either the shipper or the receiver, which assists in obtaining the business. Being usually restricted, however, to a narrow car similar in appearance to a passenger car, due to operating over city streets, an interurban road has limitations of its freight-earning capacity.

The profits of such a business depend largely upon the opportunity of the management to secure combined freight and passenger depots at the terminals and in the larger local towns, so that extra labor in billing and handling at stations may be avoided, upon the charges of terminal city railways for the right to haul freight over their tracks, and upon the hour of day when freight may be delivered to receivers.

Generally speaking, the margin of profit in this class is close and only careful management will produce a profit, particularly during the first few months after the business is started. Expenses must be carefully watched and attractive freight houses and convenient hauling facilities at terminals sacrificed for something which costs less to maintain.

Damage claims must be carefully handled, and to that end it is advisable to adopt some system of billing and accounting which permits a shipment to be easily traced from its starting point to the final destination. Some interurban roads have adopted simple billing systems, requiring only one writing to make the receipt, way-bill, expense bill and office copy. Such a system, however, does not permit of proper checking, particularly if merchandise is transported over more than one road.

After an interurban road enters class two, a good local commercial agent is a necessity. The business, consisting of a great number of small shipments, requires constant development and care, particularly if competition exists. A live commercial agent, who is a good street man, and not a desk man, earns his salary many times over, particularly if he understands how to deal with shippers. The business obtained depends considerably on the personality of the commercial agent.

I fear that many managers, in charging expenses to the freight business, do not give proper consideration to such items as additional clerks, printing and stationery, insurance on goods in freight houses, a proper percentage of the receipts to cover loss and damage, power for freight cars, proportion of track and line maintenance, telephone service, interest on the freight handling investment, etc. Neglect of these items deceives the manager as well as his stockholders, and unless receipts grow beyond the safe point the awakening will be painful and embarrassing.

Perhaps a brief description of the freight business conducted by the Iowa & Illinois Railway Company may be of interest as illustrating the point brought in the foregoing paragraph. We went into the freight business in a very tentative manner. In fact, it took considerable time for us to decide whether or not there was sufficient business in less than car-load lots to warrant the purchase of a freight car and the expense of operating a freight business.

The next grave question was that of rates, and, after considering for some time a reduction of the rate below that permitted by the Iowa state law for class "A" roads, we finally concluded to adopt the maximum tariff and to consider the business as freight and not express.

At first our old passenger depot in Davenport served also as a freight depot, but within a very few months, we outgrew the capacity of the space allowed to freight and were forced to take our passenger business to a new location. In Clinton, we still have sufficient space to handle the business, but within a very few months we will be compelled to seek additional storage room.

Immediately upon starting the business, we engaged a commercial agent, and the quick growth of the receipts to the point where we are paying expenses showed our wisdom in so doing. Within one year, with one freight car engaged in the business and the use of passenger coaches to carry some freight, the business grew to a gross exceeding \$10,000 a year. During the

summer and fall of 1906, we were compelled to operate our freight car two round trips per day for nearly 75 per cent of the time, and after the contract with the American Express Company was put into effect, we purchased and placed in service a trailer freight car, having the same capacity as the motor. The improved facilities which we have been able to offer shippers since purchasing the second car have increased the business at a very rapid rate.

We make a specialty, on less than car-load business, of beating the time of the steam railroads twenty-four hours between Davenport and points on the Chicago & Northwestern Railway in the western part of the state. For this reason, we obtain considerable business which is transferred to that road. Besides this, rush shipments in small quantities of perishable goods, such as milk, cream, butter, eggs, fruit, etc., from certain stations are handled in the baggage rooms of the passenger coaches.

We find that a trailer freight car is much cheaper to operate than a motor, but of course, it can handle only through business. It does not seriously delay the passenger coach to which it is coupled.

When the freight business was started, we adopted what we considered to be a very simple set of forms for billing and accounting, but we soon ascertained that the tracing of damaged and stray shipments was very difficult, and after carefully looking over the field we finally adopted the forms used by the Chicago & Northwestern Railway. These appeared at first to be very complicated, but a short acquaintance indicated their simplicity and the ease of tracing damaged and stray shipments.

We make a specialty of rush orders by telephone via our private line. Often a merchant in Clinton who finds himself short of some particular article telephones to us, and through our Davenport office via the private line we transmit the order to the shipper in Davenport. Shipments so ordered are frequently in Clinton within two hours from the time we were called up at the Clinton office. Wherever possible, we deliver from the cars to the store doors, which saves drayage and naturally brings business to us. A number of small platforms, at which we stop the local express cars, have been built by the shippers between towns.

We constantly endeavor to please our shippers and to show a spirit of co-operation, which has a great influence on the growth of the business.

We endeavor to be conservative in charging off expenses against the freight business and work into it anything which rightfully belongs there. We go so far as to charge off monthly three per cent of the gross receipts. This is piling up a tidy fund, but we propose to allow the account to grow, for at any time we may have to meet heavy freight damages due to fire, water or wreckage.

At the present time, the earnings from this business amount to 15 per cent. of the total gross and we hope to see it reach 20 per cent. on the same basis, *i. e.*, while our freight business comes under the head of class two.

Our transfer business has been developed under heavy steam road competition at lower rates, for in obeying the state laws we have been compelled to charge two local rates which are higher than the rate for the same mileage in a continuous haul on one road. The saving of time mentioned above has accomplished that result. A recent ruling by the Iowa Railway Commission reduces the tariff on two locals 20 per cent., and although our receipts per shipment will be naturally reduced, the increase in volume of business will be gratifying.

This exposition of the freight business as conducted by the Iowa & Illinois Railway is not made so much to indicate what is being done by that road, but is rather intended to illustrate the methods generally pursued by interurbans of like character.

An investigation made of a number of roads has brought out the fact that the average interurban conducting a freight business pursues practically the same methods described in this paper. There are, of course, a number of roads which pursue other methods and successfully too, but in such cases, local conditions govern to a great extent.

The percentage which earnings from freight traffic bear to the total gross earnings of course depends largely on local conditions, but of these roads which have favored me with statistics, I have ascertained that these earnings vary from 5 to approximately 40 per cent. of the total gross. Interurbans which handle car-load business, in addition to the traffic of which

this paper treats, in some cases enjoy gross earnings from freight exceeding those derived from passenger traffic.

I believe the experience of interurban railways to this date is that such satisfactory results are now being obtained, I am safe in predicting that any average interurban railway, the existence of which is warranted by prospective passenger traffic, can be assured of a profitable freight business, which within a few years, if not immediately, will become an important factor in its earnings.

A DEPARTMENT OF PUBLICITY

BY J. HARVEY WHITE,

Publicity Manager, Boston Elevated Railway Company

The organization of publicity departments by public service corporations is a comparatively recent innovation. For many years certain corporations have maintained, carefully organized and systematically conducted advertising departments, but it has been only within the past few years that a few of the larger companies have established departments for supplying the public with general information relative to their affairs, plans, policies and acts.

Publicity has been heralded as a positive and permanent cure for all corporate ills. A loud and increasingly clamorous cry for corporation publicity is being raised by the public, press and political leaders who commonly represent that corporations are monsters of iniquity, plundering the poor defenseless public. So persistently have they been portrayed as institutions of dishonor, greed and oppression, that the public is disposed to believe any accusation against a corporation unless overwhelming evidence to the contrary is produced.

The problems involved in the public relations of large corporations to-day are quite as important as, and in many cases much more complicated than, those involved in operation. It is in the general field of public relations that a department of publicity finds its principal usefulness and performs its most valuable service. Its function is to enable the public to know the corporation as it really is.

Annual reports disclose the vital statistics relating to operation and finance. These compilations are not only seldom read, but are almost meaningless to the general public. They do not and cannot meet the popular demand for publicity. The public wishes to know and is being educated to the belief that it has an absolute right to know practically everything that relates to public service corporations. A refusal to answer in full every question that may be proposed to a corporation is commonly regarded as *prima facie* evidence that it is afraid to have the truth known and conclusive evidence that it is arrogant, insolent and despotic.

Public opinion is a practically irresistible power. The company that stands discredited in public opinion is hampered and harassed at every turn. It does not receive fair treatment. Its merits are not recognized and every shortcoming will be magnified. On the other hand, if the public believes that a company is trying to give an efficient service and a "square deal," its excellencies will receive some recognition and its unavoidable defects will be tolerated with reasonable good nature by a large portion of the community.

No one who participates in the larger responsibilities of street railway management needs evidence outside of his experience as to the power of public opinion, or as to the importance of securing and holding, the public good will. It is undoubtedly a fact that the service rendered by most street railways merits a larger measure of public confidence and esteem than is accorded. The reason that the public so often fails to give full credit where credit is due is not because the public is constitutionally unfair but because it is uninformed or misinformed. To overcome this defect, to eliminate unfairness and hostility based on ignorance or misinformation is the function of a department of publicity, and the extent to which this is accomplished is a fair measure of the department's efficiency. Responsibility for criticism and opposition based upon real facts must be borne by the general management, but responsibility for hostility and unfairness based upon public ignorance must be borne by the department of publicity if it is authorized to make the real facts known.

The most efficient, available and practical agency for developing a fair and even friendly public sentiment is the local press. If the local newspapers constantly condemn the service and policy of a corporation, even though the criticism be unfair and unfounded, the public is certain to become antagonistic. If,

on the other hand, the facts presented by the newspapers to their readers show that the company is alive to its obligations and is giving a reasonably good service and that its shortcomings are not due to indifference, inefficiency or willful disregard of public rights, public unfriendliness will be reduced to a minimum.

The first step toward securing fair treatment of a company by newspapers is fair treatment of newspapers by the company. This means the reversal of the old and rapidly disappearing policy of giving no information that can be withheld and establishing a policy of entire frankness and withholding nothing that can properly be supplied for publication. If those whose duty it is to gather news learn from experience that all reasonable information is truthfully and promptly supplied to them and that it is only in rare cases that their requests are denied, they will learn to depend upon the company, as they ought to be able, for their news, and the stories that get into print will be more accurate and more satisfactory both to the publisher and the corporation.

The first essential for a department of publicity is ability to secure information quickly and accurately. The person in charge should have facilities for reaching every department and branch of the organization. The range of inquiries touch every phase of railway activity and interest. The head of the department will be called upon to give information concerning operation, construction, equipment, discipline, law, legislation, accounting, finance, plans, policies, accidents, undertakings and occurrences of every description. It is not necessary for the head of a department of publicity to have a very profound knowledge of any particular branch of the business, but he should know a little something about nearly everything that pertains to, or affects the company.

Next in importance to ability to get information quickly and accurately is to make the department accessible to the newspapers at all hours of the day and night. From midnight until about ten in the morning, there is seldom need of being prepared to furnish information about anything except accidents or other unusual occurrences, but from ten o'clock in the morning up to midnight all sorts of inquiries are received and the department should be prepared to answer them.

The equipment of a department for publicity work need not be elaborate. One man with a telephone connected with all of the departments and stations, a desk and a few chairs for the use of reporters can accomplish considerable valuable work. A large company will require a somewhat more extensive outfit. The writer of this paper is provided with two offices; a private office for himself, and a general office for a stenographer and clerk. Each office has a telephone. There is a small library, a collection of maps and plans, files for clippings, documents, memoranda and correspondence. These offices are open from nine to five on business days. During the other hours of the day and night and on holidays and Sundays a clerk, to whom all accident reports are made as soon as possible after their occurrence, is on duty and gives information to the newspapers.

The company's effort to cooperate with the newspapers in securing accuracy in stories relating to the company is generally appreciated in the newspaper offices. Inaccurate news accounts are still printed and the company is misrepresented in reports, but there are decidedly less of these objectionable and unwarranted statements than formerly appeared. Uniform accuracy in newspaper reporting is as impossible of accomplishment as the entire elimination of accidents in railway operation. All that can be accomplished in either case is to reduce the unfortunate occurrences to a minimum.

The Boston Elevated Railway Company does comparatively little advertising. The exhibit which has been prepared for the convention is, therefore, not very extensive. It consists of a bird's-eye view of the system on a large poster, a map of the central portion of the system, showing connections and pictures of places of interest reached by it and a few display newspaper advertisements of trolley trips.

What has been said in this paper relates to publicity from the company's standpoint. An appropriate conclusion to the discussion is a presentation of the same subject from a newspaper standpoint, and this is to be found in the remarks of Thomas F. Anderson, one of the best-known representatives of the press of Boston, made at a meeting of the Massachusetts Street Railway Association last winter.

Mr. Anderson said: "This is an age of publicity, and it is a great mistake for any transportation company or other public service corporation to try to ignore this fact and keep the news-

papers and the public in the dark concerning its doings. In the nearly twenty-five years that I have been actively engaged in journalistic work a vast change has taken place, not only in the physical make-up and the management of street railways, but in their general relations to the press.

"In the old days, it was sometimes next to impossible for a newspaper man to obtain from the head officials of these companies any authentic information about the company's affairs, no matter of how legitimate public interest it might be, and one of the most dreaded of my 'assignments' in the earlier days of my newspaper work was that of interviewing the taciturn and unapproachable president of one of the larger of these roads.

"How different are the conditions to-day! Twenty or twenty-five years ago the reporters often had extreme difficulty in getting a satisfactory report of the annual meeting of one of these companies, but see what happened here in Boston within a week, in connection with the annual meeting of the Boston Elevated Railway Company.

"Not only was a carefully prepared summary of the company's report and financial statement sent around in advance to all the Boston newspapers, but the company, through its publicity department, even made itself responsible for officially reporting the election of directors and all the other essential details of the meeting. The newspaper reporters and editors didn't even have to do any thinking and the best thing about it all was that the published reports were in exact accordance with the facts. Under such conditions there was, of course, no excuse for inaccuracy.

"Twenty years ago the reporter sent by his city editor to interview a street railway president—frowningly 'grouchy' or smilingly uncommunicative, as the case might be—always went forth on his errand with fear in his heart, and usually was obliged to cool his heels in an outer office awaiting the great man's pleasure.

"To-day he sets forth with lightness of spirit, for he is morally certain that the twentieth century railway magnate will give him the 'glad hand' and perhaps a good cigar; and if he cannot give him the information he seeks he will at least send the newspaper man away feeling almost as pleased as if he had secured the desired news.

"Not only have the managements of our street railways adopted a radically different policy with respect to their personal dealings with representatives of the press, but they have gone even a step farther, in some instances, and established official 'publicity bureaus,' after the manner of the modern steam railroad company.

"Through the medium of these departments, the press is kept in constant and almost instantaneous touch with the affairs of the company, and the president, vice-presidents and general manager of the corporation are each and all relieved of the burden of attending to the wants of a battalion of newsgatherers.

"When I speak of publicity bureaus in this connection I do not mean the departments established by some roads for the special purpose of advertising the facilities and attractions of the road, but those that have been created primarily for the purpose of serving as an official medium of news and news-suggestion between the public and the newspapers.

"The first American street railway company to establish a publicity bureau of this sort was the Boston Elevated Company, and to Col. William A. Gaston, who was president of the company at that time, is due credit for this exceedingly happy concession to a legitimate public demand for authentic information.

"The Elevated Company's publicity department was established in 1897, and it grew out of President Gaston's conviction that the public, which furnished the patronage and the dividends of the company, really had some rights in addition to that of riding a certain distance for 5 cents.

"Another important consideration was that the time of the president was too valuable to be infringed upon very extensively even by newspaper men; and this was probably the determining reason for establishing the bureau.

"J. Harvey White was selected as the head of the department. At first he devoted only a part of his time to this work, but with the growth of the system, and the increasing popularity of the bureau itself with the newspapers, he was soon obliged to give all his time to the duties. Just now that comes pretty nearly meaning twenty-four hours a day, for he is practically 'on call' at all hours.

"Mr. White has an office of his own in the Elevated Company's building, and has a stenographer and an assistant. His

mission in life is not to advertise the company, except as that may come in incidentally to his regular work, but to save the time of President Bancroft—one of the busiest men in New England—and to aid the newspapers in getting authentic news reports about the company, be it changes in policy, accidents, appointments of officials, additions of new rolling stock, or what not.

"His time is given up largely to receiving and talking with reporters who come with every conceivable sort of inquiry, all of which Mr. White is supposed to be in a position to answer off-hand; and when he is not doing this he is preparing special matter to be sent out by himself in the shape of news items or 'special articles.'

"When I called on him the other day he was preparing for the Boston papers an article about the life history of the latest employee to be added to the Elevated Company's pension list; and not only had he obtained and prepared the necessary data, but had sent the company's official photographer to make some photographs of the subject—all of which will later make a readable article that will be appreciated by both the newspapers and the public.

"It is the policy of the Elevated Company—in contrast to the secretive methods of many of the old-time street railways—to give out everything of a news nature that can possibly be construed as legitimate public property; and in the case of accidents everything except the names of those who are injured or claim to be injured. The latter reservation is made for the protection of the company, and to circumvent the enterprising 'ambulance attorneys' who are always around in times of such trouble, and some of whom do not scruple to engineer legal conspiracies against the company. The Elevated Company, like most others, also has a rule forbidding its employees to give to reporters or others any information as to accidents."

PROBLEMS OF THE SMALL ELECTRIC ROAD*

BY H. S. COOPER,

Manager, Galveston Electric Company, Galveston, Texas.

What is a "small" electric road? What is the measure of its "smallness"? The gentlemen asking for this paper indicated that their measure was gross earnings, by the fact that they spoke of "companies with less than \$500,000 revenue per annum." That is one way of looking at it, but the writer believes that gross earnings is not a true measure of a "small" electric road; if \$500,000 gross earnings means a "small" road, does \$500,000 mean a medium-sized one? And if not, where does the medium-sized one begin and end and the big one commence? Also, at the dividing line of \$500,000—or any other amount larger or smaller—do the "problems" change suddenly—or even to any extent?

And, if a mere arbitrary sum of gross earnings is not a proper division line between the "small" road and the one above it, what is the proper measure? Is it active track-mileage, or number of cars on regular schedule or population served? It is not any one or two or all of these for, if it were, many roads would be in the "small" class which are not considered in it and several so-called "small" ones would jump out of it quickly.

For the purposes of this paper, therefore, an entirely different basis of comparison will be taken, not only because it differentiates the roads in line with the question of "problems" but also gives what the writer believes is a truer division between a "small" road and the class just above it than any arbitrary measurement, financial, numerical or statistical.

The "small" road is one whose condition is such that it will not allow of full departmental organization. That is to say, it is one that, although it might rank out of the "small" class in one or two of the items of gross earnings, track-mileage, rolling stock or population served, yet it is so situated that it is considered that it cannot afford to be, cannot be made to be, or is not divided into the proper number of clear-cut and non-interfering departments with a competent, technically practical man at the head of each. It is in such a "small" road that the manager has to be, ex-officio, foreman or superintendent of every department or of most departments; or at any rate, he has to be the expert head of departments. It is in such a road that the detail which, in one fully organized into departments, is settled by the head of that department, comes to the manager's desk or calls him away for a visual inspection and a decision. In such a road he must have "a finger in every pie" instead of merely examining or tasting the finished product. With such a road the duties of the manager are not merely managerial;

they are not only a combination of the executive, legislative, judicial and administrative, but also are paternal and pedagogic. Personally, the sins of every department are directly visited on him, for is he not IT? To him personally come bond and stock holders, the public, the municipality and the employees. He cannot hide behind any department, for he may be, or must be, the decisive head of that department. He cannot take refuge behind the impersonality of an office nor a corporation title, for his personal responsibility is too well known. Even if he blames matters on a "wicked partner" such as the "board of directors" or the "home office," every one knows that it is a subterfuge and, anyway, both of these wicked partners will quickly repudiate the blame and the "last state of that manager shall be worse than the first." This is the real mark of the "small" road as it is also its first problem, a problem that begins and ends at home and is a very vital one.

The importance of organization is not fully appreciated by the "small" or "near-small" road. To many owners and managers, organization into departments seems a useless and non-productive process, entailing no revenue and much unnecessary expense, time and labor. To the very small road where the manager is everything, from engineer to bookkeeper, where the difference between bond interest and deficit is but a hairbreadth, in such a road, departmental organization seems—and probably may be—somewhat of a farce. But it must be a very small road where this really applies. Simple organization is capable of beginning much lower down in the scale of roads than is commonly practiced among owners and managers, and even a pretty full and complete organization can be started—and will prove remunerative—a great deal sooner than is generally believed.

The simplest organization will have not less than four departments—counting the manager as one of them. These would be:

- | | | | | | |
|----|--|-------------------|--|---|-------------------------------------|
| 1. | { | Accounting | { | Bookkeeping,
Car accounting,
Purchasing,
Correspondence, | } Manager and Clerk. |
| | } | Claim department. | Accidents, etc. Manager and local counsel. | | |
| 2. | Generating. Power station. Chief engineer. Assistants. | | | | |
| 3. | Transportation.—Operating of cars. Inspector, or starter and trainmen. | | | | |
| 4. | { | Maintenance | { | Rolling stock,
Buildings,
Track,
Line. | } Superintendent { |
| | } | | | | } Barnmen,
Trackmen,
Linemen. |

This simplest plan of organization is possible to any road; of course in a very small road the manager may have to be the chief engineer and the superintendent of maintenance and of transportation in addition to his other duties, but in any road having full business for six to ten regular cars on an urban line or three or four regular cars on an interurban line, the above plan of organization is none too complex.

As we go up in the scale of the smaller roads, or as a road grows in size, these departments can easily and profitably be amplified until it is—for a small road—fully organized into departments, which means into about eight, as follows:

1. Accounting and auditing.
 2. Claims and legal.
 3. Purchasing and stock-room.
 4. Power station:
 5. Shops.
 6. Track.
 7. Line.
 8. Transportation.
- And, if there is a "pleasure park" attachment.
9. Advertising and attractions.

That organization—those departments—will answer for a wide scope of sizes of roads. It may be that in the smaller roads the manager will again have to be the virtual head of each department; that the departments will overlap and interfere to some extent, but these are drawbacks only to be amended by increase in size, in earnings or in profits and, if properly carried out, that very organization will aid to that end.

It may seem foolish, when your trackman and lineman are one and the same person, when your winder also repairs trucks, when your carpenter repairs cars and buildings and does pipe-

*Abstract.

fitting, to ask them to bisect themselves into heads of departments while you show them how you want the work done, and, perhaps, how to do it; but, unless you expect your road to be forever stationary as to size, you can afford the foolishness. In the first place it is good training for both men and manager; it leads to and teaches the proper forms and the proper use of them; it tends to exactitude in work, in authority, in responsibility and in these ways makes far better discipline and more efficient and economical operation. That is the first problem of the small road—so to organize itself that, without waste of time or energy or the unnecessary unreeling of red tape, it will have the advantage of known authority and responsibility from the track greaser up to the manager. If the road thinks it is too small for any real departmental organization, let it "play at it" with a few simple departments and forms and in a short time that play will develop into earnest.

The second and next most important problem of the small road is its direct and personal relation with its patrons, the municipality and—to an extent—the employes. Nothing can be done impersonally. In every move it makes there is a personal motive imputed and a personal feeling engendered. This is compelled to be the case where most of the patrons and all the municipality know the manager and other officials and many of the employes. It is especially the case if there is a local board of directors and it is a wise board, and a blessing in disguise to the manager, if it puts everything "up to him."

This personal relation of the small road is not really a hard problem and if it is rightly worked out it can be made an advantage that is well worth the trouble to obtain it. In a comparatively small city, up to 50,000 or 75,000 inhabitants, the city will always regard its street railway as one of its possessions; not merely an adjunct or attribute as in the cosmogony of the big city, but as an object of personal interest or value and in the same category as its other civic improvements. If, therefore, the road can be made in any way a credit to the city, something that it can boast of in some particular, it is a distinct advantage gained for the road.

To obtain such a condition—that most valuable asset of a public service corporation—a pleased and satisfied public—is the next problem of the small road, but to do so needs individual care and tact in a much greater degree than with the larger road, where the public is larger and the inertia, therefore, greater; where the electric road is one of many public utilities and, as a whole, less an object of personal solitude to the citizen; where its total physical and financial condition, its rights and its franchises are not facts known to every taxpayer. In the small roads these are all matters of personal interest to the citizen, are discussed in all companies and, as this condition is handled by the road, so will they become aids or hindrances, weapons of offense or defense for the company.

And the simple solution of the matter is: perfect equity between the company, its patrons, the public and the municipality. The personal equation must "cut no ice" in matters general or matters of policy—that policy must be a straight business one requiring only the facts that—as a "public utility corporation" it has only one master, the public; only one client, the majority of its patrons, and that its only duty is to serve and keep faith with the one honestly and squarely and impartially to give the other the best service that its patronage allows.

To listen courteously and interestedly to the complaints, "kicks," hints and crude suggestions of the patrons and non-patrons of the road, to sift the wheat from the chaff and give due thanks for the few poor grains found, and to pass by the bushels of husks without offense; to meet graft—open or implied—without open recognition of it and with an honesty of company policy, purpose and dealings that inoffensively disarms it; to refuse gracefully an improper or impossible request, favor or privilege asked and leave no resentment for the refusal; to explain, excuse, expound, exonerate; to do so as to leave a satisfied or convinced person; to do so as to leave no sting; to do so in a manner to satisfy the company's motives and acts—this is the second problem that the small road puts up to its managerial head.

The third problem is a material one—one that may be divided into two heads: employes and materials. With the first, the relations of the head of the road are not only those of a—or the—superior official. They are, as I have said, pedagogic and parental. He is seldom, if ever, "The Manager" or "Mr. So-and-So"—he is "The Boss," or "The Old Man," personally known and having a personal influence and example with

them. Therefore, much is expected or exacted from him and through him from the company that is not expected from the larger road where the only "boss" is "Rules and Regulations," or an impersonal official in a swing chair before a flat-top mahogany desk; where the employe is not an individual but a unit and, in consequence, is treated by a formula with a very small variable in it. The head of the small road has the direct personal equation to meet in his discipline and in his employment. He can not be as independent of his "help" as can his brother of the larger road, for his reserve supply of trained or valuable men is not as large or as available, the small road has to be, or should be, stricter as to certain requirements than the large ones, especially among its conductors. In the large cities with their steady traffic of strangers, to the company and its employes, the requisites for competent trainmen are, in certain directions, less and less exacting, than for those of the smaller road where a certain courteous attention to and a familiarity on the part of the trainmen with the patrons and their ways is an asset of the transportation department and the company. The public in the larger cities simply desires transportation—rapid transit by preference. It doubtless appreciates convenience, comfort and courtesy, but it will sacrifice them all to spend less time in transit and be content with the change.

In the same category comes the question of supplies, and repairs and renewal parts. Whether to keep these at an absolute minimum for ordinary conditions and again to trust in Providence, or to carry a reserve or emergency surplus—those are the questions, and they are not as simple as they look. The first means small interest on investment, less stock-room space, less handling, less insurance, less depreciation, and a more rigid economy of use—the latter because everything must be made to last to the final minute and under such a strain that the employes are more careful and economical in their use. On the other hand, such a course means small-quantity purchases at small-quantity high prices and also small-quantity high freight or express rates; it also means a shortage of cars or an uneconomical "patch-up" of cars, line or track when the emergency does come.

To carry an emergency surplus means again a case of "insurance of continuity of service" and, as its proper handling will allow the buying of certain things in larger quantities, it means an economy in purchasing. On the other hand, it means an increase in investment, in depreciation and deterioration of certain supplies, and a more lavish use—at any rate a less economical use—unless life and mileages are accurately kept and applied. That means considerable additional clerical work for some one. The decision of these questions is also a local one, influenced by local traffic and geographical and climatic conditions, by the distance to large commercial centers where such supplies are always in stock and—firstly and lastly—by the financial condition of the road, by its policy and by the balanced judgment of the manager.

FREIGHT SERVICE ON ELECTRIC RAILWAYS

BY H. H. POLK,

President, Inter-Urban Railway Company, Des Moines, Iowa.

The first electric railways built were nothing more or less than street railways extended into the country, the track being laid upon the public highways, constructed of light rails and ties, and in most instances operated by street railway men who had had no experience in steam railroading. They therefore did not realize the great possibilities of freight as a source of earnings. Had they, however, given serious thought to the freight question it would have been immediately dismissed owing to the character of construction and the equipment then in vogue.

These conditions have changed, and the modern electric railway is following very closely standard steam railroad construction, which means low grades, minimum curvature, heavy rails and bridges and also the private right of way which permits of high speed and the handling of any kind of traffic. In every territory occupied by an electric railway there will be found freight to be shipped in and out. The electric railways will have steam railroad competition or they will not. If they have no competition they should get all of the freight to be moved, both car loads and less than car loads. If they have competition and make the proper effort, they should get prac-

tically all of the local or less than car-load shipments owing to the frequent and rapid service which can be given.

If an electric railway is fortunate enough to have traffic arrangements with connecting steam railroads it should secure a large portion of the through car-load foreign shipments to competitive points. It seems to me that steam railroads that refuse to recognize electric railways because they are such are very short-sighted. They cannot by this policy stop the building of electric railways and the electric railways can be made good feeders for steam railroads, if afforded proper treatment by them, such as publishing joint tariffs and granting a division of the through rate, thus securing for the steam railroads much freight which originates on the line of the electric railway. There are also many instances where the electric railway taps a new territory, one to which the steam railroad has heretofore never had direct access. To do a successful car-load freight business it is absolutely necessary to have a traffic agreement with at least one connecting line of steam railroad, for if this cannot be accomplished, then the rate from a point on the electric railway to a point on the steam railroad would be the sum of the two locals, and therefore prohibitive in most cases.

The question of interstate through routes and joint rates and facilities for the interchange of traffic is fully covered in the Hepburn Act and the Interstate Commerce Act. It is provided in section 15 of the Hepburn Act that "The Commission may, after a hearing on complaint, establish through routes and joint rates as the maximum to be charged, and prescribe the division of such through rates as hereinbefore provided, and the terms and conditions under which such through routes shall be operated when that may be necessary to give effect to any provision of this act and the carriers complained of have refused or neglected to voluntarily establish such through routes and joint rates, provided no reasonable or satisfactory through route exists, and this provision shall apply when one of the connecting carriers is a water line." We are awaiting with deep interest the decision of the Interstate Commerce Commission on the complaint made by the Cedar Rapids & Iowa City Railway Company against the Chicago & Northwestern Railroad Company, charging them with refusing to establish such through routes and joint rates.

A. B. Stickney, president of the Chicago Great Western Railway Company, and one of the ablest railway men of to-day says that he does not care how freight is brought to his road, whether in a wheelbarrow, stage coach, horse car or by an electric car, he will take it and be willing to pay something to get it. This is the broad view to be taken of this question. I think it is generally conceded that the electric railway is more popular with the farmer than the steam railroad. Accorded the proper treatment, the majority of the farmers living along an electric line will take great pride in it and soon come to think that it is their railway. It is more profitable for them to ship over the electric line than over the steam road, as the former gives them more rapid, frequent and fully as reliable service, enabling them to receive and ship freight, mail and express at almost any hour of the day. The farmers, merchants and manufacturers will generally ship their products over the electric railway if they are given the opportunity, for in a great many ways it is much more convenient than shipping via the steam railroads and hauling long distances in a wagon.

With the electric railway doing a general railway business, such as the hauling of passengers, freight, mail and express, running through the farms or near them, it is of course a simple matter to market the produce of the farm, including fruits, poultry and dairy products. This farm produce can be marketed regardless of the condition of the roads at any time of the year. It should be the policy of electric railways to put in side tracks, stock yards, loading chutes, etc., whenever it is shown that they will be used. Stock can then be loaded on the farm without driving it seven, eight or ten miles to some railroad station. The estimated shrinkage for driving cattle twelve miles is forty-seven pounds per head, while the shrinkage in transit is but twenty-seven pounds per head, when shipped 300 to 400 miles. By using the electric railway the shipper will save the resulting shrinkage from driving and has his choice of the steam railroads of larger cities, enabling him to obtain the lowest rate and the shortest route.

The electric railway having joint rates with connecting steam railroads gives to the farmer the advantage of such through line. He has merely to notify the electric railway of his intention to ship over a certain road and he will be supplied with a

car from that road. He can also ship in tile, coal, machinery, cattle, hogs, etc., having cars set upon sidings on or near the farm, eliminating the long haul from the railroad station.

Much the same thing is true of the smaller cities and towns through which the electric railway runs. A merchant can easily order by telephone from the wholesale houses, and within an hour or two goods so ordered are in his store. Is it not true then that these advantages will give to the electric railways all of the business it can handle?

Steam railroads are the main arteries of commerce of the world; electric railways are the capillaries that bring life and activity to the various communities. This being true, the prosperity of the community depends largely upon these smaller avenues of trade, and the electric railway built through unoccupied territory (I mean a territory lacking in steam railroad facilities) with the proper facilities offered in the way of freight depots, loading platforms, stock yards, elevators and reasonably good service, can obtain a great deal of freight both car loads and less than car loads.

The bulk of the business of steam railroads is made up of car-load freight. Lyman E. Cooley, the noted engineer of Chicago, is authority for the statement that over two-thirds of the freight moved in the United States consists of fuel ore and building materials. All of these are handled by rail in car-load lots. Now add to this the total of other commodities and livestock known to move regularly in car loads and it seems to be a reasonable assumption that the amount of car-load freight in the United States is not less than 85 per cent of the total freight handled. Without access to the records of the steam railroads it is of course impossible to say just what proportion the car-load traffic bears to the whole freight traffic handled.

In a recent hearing in Minnesota this subject of car-load freight was dealt with very exhaustively, and the railroads asserted and attempted to prove that the less than car-load freight was very expensive, and did not yield its fair share of the net total revenue, on account of the cost of handling. This seems to be the prevailing opinion among steam railroad traffic men. They solicit the car-load freight more strenuously than they do the less than car load, and will gladly take it at much lower rates per hundred pounds, than the less than car-load or package freight.

Some of the reasons given in support of this opinion are:

- 1st. That car-load freight is loaded by the shipper and unloaded by the consignee, thereby relieving the railway company of the responsibility of loading and unloading, and the cost of handling.
- 2d. That a very large percentage of it is handled on private terminals.
- 3d. That for the two reasons given above, the risk from loss and damage is very much less.
- 4th. That less bookkeeping and accounting is necessary on car loads.
- 5th. That it costs much less per ton to move ordinary commodities, such as move in car loads, than to move a car of merchandise or package freight.

Accurate data on the cost of handling freight on electric lines is very difficult to obtain. I addressed letters to the general managers of thirty electric railways, asking for certain information relative to the cost of handling freight. I received replies from the majority stating that they did not keep their records of handling freight and passengers separate and therefore could not give the desired information. I am therefore compelled to resort to our own experience.

Some comparison of statistics of freight traffic on steam railroads and electric railways may be interesting here.

During the year 1904 steam railroads of the United States handled 1,306,628,858 tons of freight, at an average revenue of four-fifths of one cent per ton-mile.

The Baltimore & Ohio earned five and eighty-two hundredths mills (0.582 cents) per ton-mile. The Inter-Urban Railway earned 5.928 cents per ton-mile. The great difference in the cost of handling and the amount earned is caused by the difference in the average distances hauled. The Baltimore & Ohio's average haul being 192.84 miles, while the Inter-Urban Railway's average haul was only 10.5 miles.

In the following table I have taken the earnings of steam railroads from all sources, with the per cent that each item is of the total as published in the annual statistical report of the Interstate Commerce Commission for the year ending June 30, 1901, and the earnings of strictly electric railways from all sources with the per cent. that each item is of the total, as pub-

lished in the latest reports of street railroads and electric railways, compiled by the Department of Commerce and Labor, Bureau of the Census, for the year ending June 30, 1902.

1901.	Steam.	%	Electric.	%
Passenger	351,356,265	22.12	233,821,549	94.4
Mail	38,453,602	2.42	432,080	0.2
Express	31,121,613	1.96	401,672	0.2
Other Car Pass....	8,202,982	.52	303,608	0.1
Freight	1,122,608,471	70.67	1,038,097	0.4
Other earnings.....	36,729,104	2.31	7,793,574	3.1
Miscellaneous	54,000	.01	3,853,420	1.6
	Less			

On steam railroads it will be noted the receipts from freight traffic is about 70 per cent. of the gross earnings, while on the electric railways the average receipts from freight is only 0.4. However there are a few electric railways that receive for freight between 20 and 35 per cent. From the above it is evident that freight traffic on electric railways has not yet received the attention which we believe its future development will justify.

E. E. Kimball of the Railway Engineering Department of the General Electric Company has very kindly given me some data on power consumption and cost of maintenance of electric locomotives and passenger cars.

ENERGY CONSUMPTION.

Freight Trains.

Gross Weight in Tons.	Schedule speed of trains.	Watt-hours per ton-mile at locomotive.
100.....	15 m.p.h.	28
200.....	15 m.p.h.	23
300.....	15 m.p.h.	20
400.....	15 m.p.h.	19
500.....	15 m.p.h.	19

Interurban Cars.

Gross Weight in Tons.	Maximum speed.	Stops per mile.	Watt-hrs. per-ton-mile.
20.....	45 m.p.h.	1/2	80
		3/4	87
		1.00	92
40.....	45 m.p.h.	1/2	70
		3/4	76
		1.00	81
50.....	45 m.p.h.	1/2	67
		3/4	73
		1.00	78

The cost of repairs and maintenance of a 40-ton locomotive equipped with 100-hp d. c. motors when hauling a 200-ton train about 100 miles per day will average about 1.5 cents per locomotive-mile. This includes repairs to motors and control, and care of locomotive.

An electric railway, in order to do a general railway business must be equipped to properly and promptly handle any business given to it.

1st. The freight department should be in charge of a general freight agent, who should be held responsible for all matters pertaining to his department. He should also pay strict attention to freight claims, giving them a thorough investigation and adjusting them promptly. There is no excuse for delay in settling claims promptly, as the mileage of the majority of electric railways is short, and the stations few as compared with steam railroads, it is therefore much easier to locate damages, shortages and delays.

2d. In the large cities a good solicitor should constantly be at work, keeping in touch with the freight situation, making regular calls upon the merchants, manufacturers, dairy concerns, wholesale houses, etc., as well as soliciting business from the farms through which the road runs and from as far away as it is possible to draw it. The amount of business obtained by a solicitor five or six miles away, on either side of the road is astonishing.

Besides soliciting, he should find a market for the products of the farm, such as dairy products, poultry, fruit, vegetables, etc. Encourage all of these lines and the freight business will rapidly grow.

3d. The accounting is a matter of so much detail that it will be impossible for me to cover it in the limited space allotted to me. I will say, however, that transportation of freight on electric railways is so nearly identical with that of steam railroads that it is very essential that the general form of steam railroad accounting be adopted.

4th. There should be a commodious freight house, centrally located, and convenient to wholesale houses. This is of primary importance in the larger terminal cities. The freight house should be built on the most approved design in order to economically handle freight. There should be doors on one side convenient for the use of teams. Opposite these doors should be located the doors for loading and unloading of cars, so that the truckers may truck from the wagons directly to the cars or vice versa.

This house should be in charge of the agent, and under him should be a foreman, and as many men as are needed to properly handle the business. There should also be in the larger terminal cities and smaller cities, freight-yards, with sufficient switch tracks and team tracks.

5th. Each of the stations along the line should have a freight-room, in charge, of course, of the station agent. The duties of

	Number of tons carried.	Per cent. of tons carried.	Average rate received per ton.	Freight revenue.	Car loads handled exclusive of switching.	Car loads switched.	Number of tons carried one mile.	Number of tons carried one mile per mile of road.	Average receipts per ton mile, cents.	Operating expenses per ton mile, cents.	Operating expenses per cent. of freight earnings.	Freight earnings per cent. of gross earnings.
Local freight car loads.....	65,052	78.94	\$0.406	\$26,421 11	.....	.....	694,828	9,677	3.802	.....	.....	.....
Local freight less car loads.....	8,116	9.85	\$2.27	\$18,423 32	.....	.....	85,920	1,197	21.443	.....	.....	.....
Foreign freight car loads.....	9,195	11.16	\$0.84	\$7,723 80	.....	.....	107,335	1,494	7.724	.....	.....	.....
Foreign freight less car loads.....	40	0.05	\$2.67	\$106.80	.....	.....	443	7	24.131	.....	.....	.....
Total.....	82,403	100.00	.....	\$52,675 03	3,627	1,484	888,526	12,375	.....	.....	0.37	0.23
Average.....	.....	.....	\$0.639	.....	.....	.....	.....	.....	5.928	2.194	.....	.....

The cost of repairs and maintenance of interurban cars will average about 1.5 cents per car-mile. This figure includes cost of repairs to motors and control, and cost of cleaning the car bodies.

Of course these figures will vary considerably on different roads in different sections of the country, owing to the service conditions of the road. It will be noted from the above data, that as the weight of the train increases, the power consumption decreases per ton-mile, this of course is due to wind pressure per ton. This is also true of power consumption on passenger cars, but the passenger cars will use more power per ton-mile on account of them making more frequent stops.

The report of the Inter-Urban Railway Company for the year ending June 30, 1907, gives the following statistics on freight:

the agent are many outside of the freight service. He receives and issues train orders, sells tickets, and solicits passengers as well as freight business.

6th. At all stations or side tracks, shippers should be encouraged by the company. In addition to the stock-yards, and loading chutes for the convenience of stock shippers, it is also of great importance to have depot grounds of sufficient size to permit the leasing of a part of them for a nominal rental to persons desiring to put in grain elevators and other industries that will ship their products.

In my opinion, grain is one of the best paying commodities to handle, and effort should be made to obtain shipment of this commodity.

7th. The rolling stock should be modern, the electric loco-

motives equipped with motors of sufficient capacity to handle trains of at least one to fifteen cars at a speed of at least twenty miles an hour or better, in order not to interfere with passenger service. The company should own enough box and flat cars to properly handle the business.

The service must be of the best; its frequency depending upon demand and incidentally upon competition.

8th. The small or less than car-load shipment should be handled in express cars, equipped with motors of at least the same capacity as the passenger cars.

The less than car-load shipments on the Colfax division of the Inter-Urban Railway are handled in express cars, at freight rates. Car-load shipments on this division are handled by an electric locomotive when necessary. While on the Beaver Valley division we have a way freight leaving Des Moines at 4 o'clock in the morning. This train is composed of an electric locomotive, merchandise cars, car-loads, and a caboose. It picks up all car loads and does all the switching at the various stations, out and back, setting loads and empties at the various elevators, stock-yards, coal mines, etc.

RATES

Until 1887 nearly every large railroad had a classification of its own, but now most business is handled by one of three classifications. These are the official, which is used in the East, the Southern and the Western. In several states, Illinois, Iowa, Georgia, and some others, there are classifications prescribed by the State Board of Railroad Commissioners applying to freight carried entirely within the State. The electric railways should use the classifications and rates which are used by the steam roads in their territory.

It may be interesting to know how the freight rates of the United States compare with those of some of the European countries. In England the average amount paid by the shippers for moving a ton of freight one hundred miles is \$2.35; in France, \$2.10; in Austria, \$1.90; in Germany, where most of the railways are owned and operated by the Government, \$1.84; in Russia, \$1.70; while in the United States the average cost to the shipper is only 73 cents or less than 40 per cent of average cost in Europe.

A report of the Department of Commerce and Labor for the year 1902, in a general discussion of the characteristics and significance of electric railway service, says: "It is difficult to avoid entrance into the domain of prophecy. Some of the electric railways have already made such progress in methods that certain prophets look forward to the complete superseding of steam traction by electric traction. However this may be, it is evident that, even if the electric railways confine themselves to the methods already widely prevalent, they are bound to become a social and economic factor of enormous importance. Remarkable benefits have already been realized from the existing electric lines, and the extension of such railways to a large proportion of our more prosperous communities seems but a matter of a short time."

REPORT OF THE COMMITTEE ON CONSTRUCTION OF STANDARD RAILWAY CAR STORAGE AND OPERATING HOUSES

Your committee appointed to consider the subject of the "Construction of Standard Railway Car Storage and Operating Houses" held two meetings in conjunction with a similar committee appointed by the National Fire Protection Association.

One of these meetings was held in New York on May 21, 1907, at the association's headquarters. All the members of your committee were present at that time and received a report from the committee of the National Fire Protection Association, covering rules for the construction of buildings of this character.

After a thorough consideration of the rules submitted, your committee made a number of changes and suggestions which were then submitted to the committee of the National Fire Protection Association. These suggestions and corrections were, in turn, submitted by this last named committee to their association at meetings held in New York on May 22, 23 and 24, 1907, and the suggestions made by your committee were practically agreed to.

The second meeting was held in Baltimore on Sept. 19, at which Messrs. Porter, Pumfrey, Parker and Adams were

present, representing the American Street and Interurban Railway Association, and Messrs. Patton and Townsend, representing the National Fire Protection Association.

At this meeting the rules and regulations, for the construction of car houses, which follow, were finally agreed upon. These rules have received the approval of the National Fire Protection Association, and they are respectfully submitted by this committee to the association for consideration.

H. H. ADAMS, Chairman.
A. V. PORTER,
E. J. COOK,
E. L. PARKER,
CHAS. F. FERRIN,
THOS. PUMFREY.

REQUIREMENTS FOR THE CONSTRUCTION OF STANDARD RAILWAY CAR STORAGE AND OPERATING HOUSES

A standard railway car storage house should be so constructed and protected that it may not contribute in any manner toward the spread of fire therein, and contribute only, in case of fire, not to exceed sectional losses of the structure. One single division should not exceed dimensions to expose to any one fire a greater number of cars therein than would represent a valuation of \$200,000 of combustible rolling stock or a total interior trackage of not more than 1800 ft.

(Note.—The following are recommendations from the standpoint of fire protection only and are in no way intended as a detailed guide to architects or mill engineers with reference to the actual strength which any building may require due to size or occupancy.)

SECTION 1, WALLS

Walls to be of good hard burned brick, laid in best of lime and cement mortar. (Concrete construction is not covered under this specification.)

(a) *Outside Walls.*—To be not less than 12 ins. thick, and when walls are over 60 ft. in length, to be strengthened by piers or pilasters not less than 20 ins. x 20 ins., spaced not over 20 ft., center to center, the walls between piers being not less than 12 ins. thick. When without piers to be not less than 16 ins. thick.

Where exposed, to be carried full thickness of wall, at least 5 ft. above roof, and to be provided with a durable and non-combustible coping. Where roof is of fire-resistive construction, walls to extend to roof. If exposed, walls to be solid or any openings therein to be protected in a standard manner.

(b) *Cut-Off of Division Walls of Fire Sections.*—To be not less than 12 ins. thick, and when walls are over 60 ft. in length, to be strengthened by piers or pilasters not less than 20 ins. x 20 ins., spaced not over 20 ft., center to center, the walls between piers to be not less than 12 ins. thick. When without piers to be not less than 16 ins. thick.

To be not less than 5 ft. parapet, carried full thickness, projecting through and beyond cornice 8 ins., with a durable and non-combustible coping. Where roof is of fire-resistive construction parapet may be modified.

To be no openings in division walls separating car storage sections, except that for every 100 ft. of length there may be one opening in the wall of an area not exceeding 28 sq. ft., the same to be protected with a standard automatic sliding fire door on each side of wall. End walls to have no openings within 5 ft. of division walls.

SECTION 2, HEIGHT

One story, without basement or space below, except at pits. Height of walls not to exceed 20 ft. at eaves line or 25 ft. at peak of roof above the floor level, the slope being from ½ in. to 1 in. per ft.

Note.—Where it is necessary to exceed 25 ft. in height, this may be increased by permission of inspection departments having jurisdiction, but in no case should this height exceed 30 ft.

SECTION 3, AREA

Sections between standard cut-off or division walls to contain not over 20,000 sq. ft. of floor area. Distance between centers of adjacent tracks to be not more than 12 ft. or less than 10 ft.

SECTION 4, ROOF AND ROOF SUPPORTS

(a) *Post or Column Covering (when of fire-resistive type).*—All vertical metal supports to be insulated by not less than 4 ins. of concrete or of terra-cotta, or of such other approved insulating material as is recommended in the Building Code of the National Board of Fire Underwriters, independent of any

air space next to the metal. Well laid brick is strongly preferred for column covering.

(b) *Girder and Beam Covering (when of fire-resistive type).*—All metal girders and beams to be insulated on the sides by not less than 4 ins., and on the top and bottom by not less than 2 ins. of concrete, or terra-cotta, or of such other approved insulating material as is recommended in the Building Code of the National Board of Fire Underwriters.

Note 1.—No plaster of paris or lime mortar shall be used for the purpose of insulating material, nor shall any plaster, whether or not on metal lathing, be considered a part of the covering required.

No single block or unit of insulating material used for column covering shall have a greater vertical dimension than 12 ins. when placed in position, nor shall the shells and web of hollow tile or terra-cotta blocks be less than 1 in. in thickness, and these blocks shall be well laid up with Portland cement mortar and the said blocks be suitably tied or anchored together.

Note 2.—The quality, design and weight of all metal structural parts and supports, the necessary tie rods, bearing plates, wall templates and the riveting, bolting, connecting and anchoring of structural parts, to be in accordance with requirements as recommended in the Building Code of the National Board of Fire Underwriters.

(c) *Roof (when of fire-resistive type).*—To be of an approved system of brick, concrete or terra-cotta, or other non-combustible material, with approved insulation of special supports or tie rods, as recommended in the Building Code of the National Board of Fire Underwriters for such purpose. Roof covering to be tar and gravel or approved composition.

(d) *Roof and Roof Supports (when of slow-burning type).*—Roof planking to be not less than 3-in. spliced timber. To have timbers (preferably single stick) not less than 6 ins. x 12 ins., spaced not less than 6 ft., nor more than 10 ft. on centers, supported by wooden posts, not less than 10 ins. x 10 ins., and without trusses. Where roof timbers enter walls at opposite side they should be self-releasing and have at least 8 ins. of brick work between ends of beams. To be without monitors. Roof covering to be of tar and gravel or approved composition.

SECTION 5, SKYLIGHTS AND VENTILATORS

Skylights to be of flat type, wired glass and metal frames, constructed in accordance with the rules and requirements of the National Board of Fire Underwriters covering their installation. Ventilators, if any, to be of metal.

Note.—It is advisable to provide skylights with fuse-releasing attachments that in case of fire the skylights may open and carry off heat and smoke. A metal ventilator set in each skylight is also advisable.

SECTION 6, CORNICE

Cornice, if any, to be of non-combustible material and plain finish.

SECTION 7, FINISH

Finish (interior trim), if any, to be non-combustible and without concealed space.

SECTION 8, FLOORS

To be of brick, concrete, stone, cinders or earth.

SECTION 9, PITS

To have brick, stone or concrete retaining walls or piers; brick or concrete floors; steps of stone, concrete or iron; the rails to be supported on brick, stone, concrete or wood stringers exposed on one side only, and to have not more than four track sections communicating.

SECTION 10, TRACKS

To run clear from building, without break or transfer table. To be terminated by suitable bumpers, so that there will be a clear space of not less than 3 ft. between bumpers and wall of building. Special track work in front of building to be provided with guard rails where necessary.

SECTION 11, TRACK DOORS

Track doors to be in pairs, to be arranged so that whether open or closed any door of one pair will not interfere with the operation of any other pair. When within 10 ft. of cut-off walls, to be constructed and hung as for a standard swinging fire door. Approved metal roller doors may also be used.

SECTION 12, HAZARDS

All electrical, heating, power and occupancy hazards to be installed and maintained, and where necessary to be cut off, to be in accordance with the rules and requirements of the National Board of Fire Underwriters, as published in specific pamphlets by the National Fire Protection Association.

SECTION 13, EXPOSURES

Buildings should be so located that there may be but a minimum exposure only from other property.

SECTION 14, REINFORCED CONCRETE OR CONCRETE-STEEL CONSTRUCTED BUILDINGS

Reinforced concrete construction may be accepted in instances where tests and inspections of the material and structural supports are properly made under provisions as set forth in Section 110, pages 153 to 159 of the Building Code of the National Board of Fire Underwriters, prescribed as follows, viz.:

SECTION 110, REINFORCED CONCRETE OR CONCRETE-STEEL CONSTRUCTED BUILDINGS

The term "reinforced concrete" or "concrete-steel" in this section shall be understood to mean an approved concrete mixture reinforced by steel of any shape, so combined that the steel will take up the tensional stresses and assist in the resistance to shear.

Reinforced concrete construction may be accepted for fire-proof buildings if designed as hereinafter prescribed; provided, that the aggregate for such concrete shall be hard-burned broken bricks or terra-cotta, clean furnace clinkers, entirely free of combustible matter, clean broken stone or furnace slag or clean gravel, together with clean siliceous sand, if sand is required to produce a close and dense mixture; and provided, further, that the minimum thickness of concrete surrounding and reinforcing members, $\frac{1}{4}$ in. or less in diameter, shall be 1 in.; and for members heavier than $\frac{1}{4}$ in. the minimum thickness of protecting concrete shall be four diameters, taking that diameter, in the event of bars of other than circular cross-section, which lies in the direction in which the thickness of the concrete is measured; but no protecting concrete need be more than 4 ins. thick for bars of any size; and provided, further, that all columns and girders of reinforced concrete shall have at least 1 in. of material on all exposed surfaces over and above that required for structural purposes; and all beams and floor slabs shall have at least $\frac{3}{4}$ in. of such surplus material for fire-resisting purposes; but this shall not be construed as increasing the total thickness of protecting concrete as herein specified.

All the requirements herein specified for protection of steel and for fire-resisting purposes shall apply to reinforced concrete filling between rolled-steel beams, as well as to reinforced concrete beams and to entire structures in reinforced concrete. Any concrete structure or the floor filling in same reinforced or otherwise, which may be erected on a permanent centering of sheet metal, of metal lathing and curved bars or a metal centering of any other form, must be strong enough to carry its loads without assistance from the centering, unless the concrete is so applied as to protect the centering as herein specified for metal reinforcement.

Exposed metal centering or exposed metal of any kind will not be considered a factor in the strength of any part of any concrete structure, and a plaster finish applied over the metal shall not be deemed sufficient protection.

All concrete for reinforced concrete construction whenever used in such buildings must be mixed in a machine which mixes one complete batch at a time and entirely discharges it before another is introduced. At least twenty-five complete revolutions must be made at such a rate as to turn the concrete over at least once in each revolution for each batch.

Before permission to erect any concrete-steel structure is issued, complete drawings and specifications shall be filed with the commissioner of buildings, showing all details of the construction, the size and position of all reinforcing rods, stirrups, etc., and giving the composition of the concrete.

The execution of work shall be performed by workmen under the direct supervision of a competent foreman or superintendent.

All forms and centering for concrete shall be built plumb and in a substantial manner with inside surfaces smooth and made tight so that no part of the concrete mixture shall leak out through joints, cracks or holes, and after completion shall be thoroughly cleaned out, removing shavings, chips, pieces of wood and other material, which should not be permitted in forms.

The reinforcing steel shall be accurately located in the forms and secured against displacement while the concrete is being placed and tamped.

Concrete shall be placed in forms as soon as practicable after mixing, and in all cases immediately after the addition of water.

Whenever fresh concrete joins concrete that is set, or par-

tially set, the surface of the old concrete shall be roughened, cleaned and thoroughly slushed with a grout of neat cement and water.

Concrete shall not be installed in freezing weather; such weather shall be taken to mean a temperature of 32 degs. F. or lower; concrete shall not be allowed to freeze after being put in place, and, if frozen, shall be removed.

The time at which forms and centering may safely be removed will vary from twenty-four hours to sixty days, depending upon temperature and other atmospheric conditions of the weather; the time for such removal to be determined by the commissioner of buildings.

The concrete shall be mixed in the proportions of one of cement, two of sand and four of other aggregates as before provided; or the proportions may be such that the resistance of the concrete to crushing shall not be less than 2000 lbs. per sq. in. after hardening for twenty-eight days, but for reinforced or plain concrete columns the mixture shall not be leaner than one part of cement, two of sand and five of the coarser aggregate in any case. The tests to determine this value must be made under the direction of the commissioner of buildings. The concrete used in concrete-steel construction must be what is usually known as a "wet" mixture.

Only high-grade Portland cement shall be permitted in reinforced concrete or concrete-steel constructed buildings. Such cements, when tested neat, shall, after one day in air, develop a tensile strength of at least 300 lbs. per sq. in.; and after one day in air and six days in water shall develop a tensile strength of at least 500 lbs. per sq. inch; and after one day in air and twenty-seven days in water shall develop a tensile strength of at least 600 lbs. per sq. inch. Other tests, as to fineness, constancy or volume, etc., made in accordance with the standard methods prescribed by the American Society of Civil Engineers, may, from time to time, be prescribed by the commissioner of buildings.

The sand to be used must be clean, sharp grit sand, free from loam or dirt and shall not be finer than the standard sample kept in the Department of Buildings.

The stone used in the concrete shall be a clean, broken stone, of a size that will pass through a $\frac{3}{4}$ -in. ring, or good gravel may be used in the same proportion as broken stone, broken hard bricks, terra-cotta, furnace slag, or hard clean clinkers may be used.

The steel shall meet the requirements of Section 21 of this code.

SECTION 21. STRUCTURAL MATERIAL

Wrought Iron.—All wrought iron shall be uniform in character, fibrous, tough and ductile. It shall have an ultimate tensile resistance of not less than 48,000 lbs. per sq. in., an elastic limit of not less than 24,000 lbs. per sq. in. and an elongation of 20 per cent in 8 ins. when tested in small specimens.

Steel.—All structural steel shall have an ultimate tensile strength of from 54,000 to 64,000 lbs. per sq. in. Its elastic limit shall be not less than 32,000 lbs. per sq. in., and test specimens, ruptured in tension, must show a minimum elongation of not less than 20 per cent in 8 ins. Rivet steel shall have an ultimate strength of from 50,000 to 58,000 lbs. per sq. in.

Cast Steel.—Shall be made of open-hearth steel containing $\frac{3}{4}$ per cent to $\frac{1}{2}$ per cent of carbon, not over 8/100 of 1 per cent of phosphorus, and shall be practically free from blow holes.

Cast Iron.—Shall be of good foundry mixture producing a clean, tough, gray iron. Sample bars 5 ft. long, 1 in. square, cast in sand molds, placed on supports 4 ft. 6 ins. apart, shall bear a central load of 450 lbs. before breaking. Castings shall be free of serious blow holes, cinder spots and cold shuts. Ultimate tensile strength shall be not less than 16,000 lbs. per sq. in. when tested in small specimens.

Concrete-steel shall be designed in accordance with the following assumptions and requirements:

(1) The adhesion between the concrete and the steel is sufficient to make the two materials act together; the unit value of the adhesion is at least equal to the unit shearing strength of concrete.

(2) The design shall be based on the assumption of a load four times as great as the total working load (ordinary dead load plus ordinary live loads) producing a stress in the steel equal to the elastic limit and a stress in the concrete equal to 2000 lbs. per sq. in.

(3) The modulus of elasticity of concrete at 2000 lbs. per sq.

in. is equal to one-eighteenth of the modulus of elasticity of steel.

(4) The steel takes all the tensile stress.

(5) The stress-strain curve of concrete in compression when the stress in the extreme fiber is 2000 lbs. per sq. in. may be assumed:

(a) As a straight line.

(b) As a parabola with its axis vertical and its vertex on the neutral axis of the beam, girder or slab, or

(c) As an empirical curve with an area one-quarter greater than if it were a straight line and with its center of gravity at the same height as that of the parabolic area assumed in (b).

(6) The assumption belonging to the common theory of flexure, where not modified by any of the foregoing, will apply.

In the design of structures involving reinforced concrete girders and beams as well as slabs, the girders and beams shall be treated as T-beams, with a portion of the slab acting as flange, in each case. The portion of the slab so acting shall be determined by assuming that in any horizontal plane section of the flange the stresses are distributed as the ordinates of a parabola with its vertex in the stress-strain curve and with its axis in a longitudinal vertical plane through the center of the rib of the T.

The shearing strength of concrete corresponding to a compressive strength of 2000 lbs. per sq. in. shall be assumed at 200 lbs. per sq. in.

All reinforced concrete T-beams must be reinforced against the shearing stress along the plane of junction of the rib and the flange. Where reinforced concrete girders carry reinforced concrete beams the portion of the floor slab acting as flange to the girder must be reinforced with bars near the top at right angles to the girder, to enable it to transmit local loads directly to the girder and not through the beams, thus avoiding an integration of compressive stresses due to simultaneous action as floor slab and girder flange.

Concrete indirect compression shall not be stressed under the working load more than 350 lbs. per sq. in. Reinforced compression members shall be designed on the assumption that this stress in the concrete will be simultaneous with one of 6000 lbs. per sq. in. in the steel. Should the use of hooped concrete be proposed, the working stresses will be a subject for special consideration by the commissioner of buildings.

In the execution of work in the field, work must be so carried on that the ribs of all girders and beams shall be monolithic with the floor slab.

In all reinforced concrete structures special care must be taken with the design of joints to provide against local stresses and secondary stresses due to the continuity of the structure.

In the determination of the bending moments, due to the external forces, beams and girders shall be considered as simply supported at the ends, no allowance being made for continuous construction over supports. Floor plates when constructed continuous and when provided with reinforcement at top of plate over the supports may be treated as continuous beams, the bending moment for uniformly distributed loads being taken

W L

at not less than $\frac{WL}{10}$; the bending moment may be taken at

$\frac{WL}{10}$ in the case of square floor plates which are reinforced

20

in both directions and supported on all sides.

When the shearing stresses developed in any part of a reinforced concrete or concrete-steel constructed building exceed under the multiplied loads the shearing strength as fixed in this section, a sufficient amount of steel shall be introduced in such a position that the deficiency in the resistance to shear is overcome.

When the safe limit of adhesion between the concrete and steel is exceeded provision must be made for transmitting the strength of the steel to the concrete.

Concrete-steel may be used for columns in which the ratio of length to least side or diameter does not exceed twelve. The reinforcing rods must be tied together at intervals of not more than the least side or diameter of the column.

The contractor must be prepared to make load tests on any portion of a reinforced concrete or concrete-steel constructed building within a reasonable time after erection as often as may be required by the commissioner of buildings. The tests must show that the construction will sustain a load with a

factor of safety for floors and structural members as required by Section 136 of this code, viz.:

SECTION 136, FACTORS OF SAFETY

Where the unit stress for any material is not prescribed in this code the relation of allowable unit stress to ultimate strength shall be:

As one to four for metals, subjected to tension or transverse stress;

As one to six for timber;

And as one to ten for natural or artificial stones and brick or stone masonry.

But wherever working stresses are prescribed in this code, varying the factors of safety herein above given, the said working stresses shall be used.

RULES AND REQUIREMENTS FOR INSTALLATION OF AUTOMATIC SPRINKLER EQUIPMENTS IN RAILWAY CAR STORAGE HOUSES.

The rules and requirements of the National Board of Fire Underwriters for sprinkler equipments, automatic and open systems, as recommended by the National Fire Protection Association in published edition of 1905 (or as may be covered by later issues), are to be observed in protecting this class of property, and in addition thereto the special features as herein recommended are to apply.

Attention is also called to the necessity of subdividing the areas of street railway property so that an excessive amount of value shall not be exposed to any one fire.

SECTION 1, CEILING CURTAINS

Permanent ceiling curtains are recommended in buildings having a height of over 25 ft. from floor to ceiling. These curtains may be constructed of non-combustible material or of not less than 1-in. tongued and grooved boards, coated on both sides with non-inflammable paint; curtains to subdivide ceiling into pocket areas not exceeding 5000 sq. ft. each and be of a depth from ceiling to trolley wire. Underwriters having jurisdiction should be consulted as regards the specific location of these curtains.

SECTION 2, AISLE SPRINKLERS

(a) In addition to the regular ceiling installation sprinklers to be placed on both sides of each track, in an upright position, on horizontal pipe lines parallel with tracks, and to be so located that water will spray directly into cars through side windows of car bodies; the sprinklers to be at such a height that their deflectors will be from 2 ins. to 4 ins. below the upper sash rail of car windows.

(b) Distance between sprinklers on aisle lines not to exceed 8 ft.

(c) The standard pipe schedule to govern installation of aisle lines, except that no pipe smaller than 1 in. to be used.

(d) When the distance between sides of cars on adjacent tracks does not exceed 4 ft. one line of sprinklers to be placed in the center of each aisle between tracks.

(e) When the distance between sides of cars on adjacent tracks exceeds 4 ft. two lines of sprinklers to be installed. Sprinklers to be placed not less than 6 ins. nor more than 12 ins. from the sides of cars to be protected.

Note.—When the distance between the sides of cars in adjacent tracks is less than 12 ins. or where aisle lines in accordance with this section may not be practicable as at curves, switches, transfer tables, car elevators, repair and paint shops, special instructions from underwriters having jurisdiction should be obtained as regards installing raised or altered lines.

(f) Sprinklers to be placed between cars and partitions, division or outer walls, not less than 6 ins. nor more than 12 ins. from the sides of cars to be protected.

(g) Sprinklers on all aisle lines to be staggered spaced.

Note.—It is recommended that aisle sprinklers be provided with a shield to protect them from spray of overhead sprinklers and to serve as a means of banking heat waves. Underwriters having jurisdiction should in all cases be consulted as to whether or not these shields should be provided.

SECTION 3, SUPPLY MAINS TO AISLE SPRINKLERS

(a) Aisle sprinklers to be supplied through independent connection from main risers taken from above and close to dry pipe valves; shut-off valves to be provided for ceiling and aisle systems so arranged that either may be controlled independently.

Note.—Ceiling and aisle systems should preferably be installed upon separate dry valves.

(b) Aisle lines not to be supported by nor connected to ceiling sprinkler piping. Special hangers or supports to be provided that aisle lines may be rigidly secure.

(c) Ceiling sprinkler lines to be protected against contact with trolley poles.

SECTION 4, PITS AND UNDER FLOOR SPACE

Where the under floor space does not communicate with the pits, is tightly inclosed and is not used for any purpose, sprinklers may be omitted in such under floor space by special consent in each instance of the underwriters having jurisdiction.

SECTION 5, ADDITIONAL HAND FIRE APPLIANCES

Auxiliary hand fire appliances are deemed essential, as fires within car bodies must not be expected to be extinguished minutely by sprinklers, and the following equipment should be provided:

(a) *Extinguishers.*—To be one approved and labeled 3-gal. chemical fire extinguisher for each 2500 sq. ft. of floor area; extinguishers to be uniformly distributed in permanent locations.

(b) *Sand Pails.*—In rooms containing pits, or where any wiping up or cleaning is done, to be six pails to each 2500 sq. ft. of floor area. Pails to be of galvanized iron, painted red, with the word "Fire" in black letters 3 ins. long. Pails to be of 3 gal. capacity and provided with scoops.

(c) *Small Hose.*—Fifty feet of 1½-in. approved linen hose to be provided for each 6000 sq. ft. of floor area. Hose to be provided with ¾-in. nozzle and to be in lengths of not over 50 ft., the same to be kept folded and attached to a 2-in. standpipe, which shall have an adequate supply of water at not less than 50 lbs. pressure.

Where an approved water supply is not available and building is not over 12,000 sq. ft. of floor area, additional approved and labeled chemical extinguishers may be accepted in place of each hose connection.

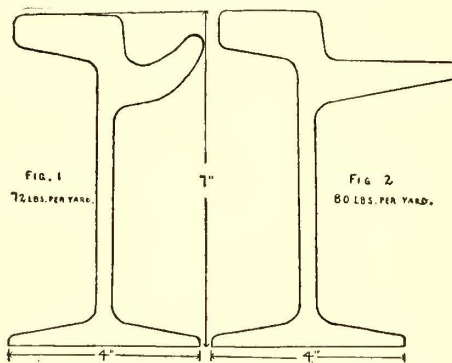
Note.—Underwriters having jurisdiction should be consulted as to standpipe and hose layouts.

THE USE OF THE T-RAIL IN CITIES

BY C. GORDON REEL,

Vice-President, Kingston Consolidated Railroad Company

In the horse car days the equipment was so light and speeds so leisurely that the problem of a proper track was easy of solution. It was expected that wagon traffic of all kinds would follow along the car tracks, and so city ordinances usually required that the street railway companies make proper provision for the accommodation of vehicular traffic. With the introduction of electricity weights and speeds were increased enormously. The trend of development has been steadily to approach nearer and nearer to steam railroad standards. With the increase in weight of equipment and increase of speed the grooved and girder rail sections soon demonstrated their inability to carry the car traffic without rapid deterioration. The inefficiency of these sections was due not to the light weight so much as to their unscientific design. The vertical web of the



FIGS. 1 AND 2.—GROOVED AND GIRDER SECTIONS ORIGINALLY USED IN KINGSTON, N. Y.

rail was usually directly under the flange of the wheel so that the weight of the car would be carried on a sort of projecting shelf. This unsymmetrical unloading was more than the rails could stand. They pounded down rapidly at the joints and could not be held to gage. Our companies were unfortunate enough to build with 7-in. grooved and girder sections shown

in Figs. 1 and 2. These rails were structural wrecks at the joints long before they were worn appreciably.

In other cities similar sections have been used which overcome the inherent weakness in design by brute strength, so to speak; that is, they are rolled in weights up to 150 lbs. per

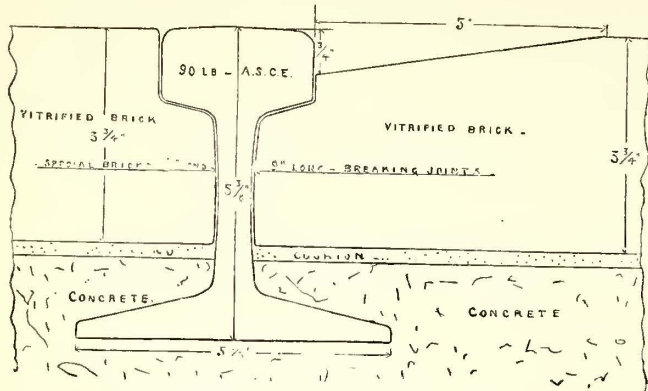


FIG. 3.—LATEST CONSTRUCTION IN KINGSTON, N. Y., SHOWING SPECIAL BRICK OUTSIDE OF RAIL.

yard, which would seem absurd to steam railroad men, especially in view of the very much heavier rolling stock used by the steam roads. It is self-evident that a proper section should not be inordinately heavy and should carry its load with no tendency to moving sideways, and furthermore that the track should stand solidly in place without having to strap the rails together every few feet. All T-rails fulfill the first two requirements, but the standard steam railroad sections would seem to serve better than the high T sections in regard to lateral stability. Just what is gained by using a high T is hard to understand, still I am willing to concede that, in view of the experience in some of the larger cities which use this rail, there is a chance for an argument between high T sections and standard T sections. Personally, I would prefer to pay more per ton for standard sections than for high T sections, although under ruling prices the high Ts cost considerably more per ton than standard T sections.

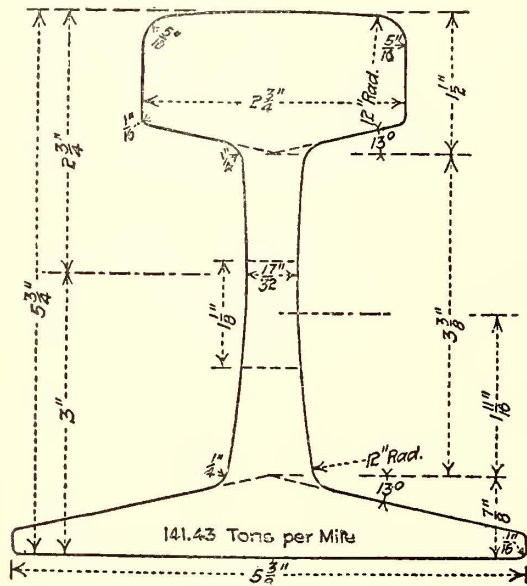


FIG. 5.—OPEN-HEARTH SECTION

When it became necessary to renew the tracks in Kingston, I looked over the experience of other companies and concluded that the T-rail was in every way more desirable than the grooved or girder rail and proceeded accordingly. To make sure, we laid an experimental piece of track, using 90-lb. A. S. C. E. standard rail. This gave such good results that we placed an order for several hundred tons in 60-ft. lengths with a view to extending the construction. After the rails were delivered a bitter opposition was engineered by interests which formerly owned one of our roads and who seem to be sore because we have been successful. It was argued that if, when they built the road, it was necessary to use an iron lip, that unless we

used the iron lip, ruts would form along the track. The only difficulty about this point was that it was not necessary, in the first place, to use any iron lip, because experience proves that there is no greater tendency for a rut to form along a T-rail than along the outer edges of a grooved or girder rail. They also used letters from city engineers of New York, Brooklyn, and Albany, stating that no T-rails were used in those cities. This argument we easily answered by asking our opponents to

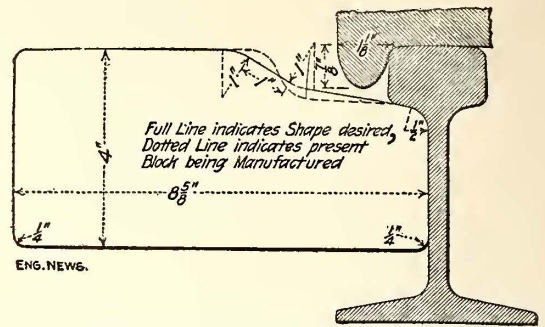


FIG. 4.—TYPE OF CONSTRUCTION, FT. WAYNE, IND.

produce letters from cities where T-rails had been used. The fact that they produced letters from places where they had not been used was certainly no evidence against their use. After a lot of misrepresentation and personal abuse in their newspaper we finally got consent from the city to lay T-rails in two rather important streets, with the stipulation that if, after the end of a year, the city authorities so desired we would remove them and substitute the old rails. As an instance of the unfairness of the opposition, this proposed trial was fought bitterly. They well knew that if the construction was tried it would make good. Another feature which had to be overcome was a bill introduced in the Legislature intended to prohibit the use of the T-rail entirely in the State of New York. Whether or not this bill had any connection with the Kingston opposition or was merely a coincidence, I am unable to say. In any event, the bill was easily defeated and was never reported from the committee.

Since the installation of this 90-lb. standard construction in the two streets referred to, we have been granted permanent permission without any restrictions to use this 90-lb. standard T-rail in Broadway, Main Street and Fair Street, which are

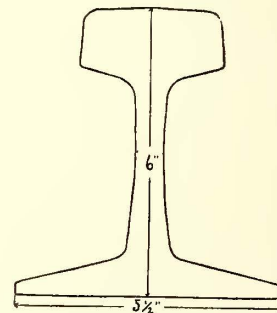


FIG. 6.—THE DUDLEY 100-LB. T-SECTION

the most important streets in the city. The opposition has simply made itself ridiculous and is now considered a joke.

The construction first proposed (published in the STREET RAILROAD JOURNAL of Jan. 26, 1907) has been amended as shown in Fig. 4; that is, we are using a special form of brick outside the rail as well as inside. It will be noted that on the inside we will go up on the head of the rail to such a distance as to barely give room enough for our wheel flange. In this way the obstruction in the street will be much less than though the brick projected under the head of the rail and very much less than any form of grooved or girder rail. I might say in passing, however, that it is now standard practice to use only ordinary brick. On the outside the brick is merely laid flush with the rail, and on the inside it is tucked under the head as shown in Fig. 5, which illustrates the construction now standard in the streets of Milwaukee.

The "nose" brick extensively used heretofore has not been entirely satisfactory. By referring to Fig. 4, which illustrates the type of construction adopted in Fort Wayne, it will be noted

that the designer desired a somewhat different form than the market provided. We think that the kind we are having made for Kingston, illustrated in Fig. 3, combines many desirable features. In the event of heavier flanges being used experience teaches that they will cut their own way in the brick and will not crack the pavement badly.

In regard to what standard section to use we have found the 90-lb. A. S. C. E. most desirable. It would seem though that the open-heapth section used by the Union Pacific and the Southern Pacific Railroads (Fig. 5) would be most desirable since it has somewhat more height and better proportions gener-

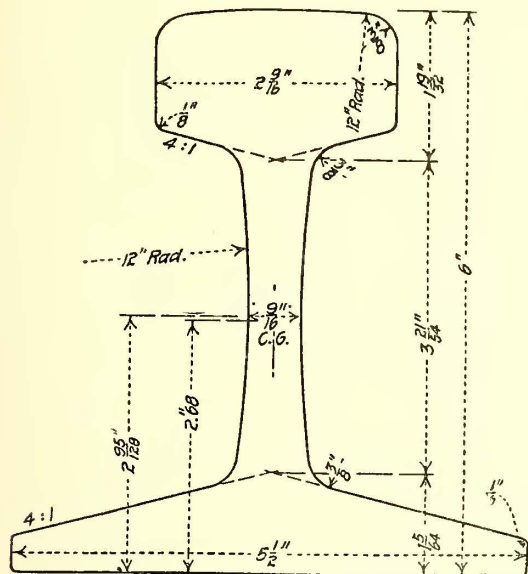


FIG. 7.—THE HUNT T-SECTION

ally. If heavier rail than the 90-lb. is used the Dudley 100-lb. section Fig. 6 would be excellent as would also the section designed by Capt. R. W. Hunt.

By referring to the following publications admirable types of construction will be found illustrated.

- Taeoma, Washington..... Street Railway Journal, Sept. 7, 1907.
- Kingston, N. Y..... Street Railway Journal, Jan. 26, 1907.
- Indianapolis, Ind..... Electric Traction Wceklly, Feb. 7, 1907.
- Seattle, Wash..... Electric Railway Revicw, June 29, 1907.
- Milwaukee, Wis..... Street Railway Journal, Sept. 7, 1907.
- Montreal, Canada..... Street Railway Journal, Sept. 7, 1907.

The gist of the whole T-rail matter seems to be that street railway tracks are beginning to be built to serve the companies which build them and the patrons of these companies, rather than every Tom, Dick and Harry of a truckman who stubbornly insists on following the car tracks instead of staying out in the roadway where he belongs. If this driving along the tracks served any economic end it might be tolerated, but it does the truckman no good and interferes with the movement and comfortable transportation of countless thousands of more important people. It would seem absurd if it were not true that any one would argue in favor of having the tracks of a street railway reserved for the transportation of merchandise at the inconvenience and discomfort of human beings.

The horse ear, the wagon on the track, slow speed, light equipment, grooved and girder rails bespeak the past. The electric car with the wagon in the roadway, high speed, heavy equipment on T-rails belongs to the present. If any man or body of men, either through ignorance or spite, endeavor to relegate any of you gentlemen to the past and, benightedly or spitefully, attempt to require you to continue grooved and girder rails in the face of present development, you will combat and overcome this ignorance and prejudice if you have a spark of manhood, and as "Angels of Light" will fight for and achieve T-rails, thus confounding these spirits of the Dark Ages.

NOTE: The article by Mr. Reel in the STREET RAILWAY JOURNAL of Jan. 26, 1907, includes a list of letters from city engineers throughout the country stating that they have adopted T-rails, explaining why they prefer them to the old grooved and girder types. The data on the subject were collected by Mr. Reel and presented at the January, 1907, meeting of the Street Railway Association of the State of New York.

MUNICIPAL OWNERSHIP IN GREAT BRITAIN AND IN THE UNITED STATES

BY W. J. CLARK

It is a great pleasure once more to address my old friends, the members of this association. Since we first met, some twenty years ago, you have accomplished more in producing local transportation facilities than has been done in all other countries of the world combined, thus promoting the public welfare, general progress and development of the country to an unprecedented degree. This brief statement in itself practically answers the question as to whether or not municipal ownership or private enterprise best serves public needs in that field where you have accomplished so much.

All virtues are not possessed by any particular class of mankind or are attendant upon any specific form of public policy; neither are all vices and shortcomings. Fewer serious evils exist, however, in connection with the development of public utilities by private enterprise in this country than are found connected with municipal ownership and operation either here or in its greatest stronghold, the British Kingdom. Comparison of municipal with private ownership of public utilities should naturally be made on economic grounds alone, based upon the actual results secured therefrom, for the worth of partially demonstrated theories is, of course, but speculative at best.

How impossible it is to treat thoroughly all that is covered by my text within the time allotted me here is best illustrated by stating that there will shortly appear a printed report of nearly three thousand pages upon municipal and private ownership made by a committee of which I have the honor to be a member. Yet this report, voluminous as it is, does not by any means exhaust the subject.

Contained in the report is much valuable information concerning certain municipally owned American gas, electric light and water supply plants that were investigated. It clearly demonstrates that with the exception of city water works, municipal ownership is not a success financially or otherwise, and even as regards water supply the showing made by the municipal plants was not so favorable from either a sanitary or financial standpoint as that of the company water works which were investigated. The baneful effects of political control and management appear in connection with the municipal plants investigated and are quite fully set forth in the report mentioned.

Turning to United States census bulletins of 1902 and 1903, giving statistics upon towns and cities of 8000 population or over, it is seen that the cost of their municipal water works was \$568,469,415 and their estimated selling value is \$499,925,742. The cost of municipal gas works is stated as \$43,018,673; their selling value is estimated at \$30,186,567. On municipal electric lighting plants the cost is stated as \$10,670,954 and their estimated selling value is \$13,614,064. No further comments on the last feature are necessary other than to say that the disinterested experts of the committee found great shrinkages in values from original costs on every municipal electric lighting plant which they investigated.

The same bulletins show that the estimated value of all municipal industrial enterprises in American towns and cities of 8000 population or over is \$707,511,949. The annual revenue therefrom is stated as \$60,725,802; the operating expenses as \$28,352,317; earnings from operations, \$31,955,581.

According to the same United States census reports the average rate of interest paid on municipal loans is 4.1 per cent, so from the earnings should be deducted \$29,007,090 for interest, leaving an apparent net income of \$2,948,491. If a depreciation of 5 per cent on the estimated value of the plants were allowed for, such depreciation would be \$35,375,597, so that the actual deficit from operating such municipally owned plants would show as \$32,427,106.

There are no municipally owned street railways in the United States, at least only one with a trifle of trackage. So on that industry in which you are most interested we must turn to the United Kingdom for information, and naturally you wish this feature treated more thoroughly than the other municipally owned public utilities. Before proceeding to do this, however, a glance should be given to the comparative development of the more important other public utilities in the United Kingdom and in this country.

In the United Kingdom there are about 1400 water supply undertakings, approximately 1100 of which are municipally owned and represent an investment of about \$400,000,000. The

investment in the 300 company plants is about \$250,000,000. In the United States there is a total of over 4000 water supply plants, about equally divided in ownership between municipalities and companies. The present investment of American municipalities in their water works is about \$650,000,000, or the equivalent of the entire investment in water works of the United Kingdom.

There are a total of about 730 gas plants in the United Kingdom, of which 265 are municipally owned and have an investment of approximately \$200,000,000. The 465 company plants have invested about \$410,000,000. The total investment for gas plants in the Kingdom is, say, \$610,000,000. There are about 1000 gas plants in the United States with an investment of nearly \$1,000,000,000.

In the United Kingdom there are 268 municipally owned electric lighting plants with an approximate investment of \$177,400,000. There are 206 company plants with an approximate investment of \$110,000,000. Total investment of the Kingdom in electric lighting, \$277,400,000. In the United States are about 4000 electric lighting stations representing an investment of over \$1,000,000,000. The total kilowatt output of the American stations is some eight or nine times greater than that of the British stations, so it is seen at a glance that far greater practical results are secured from the American investment in the electric lighting plants than is the case in the United Kingdom.

It is obvious that the greatest advantages and benefits which the public derive from the existence of local transportation facilities are directly proportionate to the extent that these are available to it. This makes local travel possible at low rates of fare, and incident thereto, aids such important matters as public enlightenment through readier intercommunication, redistribution and scattering of congested population, improved sanitation makes the ownership of homes possible to the humblest, extends the area available for employment to the laborer and increases taxation revenues through the improvement and increased values of real estate. These are the most important economic features involved in the local transportation problem.

American progress in this respect has been accomplished by private enterprise without imposing financial burdens upon public treasuries or increasing local taxation. British development of local transportation has been hampered by the municipalities where undertaken by private enterprise or favored by every unfair means at their command when undertaken by the municipalities themselves at serious risk to and great expenditures from their treasuries have been accompanied by increased taxation.

Compare the results arising in the two countries from the widely varying policies that have been respectively followed.

In 1902, the last year when official figures thereon are available, the urban population of the United Kingdom was 29,144,726; that of the continental United States was 33,850,000 and this latter included smaller communities than in the former.

The total length of tramway track in the United Kingdom was 2336 miles or 1 mile of track for 12,476 of its urban population. At the same time there was only one car for each 3760 of the urban population. The United States then had 22,328 miles of electric railway track or 1 mile for 1516 of its urban population and 1 car for each 574 thereof. In short, the urban resident of the United States had comparatively eight and one-half times greater trackage facilities available to him for travel than had the urban resident of the United Kingdom and six and one-half times the number of cars.

From 1890 to 1902 the increase of trackage in the United Kingdom was but approximately 56 per cent. During the same period the corresponding increase in the United States was about 200 per cent.

From 1902 to 1906 the length of trackage in the United Kingdom had increased 1256 miles. In the United States during the same period the increase was approximately 12,500 miles or ten times greater than in the United Kingdom.

In 1902 there were two cities of over 100,000 population in the United Kingdom without street railways. In the United States there were none.

In the United Kingdom there were seven cities or from 50,000 to 100,000 population without street railways. In the United States there were none.

In the United Kingdom there were thirty-nine cities of from 25,000 to 50,000 population without street railways. In the United States there were none.

In the United Kingdom there were 295 communities of from

8000 to 25,000 population without street railways. In the United States there were twenty-one.

Next in importance to the creation of transportation lines is, of course, the service rendered thereon. In the United Kingdom, where the greatest of handicaps and hardships have been placed upon the local transportation companies and where the municipalities have acquired the cream of the properties with the densest traffic, the average headway between cars is at present about one-third more frequent upon the company-owned lines than upon those operated by municipalities.

Contrast British conditions of service with those in America.

In 1902, the last year when full comparative figures are available, the total car miles run upon the tramways of the entire Kingdom was 145,127,423. Upon the local transportation lines of America, 1,144,430,466 car miles, or nearly eight times a greater number were run to accommodate an urban population but a trifle larger than that of the Kingdom.

A total of 1,394,452,983 passengers were carried on the tramways of the United Kingdom. On the street railways of the United States 5,521,509,521 passengers were carried. Of this last, however, 1,062,403,392 were on free transfers, a number practically equivalent to 90 per cent of the entire number carried in the United Kingdom.

On the basis of passengers carried per year the American street railway car averaged but slightly more than one-half the number carried by the tramcars of the United Kingdom. That is, the American car averaged 93,585 passengers per year, as against 182,463 passengers per year in the United Kingdom.

Now as to comparative costs of service rendered:

Making due allowance for the more favored conditions surrounding the existence and operation of British municipal properties the rates of fare upon British company systems are comparable with those of the municipalities. On this most important feature it is therefore demonstrated that despite all of the disadvantages under which they labor, British tramway companies are doing comparatively as much for the public on low fares as are the municipalities.

The average receipts per passenger on all tramways in the United Kingdom were 2.25 cents as against 3.76 cents in the United States. However, 9.65 passengers rode per car-mile in the United Kingdom as against 5.2 passengers per car-mile in the United States.

Gross receipts averaged 21.81 cents per car-mile in the United Kingdom as against 19.55 cents per car-mile in the United States.

The British passengers paid about 60 per cent. of the rate of fare paid by the American passenger, but as above stated, the facilities for travel available to him were only from 12 per cent. to 15 per cent. of those enjoyed by the American urban resident.

From 1890 to 1902 the increase in length of local transportation lines in the United Kingdom was but 536 miles. Similar increase in the United States was 10,755, or nearly twenty times as great. During the same period the average fare per passenger in the United Kingdom had decreased about 33 per cent. In the United States, despite rapidly increasing cost of essentials to operation and greatly increased facilities, it had yet decreased about 26 per cent.

It should be appreciated that it costs far more to operate local transportation service in America than in the United Kingdom. Rates of wages in this particular industry are at least double in this country those paid for similar purposes abroad. As the result of fairer treatment before the courts the rate of damage per car-mile for personal injuries in the British Kingdom averages about one-third of what is paid by American companies. As nearly as can be estimated the operation of an American street railway costs about 65 per cent more than should a similarly situated property in the United Kingdom. So it is seen that considering the cost to them of service rendered by American street railway systems the rates of fare charged are comparatively as low as those prevailing in the United Kingdom, while far greater facilities are afforded the public.

From what has been stated it is apparent that the legitimate objects for creating and operating local transportation lines have been more thoroughly met by American private practice than has been accomplished through British municipal methods. But there are other phases of the situation which should be considered.

Prominent among the arguments which are always advanced in favor of municipal ownership and operation are the alleged

financial advantages which accrue to municipal treasuries therefrom. Unquestionably there are a few instances where municipally owned utilities have brought an actual return from their operation to municipal treasuries. It would be strange indeed if this were not so, but these cases are rare and I have never known an instance where, if in the statements of their capital and operating expenditures due allowance were made for assistance rendered them toward a favorable showing, from other municipal accounts and branches of the city government, the showings would not be far less favorable.

Investigation of specific municipally owned undertakings and the results derived from their operation are of little value in determining the entire question of municipal ownership, or of direct value, unless permission were given to get at the actual basis of, and details followed in, their accounting. I have never known such permission to be granted in the United Kingdom. In fact, many pages of sworn testimony exist in the reports of parliamentary hearings which show that even the government auditors do not attempt to see if expenditures of municipalities are distributed to proper accounts.

The most honest, best intentioned municipal officials of the Kingdom unconsciously, perhaps, permit their public utilities to receive most important financial benefits from other branches of the city government, whose expenses are paid for out of general public funds, or they knowingly adopt a policy of this character and carry it to the extreme, considering it moral from the standpoint of municipal practice, although these same men would condemn anything of the sort attempted in ordinary private business. For these, and kindred reasons, the best way in which to obtain some light on the net financial results derived by the municipalities from municipal ownership in the Kingdom is to inspect their financial condition before and after municipal ownership became a dominating factor therein, drawing some incidental comparisons with American conditions.

Municipal ownership in the United Kingdom has brought burdens of local debt and taxation which are hardly grasped by the average American. To appreciate fully how onerous these burdens are, a glance should be given to those other burdens of debt and taxation which the British citizen bears in connection with his national government before the other weighs down upon him.

In 1905 the national debt of the United Kingdom averaged \$91.68 per capita of its population. That of the United States was \$11.91 per capita. The expenses of the national government for the United Kingdom averaged \$13.80 per capita. In the United States this was \$6.67 per capita.

Turning now to municipal indebtedness and taxation, the present amount of the local indebtedness of the United Kingdom is probably not far from \$2,800,000,000, or say approximately \$98.00 per capita of the urban population. About one-half of this has been incurred for municipal trading enterprises. In 1903 the amount of such indebtedness was \$2,200,000,000, or approximately \$79.00 per capita of urban population. In 1902 the total amount of local indebtedness of the United States was \$1,439,504,991, or \$43.53 per capita of urban population.

In contrasting the local indebtedness of the respective countries, and their expenditures for local government, it should not be forgotten that America has and does expend for school property and educational purposes, enormous sums, while such expenditures in the United Kingdom are comparatively small. The value of school houses in the United States was approximately \$450,000,000 in 1902. In the United Kingdom the value of similar property was about one-third that figure. It should also be remembered that in rapidly growing American cities the legitimate demands for improvements and consequent expenditures should be far greater than in old, well established British communities.

According to official estimates in 1902, the value of the realizable assets of British municipalities exceeded their indebtedness by approximately 23 per cent. The realizable assets of American municipalities exceeded their indebtedness by about 40 per cent.

The United States Census Bureau estimates that in this country for each \$100 of national wealth there is public indebtedness of every name and nature amounting to only \$2.85. In the United Kingdom corresponding debt averages \$10.50 for each \$100 of national wealth.

In 1880 the total local debt of the United Kingdom was \$684,670,350, or about \$19.56 per capita of the total population. In 1902 it was approximately \$2,200,000,000, or about \$52.64

per capita, showing a total increase in amount of \$1,504,740,825, or approximately 219 per cent, an increase per capita of \$33.08 or 169 per cent. In 1880 the total local indebtedness of the United States was \$724,427,848, or \$14.44 per capita of the total population. In 1902 it was \$1,439,504,991, or \$18.24 per capita, showing a total increase of \$15,077,143, or 97 per cent, and an increase per capita of only \$3.80 or 26 2/3 per cent. British local indebtedness is now increasing at the rate of about \$150,000,000 per year, or about \$3.25 per capita of the entire population. The local indebtedness of the United States is increasing at the rate of about \$70,000,000 per year, or less than 90 cents per capita of the entire population.

In the fiscal year of 1881-2 the total expenditures for local government in the United Kingdom, representing the amounts raised from taxation and received from the national government for local purposes, also raised by taxation, amounted to \$333,327,495, or \$9.45 per capita of the entire population. In the fiscal year of 1902-3 the total expenditures for local government were \$760,825,000, or \$18 per capita of the entire population, showing an increase in total of \$427,497,505, slightly over 128 per cent and per capita of \$8.55, or say 90 per cent. During the same period the rate of taxation upon assessed valuation of property had increased over 60 per cent, and the rate of assessment had been increased.

In the same period the increase in amount raised by local taxation in the United States averaged but 45 per cent per capita; and the rate upon assessed valuation had increased but 12 per cent, while rates of assessment had decreased.

These figures conclusively demonstrate the fallacy of the theory that British municipal ownership has relieved local taxation and improved the financial condition of municipalities. The proof is all to the contrary.

No statistics exist which fully cover all the public utility undertakings of local authorities throughout the Kingdom, but the parliamentary return of 1902, "Municipal Corporations Reproductive Undertakings of England and Wales," shows for that part of the Kingdom alone the following:

The total investment in such undertakings was	£ 121,172,372
Amount of loans repaid.....	£ 16,246,579
Amount of sinking funds.....	4,644,835
	<hr/> 20,891,414
Amount unpaid for which provision has not been made	£ 100,280,958
Total annual receipts from operation.....	£ 13,040,711
Operating expenses	£ 8,228,706
Interest paid	2,975,906
Set apart for depreciation.....	193,274
	<hr/> £ 11,397,886
Official statement of earnings from operation or about 1.36% on the total capital invested and 1.64% on that not paid or provided for	£ 1,642,825
Loans were repaid to the amount of.....	£ 1,204,544
Or 1.04% on the total capital investment.	
Showing a net profit of only.....	£ 378,281

It should be noted that small as the showing of profitable return upon an enormous investment thus is, less than one-fifth of one per cent has been allowed for depreciation in making that showing. If an allowance of five per cent had been made for depreciation, a figure more nearly correct, the amount which should have been deducted for this important item would be £6,058,618, instead of £193,274, as shown by the parliamentary return. Consequently instead of there having been earnings from operation there was properly a deficit of £4,222,519, or about 3.45 per cent on the entire capital investment of 4.22 per cent on the remaining investment. It should be observed in this connection also that the actual deficit would be about three and one-half times as great as the sums annually set aside for repayment of loans. These actual conditions, despite all complicated and misleading systems of accounting, must ultimately show in the general financial condition of the municipalities.

A favorite financial argument of the municipal ownership advocates is that owing to the superior credit of municipalities they can more readily secure capital for the creation of public utilities than can be done by companies, and upon a more favorable basis, with less risk to the investors in securities. This should seemingly be so, but let us note what the present selling values of British municipal securities are, bearing in mind that none were issued below par. The London stock exchange daily official list for Oct. 1, 1907, contains quotations upon 151 municipal securities. Of these nine were quoted at par or above; 22 from 95 to 99; 9 from 90 to 94; 60 from 85 to 89; 38 from 80 to 84; 8 from 75 to 79; 4 from 70 to 74; 1 below 60.

Among these are some remarkable quotations.

Certain London securities at.....	72 to 74
Certain Glasgow securities at.....	77 to 79
Certain Liverpool securities at.....	74 to 76
Certain Manchester securities at.....	86 to 88

It is thus seen that British investors have suffered enormous losses from the shrinkage in values of municipal securities, and that the credit of the municipalities consequently has been impaired.

There is an important feature of municipal finance involved in this connection which is generally overlooked. In all cases where Parliament has authorized municipalities to make loans for public utility purposes, it is provided that a sinking fund must be set aside to pay off ultimately the indebtedness. Rarely, however, is any provision made concerning the manner in which such sinking funds are to be invested and municipal authorities consequently handle them in accordance with their own unrestricted ideas. It should be said also that parliament in fixing the amounts to be contributed to sinking funds, and the time for their completion, rarely considers that a good share of the physical property of any public utility must be replaced one or more times before the original debt has been offset through the workings of the sinking fund.

Almost invariably these sinking funds are invested in municipal securities, and these frequently some issue of the same municipality for other public utility purposes. Consequently shrinkage in the value of municipal securities has seriously reduced the actual amount of these existing sinking funds, yet so far as I have been able to ascertain in all official statements thereon, this fact has not been stated. As regards municipalities investing sinking funds in their own securities, it is needless to remark that this is not in accordance with sound financial practice. It is clearly to be seen that the insufficiency of sinking funds to care for the original cost of properties, plus the additions required for renewal of certain portions thereof which have not been provided for, will ultimately create a financial condition thereon far different from that originally expected.

Once more dealing more directly with that particular public utility in which you are most interested at the latest period when official data is available thereon.

The last parliamentary report on the tramways and light railways of the United Kingdom, covering the fiscal year ending Mar. 31, 1906, so far as municipal properties are concerned, and that ending Dec. 31, 1905, for the tramway companies, shows that the municipalities had only 2,499 miles of track. On a basis of \$5.00 to the British sovereign, the existing capital obligations of the British municipal tramways are shown as \$177,199,735, averaging say \$70,840 per mile of track.

As is well known, in nearly all of the larger British cities the municipal authorities have acquired previously existing tramway systems owned by companies. This under a form of legalized confiscation authorized by the "Scrap Iron" Clause, so called, in the Tramway Act of 1870. As a result, only \$14,896,745 of the total capital expenditures made by the municipal tramways is shown as being paid for all the pioneer work done and properties created by the tramway companies, that have since been acquired by the municipalities. Had British municipalities been obliged to pay for what had preceded them in tramway work and investment, proportionately to what has been done in this country, their total capital investment in tramways would now be at least \$250,000,000.

In connection with the development of British tramways it has been necessary to do much street widening, which should properly be charged to tramway capital accounts. Tramway companies there have been obliged to pay for such expenditures. But it is rare where municipal tramways have had to assume much of such expense. The total charge to the capital accounts of the municipal tramways for this item is only \$3,750,000 for the entire Kingdom. It is an established fact, however, that in London alone about \$20,000,000 was expended for street widening on account of the tramways, which has never appeared in the tramway capital account. At Liverpool the same condition exists to the extent of about \$5,000,000.

If all the British municipally-owned tramways bore a pro rata charge for street widenings to that imposed on the London United Tramways Company, Ltd., there should be added to the total of their capital account about \$70,000,000, which has been assumed as ordinary local indebtedness, or partially paid for out of general local funds raised by taxation. To put the situation more clearly, British municipalities have apparently confiscated about \$70,000,000 to \$80,000,000 in tramway values,

and in stating the capital investment in their municipal tramways have omitted to say that \$70,000,000, which should have been included thereon, has gone into general public improvement or similar accounts. Consequently, had British municipalities proceeded to acquire their present 2,499 miles of tramway properties on the same basis as British and American companies have been obliged to follow, their total capitalization would easily reach \$330,000,000, or say \$132,000 per mile of track. The average per mile of track in the United States of stocks and bonds issued against street and elevated railways is less than \$107,000 per mile of track.

The results from operation of British municipal tramways during the fiscal year ending 1906 were, according to official statements:

Gross receipts	\$34,267,430
Operating expenses	21,618,670
Net receipts	\$12,648,760
Rental of leased lines, etc.	510,410
Income from operation.....	\$12,138,350
Interest charges	\$4,201,125
Reserve for renewal and depreciation.....	3,118,085
Net income	\$4,819,140

which was applied as follows:

To repayment of debt and sinking funds.....	\$3,316,680
Relief of taxation.....	1,029,905
Other matters and balance carried forward....	482,935

Under the whole theory of British municipal ownership finance, ample allowance for depreciation must be made and full contributions to sinking funds maintained, or the theory absolutely fails in practice.

Inspection of the above figures reveals the fact that only 1.8 per cent on the capital investment has been allowed for depreciation and renewal. If an allowance for this of 5 per cent had been made, an addition to the renewal and depreciation fund of \$5,667,840 is necessary, thus changing the net income as stated to a deficit of over \$800,000, preventing the making of legitimate contributions to sinking funds or for other purposes.

If we take into account, as we should, that \$70,000,000, which should have been charged to tramway capital account, has gone to general municipal accounts, and estimate the interest on this capital at 3 per cent, it is seen that at least \$2,100,000 should be added to the deficit resulting from the operation of tramways as shown above. It is thus apparent that British municipal tramways, taken as a whole, are operated at a serious actual loss, and that excepting in a few specific cases, payments to sinking funds or to relieve taxation have not been actually earned.

Based upon the official figures, which have been shown to be entirely unreliable, all the financial returns received by the municipalities of the United Kingdom from the operation of both company and municipal tramways, including local taxation thereon, repayment of debt or contributions to sinking fund, reserve, depreciation and renewal funds, and relief to local taxation, etc., average but approximately \$925 per mile of track annually. From the closest approximation which can be made in the United States, the average financial benefits which its municipalities receive from the taxation of and other contributions from street railways, and from taxation of their securities, the average is approximately \$1,295 per mile of track annually, or \$370 per mile of track greater than that shown as similarly received by the municipalities of Britain.

The last remaining important economic advantage claimed for municipal ownership is improvement in the conditions of the laboring man, and with this is always coupled the statement that there are no politics in connection with British municipal affairs, and no political dangers involved by greatly increasing the number of municipal employees. Rates of wages have increased and hours of labor have greatly decreased in connection with the operation of public utilities during recent years, both in this country and in the British Kingdom. It is questionable if these net benefits to labor since the introduction of electricity have been greater on British municipal tramways than upon American street railways. There is no question, however, but that British municipal ownership has unfairly created a class of privileged municipal employes at public expense, and to the detriment of their fellow laborers not employed by municipalities. At least this has been so stated to me by prominent American and British labor leaders.

As to whether or not a grave public danger exists in connection with the creation of such a class, is best illustrated by reading extracts from one of the circulars of the Municipal Em-

ployes Association, advancing arguments for increasing its membership:

Because unity is strength.

Because the officers of this Association have worked for years for a municipal body, and therefore know the way to approach and deal with local authorities for you better than others who have never worked for a public body.

Because it is estimated that there are nearly 2,000,000 municipal employes in the United Kingdom. What could they not do for themselves, if all together?

Because concessions, estimated to cost the municipal authorities upwards of £2,000,000 per annum, have been obtained by us.

Because we have never been defeated by a municipal body yet. If they decline a request to-day we are up and at them again to-morrow.

Because there is no need for strikes with us. We can get what we want without them, if we are united, by returning to the Council men who are in favor of fair conditions of employment.

Because we get concessions; not shout and rave about them.

A still greater political and public danger rests in the Association of Municipal Corporations and Town Clerks, and kindred organizations, which are more powerful in their influence on parliamentary legislation than any American party or political ring has ever been in national or state legislation. The votes of the 2,000,000 municipal employes mentioned above are practically controlled by them. The town clerks and other prominent salaried officials of the municipalities dominate the policy of their association. These men also generally dominate the parliamentary politics in their respective localities, and members of parliament rarely reside in the localities from which they are elected. As a result of this condition, the political future of the great majority of parliamentary members is principally dependent upon the attitude towards them of these associations. In addition to this, cash, legal, engineering and other talent are contributed by the members of the association for the services of some specific member in promoting or opposing legislation, affecting only the particular locality of that member.

Time does not permit me to go into details of how these influences have placed upon private utility companies the unfairest of burdens in securing franchise rights or in conducting their business when these have been secured. Nor how these influences have obstructed progress to the great detriment of the public at large. The unwise investment of enormous public funds with the attendant evils brought about by these influences has already been stated.

The American visitor who has been royally entertained by high-class, non-salaried elective municipal officials, and who has not gone deeply into the entire system of British municipal government, may doubt the existence of the situation described; but thorough investigation will reveal it in even more serious form than is here stated.

The real motives which have animated the great power behind the British municipal ownership movement, have emanated from those who expected personal benefit therefrom, and they are as intensely selfish as those which have ever led to the organization of a private company or have dictated the action of professional politicians in this country.

REPORT OF COMMITTEE ON HEAVY ELECTRIC TRACTION

BY CALVERT TOWNLEY (Chairman), E. B. KATTE, L. B. STILLWELL

The scope of your committee's work, as suggested in the committee's own report of last year, included mainly the consideration of such questions pertaining to heavy electric traction as might from time to time be referred to it by the association. Fortunately, such references have not seemed necessary to your officers during the past year, and therefore your committee is not called upon to report its consequent findings.

The progress of electrification has been considerable, and the service required from electrified lines widely varied. Owing to this latter fact, and to the rapidly developing state of the art, it is as yet rather early to attempt to establish new standards, and your committee is not prepared to recommend such.

The more important electric railroad projects begun or materially advanced during the past year have all been bulletined, and many of them described in the technical press. A review of same would be out of place here, but it may be of interest to summarize these in a brief list, which is therefore below appended.

CONTINUOUS CURRENT 500 TO 600 VOLT INSTALLATIONS

New York Central & Hudson River Railroad, New York City.—This noteworthy installation, which has been in progress for some years, and which comprises 35 100-ton locomotives,

and 131 multiple unit cars, has been practically completed and is in successful operation.

Detroit River Tunnel Company, Detroit, Mich.—Six 100-ton locomotives.

United Railways, Portland, Ore.—One 35-ton locomotive.

Boston Elevated Railway Company, Boston, Mass.—This company, which has operated heavy elevated service for a number of years, has under construction 308 160-hp motors for use as double equipments.

Metropolitan West Side Railway Co., Chicago, Ill.—Two hundred and twenty-eight 160-hp power motors have been added to the previous equipment of this company's motor power for use with multiple unit control as double equipments.

Philadelphia & Western Railroad, Philadelphia, Pa.—One hundred cars, each equipped with four 125-hp power motors.

Brooklyn Rapid Transit Co., Brooklyn, N. Y.—This company has added to its rolling stock 100 elevated cars, each equipped with two 200-hp motors with multiple unit control.

West Jersey & Seashore Railroad (Pennsylvania Road), Camden, N. J.—Eighty cars, each equipped with two 200-hp motors.

Philadelphia Rapid Transit Co., Philadelphia, Pa.—This company has added to its equipment 170 125-hp motors for use in two-motor equipments.

The Hudson Companies, New York, N. Y.—Fifty cars, each equipped with two 170-hp power motors.

Buffalo, Lockport & Rochester Railway, Rochester, N. Y.—Nineteen cars, equipped with four 75-hp motors each.

Texas Traction Company.—Fifteen cars, each equipped with four 75-hp motors.

West Shore Railroad Company (Oneida Railway Company), Utica, N. Y.—Fifteen cars, each equipped with four 75-hp motors.

Pittsburg, Harmony, Butler & Newcastle Railway Company.—Twelve cars, each equipped with four 75-hp motors. This equipment is noteworthy as contemplating the use of 1200 volts on the trolley, two 600-volt motors being connected in series.

Buffalo & Lake Erie Traction Co., Buffalo, N. Y.—Eight cars, each equipped with four 100-hp motors.

SINGLE-PHASE ALTERNATING CURRENT INSTALLATIONS

New York, New Haven & Hartford Railway Company, New York City.—This installation, which has been in progress for the past two years, has been practically completed and is in successful operation. It comprises 35 90-ton locomotives operating both from 11,000-volt, single-phase trolley and a 650-volt continuous current supplied from the third rail.

Spokane & Inland Railway, Spokane, Wash.—This installation comprises 14 locomotives, six equipped each with four 100-hp motors and eight equipped each with four 75-hp motors; also 21 passenger cars, each equipped with four 100-hp motors. This road is operating partly from 6600-volt trolley and partly from a continuous current. Length of track, 146 miles.

Sarnia Tunnel.—Five 62-ton locomotives; trolley voltage, 3300 volts.

Illinois Traction System, Springfield, Ill.—One 50-ton locomotive and eleven cars, each equipped with four 75-hp motors; trolley voltage, 3300.

Erie Railroad, Northern New York.—Six cars, each equipped with four 100 hp motors; trolley voltage, 11,000. Length of track, 34 miles.

Washington, Baltimore & Annapolis Railway Company, Baltimore, Md.—This equipment comprises 21 cars, each equipped with four 125-hp motors; also four cars each equipped with two 125-hp motors; trolley voltage, 6600.

Richmond & Chesapeake Bay Railway Company, Richmond, Va.—Four cars, each equipped with four 125-hp motors; trolley voltage, 6600.

POLYPHASE INSTALLATIONS

Great Northern Railroad, Cascade Tunnel, Washington.—This equipment will comprise four locomotives, each of 100 tons, to be operated on a 3000-volt, three-phase alternating current. This installation will doubtless be watched with great interest and will give an opportunity of demonstrating the fact regarding the advantages for and objections to polyphase currents for heavy railroad use.

CONTINUED CURRENT 1200-VOLT INSTALLATIONS

Southern Pacific Company, Oakland, Cal.—This equipment will comprise 44 cars, each to be equipped with 125-hp motors

to be operated continuously two in series on 1200 volts. There will also be forty trail car equipments.

Indianapolis & Louisville Railway.—Ten cars, each to be equipped with four 75-hp motors connected two in series for 1200-volt operation.

Much interest has been attracted to the investigations of the Pennsylvania Railroad, who are preparing to equip their new New York City Terminal and the tunnels connecting Manhattan Island with New Jersey and with Long Island by electricity. For the purposes of demonstrating the various possibilities open to them they have arranged to test both large continuous current and large alternating current locomotives, that comprising the greatest novelty being a 140-ton 15-cycle, single-phase alternating current locomotive for operation from 11,000-volt trolley.

REPORT OF THE COMMITTEE ON INSURANCE

BY H. J. DAVIES (Chairman), G. L. ESTERBROOK, A. H. FORD,
CHAS. O. KRUGER, R. B. STEARNS

Your Insurance Committee has held three meetings since its appointment a year ago, has sent one circular-letter (with data-sheet No. 17) to every member of the association, and to other street railway companies, and has analyzed the data received in response thereto. The filling out of the data-sheet involved considerable work, and for this reason, as well as because the subject of insurance still receives less attention from street railway companies than any other part of their business, the number of blanks returned was much smaller than the committee had hoped to receive.

The seventy odd reports received show insurance premiums amounting to more than \$3,000,000, losses of \$1,482,600, and payments by the insurance companies of \$1,360,000 in adjustment of the losses, or 45 per cent of the premiums paid, indicating that, while rates on many large properties have been reduced, there is still considerable profit in the business.

A large part of the cost of conducting insurance business consists of commissions paid to agents, brokers and solicitors. It is evident from these figures that if this item of expense could be eliminated, either by co-operation among traction companies mutually to insure their own properties, or by arrangement with existing insurance companies to do the business directly with the traction companies without the intervention of middlemen, a substantial additional saving in premiums might be obtained.

Of course, if full reports had been received from all the members of the association, the ratio of loss to premiums might have been greater. On the other hand, it might have been smaller. Some of the companies that reported gave figures for only a part of the period called for by the blank. If even these companies had made full report for each of the seven years the result indicated might have been changed. It may be that all the losses suffered by these companies are not included in their reports, but the large losses suffered by the Baltimore, Cleveland and St. Louis companies within that period are included and these three losses alone amounted to more than \$800,000.

Some of the companies reporting are setting aside from their earnings an insurance reserve or fund in lieu of insurance or in addition to insurance. The amounts so set aside are not included in the premiums on which the foregoing calculations are based. If they were included the percentage of loss would be smaller. Members that did not fill out data sheet No. 17 are urged to do so and to mail it to Secretary Swenson as soon as possible, so that the association may have the information on file for the benefit of its members. The committee recommends that the secretary of the association send out a blank soon after the close of each calendar year, asking the members to give him the data called for by questions 5, 6 and 7 of this year's data sheet and that he tabulate the information received, so that the association may know at all times the gross cost of insurance, the losses and the causes of fires. It was very difficult for members to get together all the data asked for by the data sheet; it will be comparatively easy for them to make a report for a single year at a time.

Your committee received in response to its circular letter more than fifty insurance forms or descriptions of property. A sub-committee was appointed to make examination and study

of these and to prepare a general form that would aid the members of the association in negotiating for insurance. This work has not yet been completed.

The reports show that the causes of fires have been various—some from lightning, some from defective wiring, some from short-circuits in cars, some from electric heaters, one from the upsetting of a car stove caused by the derailment of a car, one from placing wet horse blankets in an armature oven to dry, and some from other causes. Most of the fires started in cars and a large proportion of the car fires occurred in cars in service on the road. Several of the fires reported occurred in theaters or other park properties, and one was in a storage warehouse owned, but not occupied, by the street railway company that reported the fire. The losses from these fires are included in our statement of losses, although the properties destroyed or damaged were not, strictly speaking, street railway properties.

After the adjournment of the Columbus convention President Beggs appointed a committee on car house construction to consider and make recommendations upon the subject of the building of car houses, with especial reference to the prevention of fires, so as to carry out more effectually the suggestions of the insurance committee in its report of last year in regard to the importance of the adoption of methods of protecting the buildings and rolling stock of street railway companies from destruction or damage by fire. That committee has done most excellent work in collaboration with a similar committee of the National Fire Protection Association.

Responding to suggestions made to the association by representatives of the old-line insurance companies at the Columbus convention your committee invited the Eastern and Western associations of those companies to meet with it in New York at the office of this association on Sept. 23. The meeting was attended by H. A. Smith, vice-president of the National Fire Insurance Company, Hartford, Conn.; C. G. Smith, secretary of the German-American Insurance Company, New York; C. H. Holaman, assistant manager of the Commercial Union Insurance Company, Hartford, Conn.; E. H. A. Correa, vice-president of the Home Insurance Company, New York; Fred. S. James, Western manager of the National Fire Insurance Company, Chicago; Ed. Milligan, vice-president of the Phoenix Insurance Company, Hartford, Conn.; J. W. G. Coffran, Western manager of the Hartford Insurance Company, Chicago; Wm. Hare, assistant manager of the Norwich Union Fire Insurance Society, New York; J. H. Stoddard, general agent of the New York Underwriters, New York; Bruce E. Loomis, manager of the Fire Underwriters' Electrical Bureau, of New York, and three members of your committee.

The insurance committee of this association has from the start urged that the prevention of fires was more important and more economical financially than the collection of losses. While the work of your committee has brought about reductions in rates and a more intelligent and careful consideration by traction managers of the subjects of insurance against fire losses and the prevention of such losses, the effect of the work, it is believed, has been greater upon the insurance companies than upon the traction companies. This was made manifest at the meeting of your committee last month. The old-line insurance companies have lately been giving much attention to traction properties. They are coming to look upon them as less hazardous than they had supposed them to be. They have recommended improvements in the construction and protection of many street railway plants. They are treating our properties in a class by themselves. They have done a great deal to educate street railway companies to guard their properties against damage by fire and a great deal more to educate themselves on this subject and on the subject of the cost of insuring such properties as a class. They admit that mistakes have been made in the insurance business, as in all businesses; that the business has been too much localized; that it has been difficult to break away from century-old customs and to adopt more modern methods.

The old-line insurance companies propose a more intelligent and expert inspection of traction properties. The representatives of the companies present at the September meeting of your committee stated that they were ready and able to quote rates which were fair and which they could convince us were fair; that they were ready to offer inspection and supervision that could not be excelled; that they had substantially completed a new schedule for rating street railway properties which would make like rates upon like properties throughout the country

that could not be seriously criticized; that they had made arrangements for an efficient inspection service; that they were devoting more money, more thought and more time to inspection than in former years and that they much preferred a low rate with a sure though small margin of profit to a high rate with big margins in certain years and big losses in other years; that they proposed to keep regularly employed a bureau of experts under the direction of Bruce E. Loomis to advise street railway companies in regard to construction of buildings and in regard to devices and means for preventing fires and minimizing losses; that the rates made would include the services of this expert bureau, which would take the place of the numerous inspectors heretofore sent out by insurance companies, so that there should not be variations in recommendations and so that rates on like properties would be uniform.

Your committee is convinced that these insurance companies are sincere in their statements of willingness to co-operate with the traction companies in improving their risks and to write insurance at rates that will give them a comparatively small margin of profit. In return for the high-class inspection and supervision and this reduction in rates they hope to obtain substantially all the insurance of traction companies and they think that, with their new machinery and organization, they will be able to furnish good service at a cost lower than the street railway companies can obtain by any other instrumentality.

Your committee is of the opinion that while this association should acknowledge obligation to the stock insurance companies for their present lively interest in the traction insurance business and for the efforts they are making to so improve street railway properties as to enable them to reduce rates, the street railway companies of the country should so construct, equip and protect their properties as to invite competition in insurance and should be prepared to carry all of their own insurance whenever rates are too high and prepared at once and at all times to carry at least enough of their own insurance to make the rates. To this end we recommend most earnestly your support of the insurance companies that have been organized by about thirty of the traction companies. This association ought to have the means of knowing, through its own bureau or through a bureau maintained by an insurance company or insurance companies organized and conducted in the interest solely of street railway companies, and not for profit, the exact cost of insurance and the best methods of construction and protection, so as to be able to give intelligent consideration to the rates charged or asked by the old-line companies or by other companies, and, if they appear exorbitant, to be able to present reasons why they should be lower.

The action of the stock companies since you began the consideration of the subject of insurance three years ago in reducing rates, especially to the companies that have been most active in forming organizations for mutual insurance at cost, indicates, first, the effectiveness of the work of your committee, and, secondly, a determination on the part of the old-line companies to retain the business of the traction companies, even if they have to do some of it at a loss. This is emphasized by their statement to your committee that rates ridiculously low—so low as to show no possibility of profit—have been made to certain street railway companies. Their purpose in making these low rates was to prevent those companies from carrying their own insurance or from uniting with other companies for mutual insurance at cost. As your committee pointed out last year, rates lower than cost are unwise for both insurer and insured.

The old-line companies express a willingness, even an anxiety, to co-operate with the traction companies to bring about or secure better protection and lower rates of insurance, being actuated, they say, by a desire to benefit the traction companies. The real fact is that they realize that such co-operation and such intelligent treatment of the subject are necessary in order to enable them to retain the business they have, to say nothing of enlarging their lines of insurance. Some of their representatives intimated to your committee that they would be willing to do business with the traction companies at a net profit of 10 per cent. of the premium, or even a smaller percentage; but they declined to consider a proposition to return to the policyholder any net earnings in excess of that profit, and they are unable to eliminate from their expenses the commissions of agents and brokers.

The tendency of the times toward self-insurance is shown by the practice of the United States Steel Corporation, the

Pennsylvania, the New York Central and other large steam railroad companies, which carry their own insurance.

The mutual insurance plan recommended by your insurance committee has been favorably considered by the Central Electric Railway Association, the National Electric Light Association and the Association of Edison Illuminating Companies, each of which has appointed an insurance committee with duties similar to those devolving upon this committee.

A great many properties are under-insured. In case of loss on such properties a part of the loss would have to be sustained by the insured. A lower rate of insurance, to which the figures compiled by your committee indicate that the railway companies as a whole are entitled, and which any company that will make the improvements now recommended by most of the insurance companies ought certainly to receive, will enable companies to carry large amounts of insurance for the same amount of premium that they now pay. On the other hand, full valuation of properties, especially of well-protected properties, ought, and is likely, to bring reduced rates. We recommend to the members, therefore, a more careful valuation of their properties for insurance purposes and that a fund or reserve be established to cover losses in excess of valuations—the difference, for illustration, between the 80 per cent usually carried on certain classes of property and the full value of such property.

The number and value of cars subject to destruction at any one fire are oftentimes too great. If it is essential to the operation of the road that rolling stock of a very great aggregate value be stored in one locality the storage house or yard should be divided by fire walls or otherwise, so that a total destruction of the property in any one location or unit will not tie up the road or seriously cripple it. The fewer cars there are in each unit the less will be the likelihood of a disastrous fire and the lower should be the rate of insurance.

We trust that our work and this report will receive your entire approval.

REPORT OF THE AMERICAN ASSOCIATION COMMITTEE ON PUBLIC RELATIONS

BY W. CARYL ELY (Chairman), JOHN B. PARSONS, JERE C. HUTCHINS, CHARLES W. WETMORE, HENRY A. ROBINSON, E. C. FOSTER

It has been considered by your committee that the subjects naturally within its scope are those indicated by its title, namely, our relations with the public as distinguished from those matters pertaining to our internal business operations. These external or public relations in the minds of your committee naturally subdivide themselves as follows:

1. Our relations with that portion of the public served by our several lines of transportation; in other words, our patrons.
2. Our relations with governmental bodies, Federal, State and Municipal.

Under the first heading are embraced such questions as service, rates of fare, transfers, rules and regulations governing the service in so far as they apply to or directly affect our patrons, and in general our methods and ways of transacting our business as affecting our patrons and those persons who are residents of our several transportation districts.

Under the second heading are naturally grouped such subjects as franchises, taxation, including all public burdens and impositions, capitalization, service, rates of fare, public regulation and control. The events of the past year have caused the last mentioned subject to occupy a position of all absorbing interest and importance.

The contention for the enlargement of the powers of the Interstate Commerce Commission is familiar to you all and need not be further adverted to here. In addition to this a series of events relating to the management, operation and control of corporate enterprises has directed the attention of all people throughout this country to the subject. The legislatures of more than a dozen states during the past year have enacted laws which in some way or other directly provide to some extent for the supervision and control of corporations engaged in the business of transportation. In some states this legislation has embraced nearly, if not quite all, of the so-called public utility corporations. It may be and undoubtedly is a fact that this riveting of public attention upon this particular subject has in a large measure been brought about by a better understanding on the part of the American public of the facts and conditions concerning municipal ownership and its inapplica-

bility in this country and under the conditions prevailing here to this particular species of property. Public regulation and control and municipal ownership are intimately related. Indeed, it would seem that the one is the alternative of the other. We believe, in fact, that it is so now generally conceded and this seemingly almost universal turning away in this country from attempts at municipal ownership towards practical regulation and control affords evidence of the highest quality of a growing, if not an already established, belief that municipal ownership is impracticable and undesirable in this country.

It is not the purpose of your committee to discuss at length any of the matters herein referred to, but we would briefly call your attention to the statutes of the three states of Massachusetts, New York and Wisconsin as affording the most pertinent examples of this class of legislation.

Massachusetts in 1864 was the first of all the states to establish a State Board of Railroad Commissioners, and in 1885 was again the first to provide a Board of Gas and Electric Light Commissioners. New York in 1882 established a Board of Railroad Commissioners and a few years since again followed the lead of Massachusetts by establishing a Gas and Electricity Commission. During the past legislative session New York enacted a law to regulate public utilities and placed under State commissions nearly all public utilities, the telegraph and telephone companies being almost the sole exceptions. The New York commissions act of 1907 differed from the previous legislations in that state and also from Massachusetts by committing the regulation and control of the railroads as well as the other public utilities to the same commission, and divided the state into two commission districts, but made the subjects of commission jurisdiction the same in both districts. The New York law at the time of its passage was by far the most comprehensive piece of legislation of the kind that had been enacted up to that time. It conferred upon the Public Utilities Commissioners all the powers that had heretofore been invested in the Board of Railroad Commissioners and the Gas & Electricity Commission, and in addition thereto vested in the Commissioners both the power to fix the capitalization of such corporations both in stock and bonds, and also the power to make rates and specify and regulate service. It prohibits the capitalization of franchises except in such amounts as had actually been paid by any corporation to the public for any particular franchise possessed by it.

Later in the year the Legislature of Wisconsin passed a Public Utilities law regulating heat, light, water, power and telephone companies, and another law bringing telegraph companies and street railways under the same provisions as steam railways and interurban electric lines, and bringing all these public utilities under the jurisdiction and control of the State Board of Railroad Commissioners. The Wisconsin law goes further than either the Massachusetts or New York laws in that it provides for the physical valuation of the properties of such corporations, and provides for a complete system of uniform accounting with special requirements as to depreciation and construction accounts. It also provides for the so-called sliding scale by authorizing the Commission to investigate and sanction such devices; confers the power to regulate rates, fares and charges and establishes what it terms the indeterminate permit, which it defines to be "the right to continue in business until such time as the municipality exercises its option to purchase the property at a just compensation to be determined by the State Commission." This is a most important provision and one far in advance of anything heretofore attempted in any legislation in this country. Under the indeterminate permit feature corporations operating under existing franchises are permitted to surrender them and to receive in place and in lieu thereof by operation of law an indeterminate permit, agreeing thereby to sell to the municipality in the manner therein provided and "to waive the right to insist on the fulfillment of any contracts regarding rates or services which might be set up as a defense against the orders of the State Commission." In return the corporations obtain protection against unnecessary competition on the part of other corporations or municipal plants, the question of necessity to be decided by the Commission. This indeterminate permit provision does not apply to telegraph or telephone companies. In fixing rates the Wisconsin Commission is empowered to act absolutely instead of fixing merely maximum rates as provided by the New York law. An exhaustive statement concerning this

Wisconsin legislation, the method of its enactment and the objects sought to be achieved by the legislation is contained in an article upon the subject appearing in the *American Review of Reviews* for August, 1907, by Professor John R. Commons, Professor of Political Economy in the University of Wisconsin.

A Public Utilities Commissions bill is, at present writing, pending in the Legislature of New Jersey, and there are well-authenticated statements concerning the preparation of bills upon the same subject to be introduced at the coming sessions of the Legislatures in other states.

Under these circumstances it is not the purpose of your committee at this time to discuss the questions academically. It is a condition and not a theory that confronts us. The powers sought to be conferred upon commissions by legislation of the character above referred to are so far-reaching as to overshadow at the moment any and all of the subjects within the purview of your committee; indeed, nearly all of them are in part or in whole embraced within the scope of such legislation.

In view of the importance of the subject, its delicacy and its far-reaching effects upon street railway properties it would seem to be wise for your Association at this time to consider the adoption of some coherent and well-defined policy with reference to the matter.

During the past year the Committee on Public Policy of the National Electric Light Association has devoted a great deal of attention to this subject, and the reports of that committee and its sub-committee on Municipal Ownership and on Public Regulation and Control are respectfully recommended to your attention.

The conclusions of the sub-committee on Public Regulation and Control were stated to be:

First.—That the National Electric Light Association should favor properly constituted general supervision and regulation of the electric light industry.

Second.—That if state commissions be constituted they should be appointed in that manner which will give them the greatest freedom from local and political influences, to the end that their rulings shall be without bias.

Third.—That state commissions should be clothed with ample powers to control the granting of franchises, to protect users of service against unreasonable charges or improper discriminations, to enforce a uniform system of accounting and to provide for publicity. If the state provides for publicity on the one hand, on the other hand it should safeguard investments. Regulation and publicity would be a grievous wrong unless accompanied by protection.

The report of the full committee was written before the passage of the Public Utilities bill by the Legislature of New York, and while the full committee does not in terms make recommendations embodying the sub-committee's conclusions as stated above, nevertheless its general tenor is in the line of acquiescence in the general public policy involved in the legislation of regulation and control.

Mr. Everett W. Burdett, of Boston, is the Chairman of the Public Policy Committee of the National Electric Light Association, and partly because of his great experience and ability which peculiarly fit him to be a wise counsellor at this juncture, and particularly because of the excellence of the report in question, your committee has considered it wise to reproduce it here as well as the reports of two of the sub-committees.*

Your committee does not feel that it would now be justified in recommending any line of action to be pursued by this Association or its members when and as it and they shall be called upon to define a line of action as legislative emergencies of this character shall arise in different parts of the country, but we respectfully urge upon you the desirability of formulating such a policy, and to that end beg leave to suggest that at this session of the Convention a meeting be held of such of the administrative officers of electric railways as may be in attendance at this Convention.

In conclusion the committee apologizes for its inadequate treatment of this subject, but ventures to express the hope that it may still be of assistance in your further deliberations, if any, upon the subject which has formed the burden of this report.

*The committee includes these reports in an appendix.

REPORT OF THE COMMITTEE ON MUNICIPAL OWNERSHIP

BY C. D. WYMAN (Chairman), J. A. BEELER, H. M. SLOAN AND
J. J. STANLEY

In August last your committee in a circular letter to the members of the association asked as to the status of the municipal ownership movement in their respective localities. Among other questions to which replies were solicited were the following:

"What, if any, agitation or movement has arisen or been in progress during the past year for the extension of municipal public utilities?"

"Has there been any movement looking toward the municipalization of your company's business or any part thereof?"

"If any such agitation has arisen, please state its cause or causes."

"What seems to be the present status of public opinion in your vicinity touching municipal ownership of public utilities, such as street railroads and lighting companies?"

To our inquiries 132 replies were received, of which 55 represented city lines alone, 15 represented interurban lines alone, 62 represented both city and interurban lines.

The number of states represented by replies was 37 states and territories and four Canadian provinces. The number of cities covered by these replies of over 50,000 population was 73, and of those under 50,000 population 332. The number of municipally-owned utilities in cities represented by the replies was as follows:

1. Street railway systems, 2, one of which was in Canada.
2. Electric lighting plants, 29.
3. Gas plants, 4.
4. Water works, 69.

The answer to the question as to whether there had been any agitation regarding the municipal ownership of street railway lines in the field covered by our membership during the past year elicits an almost universal negative. We quote a few of the answers returned:

The manager of a line operating in one of the largest cities represented in our membership states:

"In answer to No. 7 as to the present status of public opinion I may say that the public mind of * * * on the question of municipal ownership has had a very serious set-back, as was demonstrated pretty conclusively by the mayoralty election last spring when the question of municipal ownership was the dominant issue. It should be stated in this connection that the result came principally from the non-partisan effort of a large number of the better class of citizens to educate the public, and their very thorough efforts were effectual in disabusing their minds of the many glittering fallacies that demagogues, yellow journals and mistaken zealots had built up in their fancy. It occurs to me that the average voter is thoroughly convinced of the rottenness of municipal politics, in this country especially, and it is easy to convert him to the fact that graft and perpetuity in office would be the result of municipal ownership."

The president of a large company in a Southern state says:

"Much less said now in regard to it than there was a year or two since. The public seems to have lost interest in the subject."

Still another manager reports:

"Less favorable to lighting than a year ago, and not considering railroads at all."

From central New York the word is sent that the business men of that locality are adverse to the experiment, and from a growing city in the far North a manager of a combined company writes:

"Decidedly against municipal ownership. Three newspapers adverse to it and also the best business people."

A company in Ohio reports:

"Authorities are not inclined to municipal ownership, they had a sad experience with the gas plant."

Another company in the same state replies:

"The public do not want it."

From the far South word is sent that public sentiment is against municipal ownership, and a Virginia company reports that the scheme is not looked upon with favor by the more intelligent citizens of the city. Two companies report that there has been some talk about it, and give as reasons therefor the desire for political preferment on the part of some politicians, but qualify the statement by saying that the taxpayers are taking no active steps in support of the movement. One company admits that by reason of poor service which they have

been obliged to give there has been some newspaper talk about the city taking over the railroad lines, and another one speaks of the municipal ownership scheme being used as a threat to obtain certain reductions in fare.

The condition as revealed in the answers with reference to lighting, gas and water works is not quite so favorable, although even with reference to such public utilities, a number of the replies are to the effect that with existing municipal plants in their cities the people are becoming disgusted with the operation and the service they afford, and to that extent are being turned against further extension of the municipal ownership scheme.

From a careful reading of these replies, which have been placed by the committee on file with the secretary of the association, we feel safe in making the assertion that municipal socialism as affecting street or interurban railway properties, in the sense of the taking over by municipalities of the ownership and operation of such properties, has as a social doctrine and as a political text quite considerably decreased in force during the past year. This decadence of the municipal ownership idea may be ascribed to several causes. A year ago the propaganda seemed to be the tide of a great movement which, on account of its utility as a political doctrine and its popularity with the masses because of its premises of reduced cost of service and an extension of opportunities for labor, was sweeping on largely unopposed, to the ultimate confiscation of our properties. The glories of its conquests abroad had been for some years rehearsed, and the blessings which it would introduce here in this country proclaimed from political platforms and through socialistic publications. But during the last 12 months the people at home and abroad have given to the subject a careful and critical examination of its principles and an analytic study of the facts as developed here and abroad through the trial of the scheme, with the consequence that the weaknesses and the fallacies of the proposition as a social economic theory, and especially the dangers of attempting to introduce to any great extent the practice it advocates in municipalities with the political complexion of American cities, have been shown, and what might be termed at least the radical and bald theory of municipal ownership and operation by the people of a municipality of such utilities, as those of transportation and to some extent of light, has been marked doubtful and is no longer in a general way being urged.

We believe that the campaign of education which has been in progress during the past year against the theory and principles of municipal ownership, a campaign to which doubtless the members of this association have contributed in public and in private, has shorn the idea of much of its strength and to that extent has weakened its force both as a political and a social enemy. This change of sentiment finds its illustration in the result of the elections in London last March, and Chicago in April of this year, both of which contests turned on the questions of municipal trading and municipal ownership, and which as precedent to the vote, involved a very complete collation of statistics touching the practical result of municipally owned utilities, and as well a great deal of illuminating academic discussion as to the principles and effects of the doctrine. At the London election out of 118 candidates 84 were unconditionally opposed to municipal trading, and the candidates in general in their addresses absolutely condemned competition with private enterprises. In Chicago also the issue was practically the same, the line of separation being clearly drawn between those who believed and those who did not believe in the wisdom of placing in the hands of the municipality the transportation business of that city. Thus we think we are safe in the conclusion that municipalization, involving the ownership of a public utility property and its operation by a municipality, has during the last year received a very considerable set-back, and it is pleasing to feel that in the long run the pendulum of justice and fairness, which may at times of frenzied reform swing to the extreme point of danger, will after a while return to a normal and safe position.

It must not be concluded, however, that the dangers to our corporate life are at present so greatly lessened as to be unworthy of our constant care and effort. In the stead of the socialistic theory of municipal ownership there has of late arisen the doctrine of public regulation, which has sprung into such popularity as to have become the favorite measure of legislation in almost every state in the union during the past 12 months. Perhaps we are trespassing upon the preserves of our committee—that of Public Relations—in adverting to this

matter, but as it is so intimately related and apparently is, to a large extent, the outgrowth of the movement for municipal or state ownership of public utilities, we may be forgiven for devoting some space to its consideration.

The past year bears many resemblances to the period of the Granger agitation. Railroad legislation in the states has been, however, far more widespread. Not only in the central and far West, but in the supposedly more conservative Atlantic seaboard states, a large part of legislative effort has been devoted to passing railroad laws. To be sure, these have referred to the steam companies, but the agitation which has given rise to them has also borne fruit in the passage of certain legislative bills which have included public utility corporations such as trolley, gas, electric light and telephone companies. It has been calculated that the number of such laws affecting railroads passed within the last year is about 300. Ten State Legislatures alone at their recent session passed 177 different laws with reference to the control of steam railroad corporations and dealing with almost every department and innumerable details of railroad operation and management, from the reduction of passenger fares to dusting of passenger cars, from establishing railroad commissions more powerful than any ever before created to requiring railroads to run only eight-wheel cabooses.

Public utility corporations, therefore, are just now passing through a crisis in their history, the result of which is difficult to predict. The socialistic and political organization through which perhaps more than from any other source the municipalization of street railway companies was preached and to some extent promoted a year ago has, it is true, during the past year shown less strength and declined to a marked degree, but on the other hand, as we have mentioned above, socialistic legislation instigated and promoted by both political parties, has been prevalent both in Congress and in State Legislatures to a degree exceeding that of any other period in the country's history. When corporate interests were obliged to face what seemed to be an un-American doctrine, radical in its tendencies and quite opposed to the character of our institutions, the socialism which, unaffiliated with other political organizations, demanded that all public utilities of every name and nature be turned over to the general government and the state or municipality, the fight was largely in the open and to that extent lacked some of the elements of danger which are present in the more covert and at the same time more generally popular movement which has of late been instituted by both democratic and republican organizations for the publicly proclaimed purpose of controlling the corporations for the people, but which it seems to us in many instances, if the provisions embodied in various bills are to be literally carried out, would mean, practically, confiscation. The socialists in this country find their work being done for them, and the rather anomalous spectacle is presented of the decline of a party whose avowed doctrines and policies are at the same time being supported. The condition is one which represents a drift that may become mischievous and dangerous unless we are fully alive to the forces which animate and vitalize it and are willing to meet it fairly and patriotically. Unless we are greatly mistaken, invective and stubborn opposition to the principle of regulation by commission or in some other way will not turn the tide which is setting in favor of that sort of control. That corporate offences have been committed in the haste for extension and for the occupancy of alluring fields which this country has presented, is a fact not to be controverted, and we respectfully submit that it is possible that some proper form of regulation, which shall on the one hand prevent ruinous competition to what are natural monopolies and on the other assure to investors the proper handling of their funds, would be helpful to all our interests. We must not deceive ourselves into believing that the spirit of socialism in this country has suffered such a decided reverse that it is entirely relegated to the rear. It is true its army is clad in a somewhat different uniform than formerly and marches under banners with new devices, but unless it is met with the same sort of intelligent study and a willingness to fairly discuss the questions, such as has characterized our municipal ownership campaign during the past year, we shall fall short, we fear, of properly safeguarding our interests.

In an excellent report upon this subject, made to the National Electric Light Association on municipal lighting, it was stated: "It would be a serious error to assume that the present movement of public sentiment toward public regulation signifies that municipal ownership is now or is soon going to be consigned to the limbo of discredited theories along with such past crazes as

free coinage of silver at a ratio of sixteen to one. If public regulation shall fail to establish a good understanding between the corporations operating public utilities and the customers of those corporations, we shall inevitably have a revival of the cry for municipal or State ownership."

At the risk of repetition, your committee wish to emphasize their feeling that while municipal ownership as a socialistic scheme has been greatly weakened, it reappears in many of its essential features in some of the schemes which have been legislated upon for what is properly known as "Public Regulation," and it is our business to meet it on the open platform of discussion with the idea of accepting that which it presents which is fair and just, and to the elimination from it of such elements as are unjust and confiscatory.

ANNUAL MEETING OF THE ALLIS-CHALMERS CO.

At the annual meeting of the Allis-Chalmers Company, held at Jersey City Oct. 24, President Whiteside said that the past year had been marked by a very considerable increase in the sale of the products of the electrical and steam turbine departments. Probably the most important work which has been brought to a commercial consummation has been in the development of the company's steam turbine units. Sizes ranging from 500 to 7500 kw have been completed and their success thoroughly established. The company's sales of steam turbines have already reached nearly 100,000 kw normal capacity, and compared with the previous year show in orders booked an increase of \$800,000. The gas engine department has also shown substantial progress. Orders to Aug. 1, 1907, for the horizontal, twin-tandem and double-acting type of gas engines, ranging in capacity from 500 to 5000 hp, aggregate 189,350 hp. One of the company's notable contracts covers the electrification of a steel plant requiring gas engine electrical units of an aggregate capacity approximating 60,000 hp. Another for traction purposes comprises three horizontal, twin-tandem gas engines of 1500 hp each, direct-connected to 1000-kw, 3-phase, 25-cycle alternators of our manufacture and includes all substation apparatus. During the year the company installed and placed in operation ten complete hydro-electric plants, having a combined output of 105,000 hp. The air brake department was organized about July 1, 1906, to exploit the sale of air brake equipments under the Christensen patents. A reasonable degree of success has already rewarded the company's efforts in this line of business. The company has now completed the development and manufacture of a considerable number of large alternating current and direct current generators, rotary converters, induction and direct current motors in all sizes and capacities, transformers for both power and lighting service, street railway motor equipments and electric hoists, all of which are in successful operation. It is worthy of note that notwithstanding the large inroads made by the steam turbine and gas engine, the company's Corliss engine business continues in steady volume, particularly for the medium and smaller sizes. The financial report of the company for the year ending June 30, 1907, shows a profit on operations of the last fiscal year after deducting expenses of manufacturing and selling, interest, dividends on preferred stock of The Bullock Electric Manufacturing Company, and provision for doubtful accounts of \$1,226,242. From this amount the following deductions are made: Charges for maintenance, repairs and renewals on buildings, machinery, plant, tools, etc., \$854,503.32; depreciation on buildings, machinery, plant, tools, etc., \$253,987.42; interest on bonds, loans and notes payable, \$505,049.40. This leaves an operating deficit for the year of \$387,298.14. For the quarter ended June 30, 1907, the company shows a net profit after deducting selling expenses, interest on bonds, etc., of \$200,358; for the quarter ended Sept. 30, 1907, the net profit was \$288,910.

The annual report also shows that the finance and executive committees have been abolished. This places the management of the company in the hands of Elbert H. Gary and W. H. Whiteside. The following new directors were elected: Elbert H. Gary, Edmund C. Converse, Charles MacVeagh, general solicitor of the United States Steel Corporation, and Alexander F. Banks, president of the Joliet Eastern Railroad (a railroad operated by the United States Steel Corporation). All of these are United States Steel Corporation officials. This materially strengthens the board and places the financial affairs of the company in excellent hands. The company has ample funds now to operate efficiently.

CONVENTION NOTES

In addition to the companies whose exhibits were described last week the following companies were represented at the Atlantic City convention:

J. P. SJOBERG & COMPANY, of New York, made an exhibit in connection with Semon Bache & Company. As is well known, Sjoberg & Company do an extensive business in wood-work for cars, and have recently been making a specialty of car vestibules, of which they have furnished a large number for the New York City Railway and other lines. Mr. Sjoberg himself was present.

W. R. GARTON COMPANY, of Chicago, were present in the persons of W. R. Garton and Ray P. Lee.

R. W. MARSHALL & COMPANY, of New York, were represented by R. W. Marshall, Geo. S. Thompson and Herman S. Crossman.

RUSSELL CAR & SNOW-PLOW COMPANY, of Ridgway, Pa., exhibited in connection with Messrs. Wendell & MacDuffie, their Eastern sales agents. The Russell snow-plows are adapted for both city and interurban service. The company also makes a specialty of a combination car and snow-plow which may be used for carrying express or freight in addition to cleaning the tracks.

SCRANTON ELECTRIC CONSTRUCTION COMPANY, of Scranton, Pa., made the acquaintance of many of the delegates through their purchasing agent, Joseph B. Noros, who was present at the convention.

BARBOUR-STOCKWELL COMPANY, of Cambridgeport, Mass., manufacturers of special track work for electric railways, were represented by F. F. Stockwell and W. W. Field.

BURDON TROLLEY CONTROLLER COMPANY, of Louisville, Ky., exhibited the Burdon trolley catcher, a device shown for the first time at the convention. Although the company is just preparing to take active steps to put the catcher on the market, it has already been tried out in actual service. In addition to exhibiting the device the company distributed circulars containing testimonial letters from the Louisville Railway Company and the Louisville & Southern Indiana Traction Co., expressing satisfaction with the workings of the trolley catcher in service. A distinctive feature of this new device is that it is operated by a gravity weight, and does not depend upon springs. The company was represented by C. H. Jenkins, general manager.

MILLOY ELECTRIC COMPANY, of Bucyrus, Ohio, was represented by P. D. Milloy. While making no exhibit on the Steel Pier, Mr. Milloy had samples of the Milloy trolley base at his hotel, where they could be inspected by the delegates.

AMERICAN CARBON & BATTERY COMPANY, of East St. Louis, Ill., was represented at Atlantic City by P. V. D. Brokaw, manager, and Harold J. Wrape. American carbon brushes are becoming very well known in the electric railway field, and the company has recently increased its manufacturing facilities so as to give special attention to brushes for this service.

WAGNER ELECTRIC MANUFACTURING COMPANY, St. Louis, was represented by E. W. Goldschmidt, of its New York office, and John Mustard, of Philadelphia.

THE WILDER SNOW-PLOW & MFG. COMPANY, of Worcester, Mass., was represented by W. E. Wilder, president. The company made no exhibit, but Mr. Wilder explained to many of the delegates the distinctive features of the Wilder Radial Snow-Plow.

H. B. IVES COMPANY, of New Haven, Conn., was represented by Jerry M. Hayes. This company is making a specialty of the "New Haven" trolley wheels and bushings, and also manufactures register fittings and other car trimmings.

INTERNATIONAL TIMBER PRESERVING COMPANY, of Chicago, was ably represented by H. De Steese, its eastern sales manager. Mr. De Steese had a sample can of "Neosote," and explained to many of the convention delegates the advantages of this compound as a preservation for poles, ties, bridge timbers, etc.

SAMSON CORDAGE WORKS, of Boston, Mass., had expected to make an exhibit at Atlantic City, but reported that 10 cases of goods which had been shipped from Boston had been lost or held up on the railroad. The company is looking forward to the days when electricity will replace steam for all

railroad traffic, so that delays of this kind will become impossible.

DAYTON MANUFACTURING COMPANY, of Dayton, Ohio, had a quartet of representatives in the persons of John Kirby, Jr., Jos. Leidinger, Peter Leidinger, and Nelson Emmons, Jr. As is well known, the Dayton Manufacturing Company makes an extensive line of car trimmings and supplies, including headlights, sand-boxes, brake handles, basket racks and other specialties.

J. P. DEVINE COMPANY, of Buffalo, N. Y., whose specialty is the Passburg System of vacuum drying apparatus, was represented by J. P. Warfel.

BONNEY VEHSLAGE TOOL COMPANY, of New York, was represented at the convention. This company is now putting on the market an extensive line of ticket punches, for which many points of superiority are claimed.

STANDARD AUTOMATIC TROLLEY RETRIEVERS COMPANY, of Greensboro, N. C., was one of the new companies exhibiting at the convention. The company was represented by Chas. L. Van Noppen, secretary and treasurer, who explained to delegates the workings of the "Standard" automatic trolley retriever.

THE SAFETY INSULATED WIRE & CABLE COMPANY, of New York, was represented at the convention by its sales agent, Richard C. Smith.

ATLAS ANCHOR COMPANY, of Cleveland, Ohio, made an interesting and instructive exhibit of the Atlas anchors, which are especially adapted for heavy construction work. The company claims not only that the Atlas Anchor costs less installed than other similar devices, but that when set in any good ground the anchor will hold more than the connecting rod. To set the anchors, the company has a unique device which works on a thrust ball-bearing cone, by means of which one man can exert a strain twice as great as that required to set the anchor. Thus the anchor is set to its full load position, independent of the pole, and will not creep afterward. The company offers to send a digger and setter with a half dozen anchors to any electric railway company on 60 days' trial.

THE RUBBERSET BRUSH COMPANY, of Newark, N. J., made an interesting exhibit of brushes for various purposes. These included brushes for painting and varnishing cars, iron work, and other requirements of electric railway companies. A. L. Holtzman, who represented the company at Atlantic City, distributed as a souvenir of the convention a shaving brush, which was very much appreciated by the electric railway men who received it.

UNIVERSAL POLE & POST PRESERVING COMPANY, of Circleville, Ohio, was represented by H. P. Folsom. The literature distributed by Mr. Folsom included an interesting pamphlet entitled "The Decay of Poles," and some other circular matter illustrating the method adopted by the Universal Pole & Post Preserving Company for preventing decay.

THE BUCKEYE ELECTRIC COMPANY, of Cleveland, was represented by M. H. Hartman, of the Cleveland office, and J. M. Smith, Philadelphia sales manager. This company manufactures special incandescent lamps for railway and park service.

G. C. REITER, Canton, Ohio, was represented by Mr. E. Rutter. This company manufactures a full line of gongs for railway service, and an exhibit of various styles, sizes and finishes was made in the booth of the Wallace Supply Company.

H. D. MILES and O. S. SLEEPER, of the Buffalo Foundry & Machine Company, were at the convention. This company manufactures vacuum drying and impregnating apparatus and devotes especial attention to railway and electrical work.

MR. A. R. DITTRICK, of the Dittrick & Jordan Electric Co., Cleveland, Ohio, was very much in evidence throughout the convention. While no formal exhibit was made, everybody knows Mr. Dittrick, and he was kept busy distributing the handsome pocketbook and letter opener souvenir which had been prepared for the occasion.

MR. WILLIAM A. ARMSTRONG, JR., of the Electric Service Supply Company, and J. M. Smith, of the Buckeye Electric Company, with their wives, Mr. and Mrs. F. B. Musser and Mr. and Mrs. H. R. Fehr and Miss Flynn made up a party at Had-don Hall during convention week.

THE MAGANN AIR BRAKE COMPANY had a booth on the pier, but did not exhibit any apparatus. E. C. Rutherford, sales manager, was the only representative of the company attending the convention, but he was very much in evidence. As stage manager of the vaudeville show on Thursday, he did excellent work. The programme of the performance was not definitely laid out until Thursday. Still the performance passed off without any of the hitches or delays that are customary at amateur performances. This was certainly pretty good stage management.

THE HOWE STEAM SAND DRYER attracted considerable attention. This sand dryer, which has been described in the STREET RAILWAY JOURNAL, is so constructed that the air after being heated by steam coils and absorbing moisture from the sand is drawn out of the sand by means of ventilating ducts in which a partial vacuum is created by a steam jet. The moist air so drawn out is, of course, replaced by dry air which is then heated. The construction increases greatly the capacity of a dryer of given size. The dryer of 10 tons per day capacity shown at the convention was 6 ft. 9 ins. high, 5 ft. long and 4 ft. 1 in. wide. Among sales made at the convention was a dryer to the Springfield Traction Company, Springfield, Mo. A. D. Blackinton, president of the Howe Manufacturing Company, of Scranton, Pa., the manufacturers of the heater, and C. F. Towne, exclusive sales agent, were in attendance at the convention.

THE PEACOCK BRAKE, exhibited in a tastefully decorated booth, was examined by many visitors who had not previously had an opportunity to have its features explained to them. Several styles of brakes were represented by aluminum models, one being the first model of the brake exhibited at a convention. Visitors generally admired the large stuffed peacock, which, perched on one of the columns in the rear of the booth, added considerably to the appearance of the booth. Visitors were received by G. S. Ackley, president of the National Brake Company, and several of his representatives.

THE NATIONAL FIBER & INSULATION COMPANY, of Yorklyn, Del., showed its Peerless insulation, a strong, tough insulating paper made by a special chemical process and furnished in sheets or in rolls and from .005 in. to $\frac{1}{4}$ in. in thickness.

THE TROLLEY SUPPLY COMPANY, of Canton, Ohio, showed the Kuntson trolley retriever.

THE AMERICAN RAILWAY SUPPLY COMPANY, of New York, represented by Charles Lounsbury and Walter Chur, showed a full line of metal cap and coat badges for electric railway employes.

THE AMERICAN SEWER PIPE COMPANY, of Pittsburgh, had on show vitrified clay conduits in single and multiple ducts for underground work. F. N. Kondolf, A. S. McCome and W. R. Adams represented the company.

THE COLUMBIA NUT & BOLT COMPANY, INC., of Bridgeport, Conn., was represented by Fred Atwater. A complete line of block nuts was on show.

THE CURTAIN SUPPLY COMPANY, of Chicago, Ill., showed complete curtains and curtain material of all kinds, also the Forsyth N 86 roller tip fixture, No. 88 ring fixture, Keeler eccentric fixture, Acme and Climax open car ring fixture. W. H. Forsyth, A. L. Whipple and Ross F. Hayes represented the company. Mr. Whipple also acted as chairman of the entertainment committee of the American Street & Interurban Railway Manufacturers' Association, in which capacity he did excellent work and added greatly to the social success of the convention.

S. F. HAYWARD & COMPANY, of New York, showed their well-known fire extinguishers.

THE NATIONAL CAR WHEEL COMPANY, of Allegheny, Pa., showed different types of car wheels.

ARCHBOLD BRADY COMPANY, of Syracuse, N. Y., was represented by W. K. Archbold, R. L. Allen and C. Loomis Allen.

THE BRADY BRASS COMPANY, of New York, manufacturers of the well-known Brady bearings for electric motors, street car journals, etc., were represented by D. M. Brady, president, and Amos J. Passino, Henry J. Lahey and H. S. Hayward, Jr.

ROSSITER, MacGOVERN & COMPANY, of New York, were represented by Frank MacGovern.

THE CINCINNATI CAR COMPANY, of Cincinnati, Ohio, had as its representatives at the convention H. C. Ebert, president; Robert Dunning, G. T. Farrell and Fred Phelps.

THE CLEVELAND FROG & CROSSING COMPANY, of Cleveland, Ohio, was, as usual, represented by G. C. Lucas, general manager, and George Stanton, sales agent.

THE FALK COMPANY, Milwaukee, Wis., exhibited in connection with Wendell & MacDuffie, its Eastern representatives. Otto H. Falk, vice-president, and W. Frank Carr, chief engineer, were present.

THE ELECTRIC RAILWAY EQUIPMENT COMPANY, of Philadelphia, Pa., dealers in second-hand cars and other electric railway supplies, had in attendance its general manager, Charles S. Ayres, and other representatives.

THE ELECTRIC RAILWAY EQUIPMENT COMPANY, of Cincinnati, Ohio, manufacturers of tubular iron poles, brackets, line material, etc., was represented by W. A. McCallum and J. G. Kipp.

THE JEWETT CAR COMPANY, of Newark, Ohio, which is building so many fine cars for interurban service, was represented by W. S. Wright and E. Besuden.

W. R. KERSCHNER, of Allentown, Pa., dealer in new and second-hand electric railway supplies, was present in person, and was also represented by J. B. Noross.

THE E. G. LONG COMPANY, of New York, manufacturers' agents and supply dealers, was much in evidence in the person of E. G. Long, president.

THE McGUIRE-CUMMINGS MANUFACTURING COMPANY, of Chicago, had ample opportunity to interest the electric railway officials in its cars, trucks, sweepers, sprinklers, etc., through its quartette of representatives, John G. Cummings, G. N. Brownrigg, F. J. Ryan and C. T. Biddison.

THE MORE-JONES BRASS & METAL COMPANY, of St. Louis, explained the merits of Tiger bronze axle bearings through S. W. Crawford and John B. Strauch.

ARTHUR S. PARTRIDGE, the well-known electric railway supply dealer, of St. Louis, was present, as usual, and was also represented by Harold R. Wilson and P. C. Murphy. At the annual meeting of the American Street and Interurban Railway Manufacturers' Association, Mr. Partridge was elected a member of the executive committee of that organization.

THE PATTON PAINT COMPANY, of Milwaukee, Wis., and Newark, N. J., was represented by John L. Brown and Jas. G. Mowry.

JOHN A. ROEBLING'S SONS COMPANY, of Trenton, N. J., was much in evidence, being represented not only by its New York manager, Henry L. Shippy, but also by R. Raymond Newell, G. W. Swan and Albert Mann.

THE ST. LOUIS CAR WHEEL COMPANY, of St. Louis, Mo., was represented by John W. Nute, W. W. Talman, F. O. Grayson, S. E. Hodge, who explained to the delegates the superior features of the company's reinforced spoke wheels for city and suburban cars.

THE STONE & WEBSTER PUBLIC SERVICE JOURNAL was one of the periodicals represented at the convention and many compliments were extended to the representatives of the firm present upon the tasteful appearance of the November issue of that paper. The names of the different gentlemen attending the convention in the interests of the firm were published last week.

THE ELECTROSE MANUFACTURING COMPANY, of Brooklyn, N. Y., was represented by Louis Steinberger, president.

THE EGYPTIAN METAL COMPANY, of New York, manufacturers of Pyramid metal, was represented by its special representative, E. H. Chapin, who has attended many conventions. Mr. Chapin was kept busy receiving the congratulations of his friends for a quick recovery from a sprained ankle, and in explaining the merits of the new bearing metal which he is representing. This work is in addition to his connection with the National Car Wheel Company, of which he is still New York selling agent. Pyramid metal is new in this country only, as it is made from an old Egyptian formula secured by Nelson Grayburn, of the Montreal Street Railway Company, while in Cairo. It has been employed on a number of street railway properties in this country and Canada with great success, and remarkable results have been secured from its use.

WESTERN ELECTRIC COMPANY, of New York and Chicago, had an interesting and comprehensive exhibit at the convention. Electrose overhead line material and Electrose high-tension insulators formed the main part of the exhibit. All types of overhead line material were shown, including straight line single and double curve suspension; car barn, bridge and mine suspension; double trolley hangers, straight line, single pull-off and double pull-off; cap and cone suspension, straight line, single and double curve; bracket suspension; strain suspension; double trolley suspension, three types; round-top hanger suspension, straight line, single and double curve; goose-neck suspension, four types; insulated locking hanger; loop strain insulators, several types; single and double turn-buckle strain. Several types of trolley ears, a number of interesting overhead crossings; section insulators and Electrose high-tension insulators of several types were also shown. One insulator, made of Electrose insulation, capable of carrying from 50,000 to 60,000 volts was exhibited. The neatness and small size of this insulator was noticeable, considering the very high voltage it was designed to carry. Third-rail insulators of recent design were also exhibited, as were trolley wheels of various types and weights, including W. E. standard, competition, spoke ribbed, high speed and sleet wheels. There were also samples of Deltabeston wire for railway motors and all types of D. & W. fuses, including 500-volt indicating cartridge fuses, 500-volt car heater cut-outs and 500-volt porcelain cut-outs. Various other appliances for the use of electric roads were also exhibited and attractive catalogues and other printed matter was distributed. The representatives of the company at the convention were: R. H. Harper, manager of the railway department, New York; F. D. Killion, A. E. Meixell, W. N. Harkness, E. P. Heyer, D. C. Guest, C. A. Howlett, F. C. Jaeger and R. Roth.

FRANCHISE A CONTRACT ACCORDING TO MILWAUKEE RULING

Judge J. C. Ludwig, of the Circuit Court, has overruled the objections of the defendants in the case of the state against the Milwaukee Electric Railway & Light Company, to the examination under the "discovery statute," and has vacated the injunction restraining Court Commissioner Joseph Donnelly from proceeding with the examination. A temporary stay of proceedings was granted, however, pending the perfection of an appeal to the Supreme Court. Attorney-General Frank L. Gilbert brought suit against the Milwaukee Electric Railway & Light Company, the North American Company (holding company), officers and directors of both companies, and nearly all of the aldermen in Common Council in 1900, when the disputed franchise was granted the company, and asked that the franchise be declared null and void. Judge Ludwig holds that, while the passage of a franchise cannot be restrained on the ground of fraud, it is, after its passage, a contract, and that a court can either annul the franchise or permanently restrain its use.

PROGRESS OF THE NEW PARK ASSOCIATION

Through C. H. Oberheide, vice-president and general manager, of the White City, Trenton, N. J., who is secretary-treasurer of the National Amusement Park Association, the STREET RAILWAY JOURNAL learns that the arrangements are well under way for the meeting in November of the new park association, of which detailed reference was made in the STREET RAILWAY JOURNAL of Oct. 19. Mr. Oberheide has visited a number of park companies, and wherever he has been has secured the support of park owners, and he expects at the next meeting that the attendance will be large, due to the interest manifested in the new organization by people in this line throughout the country. The by-laws of the association, as prepared by Mr. Oberheide, are now in the hands of the by-laws committee and will be submitted for approval at the next meeting. Many interesting subjects will be taken up which will be of interest to street railway and park men. Mr. Oberheide plans quite an extensive membership campaign, and is devoting a large part of his time to furthering the interests of the association, which has for its main object the securing of the best attractions for the parks and the dissemination of such information as shall be helpful to the park managers.

THE REASON FOR PASSING THE DETROIT DIVIDEND

Henry A. Everett, chairman of the board of directors of the Detroit United Railways, in an interview, said that the company faced the alternative of increasing the floating debt, if a dividend was paid this year, since about \$800,000 had been spent in improvements and in increasing and bettering the service. At the prices at which bonds of this or any other company would have to be sold now, he said, that the board preferred to take off the dividend until the improvements could be capitalized. It has been the policy of the company, he said, to give a first-class service and thus keep the good will of the people, so that the franchises may be renewed when they expire. The capitalization is low, in comparison with the value of the properties of the company, and everything is in good condition. Much of the stock is held in Canada, he said, and a good portion on margins, and this is what caused the sharp decline.

INTERBOROUGH EARNINGS FOR YEAR ENDED JUNE 30, 1907

The Interborough Rapid Transit Company made public Monday, Oct. 21, its statement of earnings for the fiscal year ended June 30, 1907, in comparison with the earnings of the preceding year. The statement showed a gain of \$1,475,700.77 in net earnings and of \$547,553 in net income, while the surplus earned in the year after the payment of charges and the dividend on the \$35,000,000 Interborough stock increased \$286,053 over the surplus for the year ended June 30, 1906. The dividends declared on the Interborough stock went to pay the interest on the \$70,000,000 Interborough-Metropolitan bonds when received by the holding company as owner of substantially all the stock of the Interborough. That was the only income derived by the Interborough-Metropolitan as holding company, the surplus earnings of the Interborough remaining in its own treasury. Following is the statement:

Interborough Rapid Transit Company statement, showing gross earnings, operating expenses, net income, and passengers carried for years ended June 30, 1907 and 1906—		Increase.
Year Ended June 30, 1907.		1907 over 1906.
Gross earnings	\$22,363,802.33	\$2,668,208.21
Operating expenses	9,593,331.03	1,192,597.44
Net earnings	\$12,770,471.30	\$1,475,700.77
Other income	815,832.63	100,329.47
Gross income	\$13,586,303.93	\$1,576,030.24
Interest on bonds and three-year gold notes and rentals	4,375,894.86	789,072.00
Taxes	1,377,965.37	*12,594.76
Total interest, rentals, and taxes	\$5,753,860.23	\$776,477.24
Balance	\$7,832,443.70	\$799,553.00
7% on Manhattan Railway Company stock..	4,116,000.00	252,000.00
Net income	\$3,716,443.70	\$547,553.00
Dividends on \$35,000,000 Interborough Rapid Transit Company capital stock....	3,150,000.00	262,500.00
Surplus	\$566,443.70	\$285,053.00
Operating per cent.	42.89	0.24
Passengers carried	449,287,884	53,571,498
*Decrease.		

The Interborough also gave out at the same time a statement in answer to certain deductions drawn by investigators employed by the City Club as to the relative decrease of service on the elevated lines between 1902 and 1907, as compared with the increase in passengers carried. The Interborough's statement showed the figures on passengers carried and car mileage for the first six months of the two years in question, whereas the City Club's figures were based on train mileage and number of passengers. It is the assertion of the railroad that train mileage does not furnish a fair criterion on account of the fluctuation of the number of cars on trains operated from time to time.

This was the showing made by the company:

Elevated Lines.	Car Mileage.		Inc. P.C.
	1902.	1907.	
Second Avenue	3,178,982	4,746,109	49.3
Third Avenue	8,426,855	12,402,877	48.2
Sixth Avenue	7,091,135	7,671,172	08.2
Ninth Avenue	4,174,964	6,057,057	45.0
Total	22,871,936	30,967,237	35.4
Elevated Lines.	Passengers Carried.		Inc. P.C.
	1902.	1907.	
Second Avenue	14,788,283	23,886,006	61.5
Third Avenue	43,880,451	62,845,547	43.2
Sixth Avenue	44,187,599	44,053,340	*0.3
Ninth Avenue	12,880,164	16,513,617	28.2
Total	115,736,497	147,298,510	27.2
*Decrease.			

THE SITUATION IN CLEVELAND

Alleging that the cars of the Forest City Railway Company have been leased to the Low Fare Railway Company in so far as the operation over its lines are concerned, their operation on Euclid Avenue was not stopped, notwithstanding the decision of Judge Lawrence that the Forest City Railway Company had no rights east of Ontario Street in the middle of the Public Square. Decision on the Low Fare Company's franchise around Erie Street Cemetery has been reserved, and until it is rendered the cars will, perhaps, continue to operate over Euclid Avenue to the connection at East Fourteenth Street. This is the same trick that was played, when an injunction was granted that should have effectually barred the Forest City Railway Company's cars from Superior Street.

As soon as the decision of the Common Pleas Court was made known, and it was found that the cure-all ordinance had been sustained, so far as the franchises on the West Side were concerned, a force of men were put to work laying track on Bridge Street. A single track had been laid on that street some time ago, and the company now proposes to complete the double track and operate its cars. It is said that a number of new cars have been received and will be put into operation at an early date.

City officials state that action will be taken by the City Council at an early date to legalize the franchises on Central Avenue and Quincy Street on the East Side, but it is a question of consents on those streets now. The Cleveland Electric officials say they have a majority of the consents on both streets and do not fear that they will not secure a legal franchise.

In Peter Witt's case against the Cleveland Electric to force it to cease spending money for advertising and in legal controversies, testimony was taken last week tending to show that the publicity bureau of the company is furnishing material for campaign purposes and that space has been purchased in some of the newspapers printed in foreign languages for that purpose. This was denied by those who conduct the publicity bureau of the company. As a result the editor of the *Press* and of the *Scripps* papers were put on the stand, and both of them testified that the headlines on some of the matter were written by a man formerly employed on the *Press*, but who is now in the employ of the Cleveland Electric.

The mayoralty campaign has resolved itself into a fight over the street railway subject. Mayor Johnson still asserts that his election means an immediate settlement of the matter. On the other hand, Mr. Burton emphasises the fact that his plan will result in an immediate reduction of fares, a settlement within one year and a greatly improved service.

Seven street railway ordinances were introduced in the City Council Monday evening, Oct. 21, all of them, with one exception, providing for extensions of the 3-cent fare lines from the West Side Road that is now in operation. These ordinances provide for the extension of the Fulton Road and Denison Avenue franchises to and around the Public Square and through the Square. From this point grants are asked on Euclid to East Fourteenth Street, on Superior to East Ninth Street, on East Ninth Street from Superior to Euclid; from the Square on Ontario Street to Eagle Avenue, from Ontario Street on Prospect Avenue to East Ninth Street, and on East Ninth Street to Euclid Avenue. This would give the Forest City Railway Company a right to operate on all the streets in the central part of the city, with the use of the various squares for loops. On all the streets named, it would be necessary to use the Cleveland Electric tracks. The proposed grant for the use of Central Avenue and Quincy Street provides that cars shall run from the center of the Public Square out Euclid Avenue to East Fourteenth Street, thence south to Central Avenue and east to Eighty-Fifth Street; also on Fifty-Fifth Street from Central Avenue to Quincy Street, and on the latter to Woodhill Road. Consents must be secured for the lines on Central Avenue and Quincy Street, and some arrangement must be made to use the tracks of the Cleveland Electric on all other streets mentioned, with the exception of the short line owned by the Forest City Railway Company on East Fourteenth Street. Other ordinances provide for grants on West Twenty-Fifth Street between Bridge and Lorain Avenues, on Lorain Avenue from its intersection with Fulton Road west to West Seventy-Third Street, and from the same point east to Abbey Avenue, across the bridge to West Fourteenth Street and to Kenilworth Avenue, on this street, on West Fourteenth Street to Central Viaduct, across this viaduct to Central Avenue,

Ontario Street and Eagle Avenue, thus giving two routes to the central part of the city. These ordinances will probably be rushed through, with the exception of those requiring consents.

The Forest City Railway Company made a tender of \$19,000 to the Cleveland Electric Railway Company a few days ago for the joint use of the tracks, lines, poles and other property between its lines on the West Side and the Public Square. This was refused, as was a tender made some time ago.

STORAGE BATTERY INSTALLATION OF THE NEW YORK CENTRAL RAILROAD

In the article on the storage battery installation of the New York Central Railroad in the Oct. 12 issue of this paper a reference was made to the fluctuations for rotary in sub-station No. 2 on Aug. 7, and a chart was published of the output of the sub-station and output of the rotaries. The statement was made that the extreme fluctuation for rotary was about 2500-amperes, whereas the correct figure should have been 250 amperes, as an examination of the chart will indicate.

MONTHLY MEETING OF THE NEW ENGLAND STREET RAILWAY CLUB

The regular monthly meeting of the New England Street Railway Club was held in the library of the Edison Electric Illuminating Company, Boston, on Thursday evening, Oct. 24. Through the courtesy of the Edison Company, the members of the club were favored with a most interesting address and inspected the Boylston Street exhibition department and the L Street power station in South Boston. This gave the members an opportunity to see the three 5000-kw Curtis turbines in operation, and the fourth of the same size and make now being installed. The company is at present engaged in doubling the size of the turbine station buildings, and is making preparations to install an 8000-kw Curtis turbine next spring.

The members assembled in the library of the Edison Electric Illuminating Company at 6:30 p. m., and at 6:45 p. m. a lunch was provided by the club. At 7:15 p. m. a representative of the Edison Company described briefly the apparatus which the members saw in operation at the L Street power station later in the evening. At 8 p. m. the party boarded special cars, and through the courtesy of the Boston Elevated Railway Company, proceeded to the L Street power station of the Edison Company.

DECISION IN CALIFORNIA ON JOINT USE OF TRACKS

Judge de Haven has handed down in the United States Circuit Court of Appeals, in San Francisco, a decision in which he maintains that the municipal authorities have a right to grant a franchise to one railroad company to run its cars on the tracks of another company for five consecutive blocks. The decision will enable the California Street road to run over the track of the United Railroads of San Francisco to the ferry. The Geary Street road could also find a way to reach the waterfront. Under the ruling, it would be almost impossible for any one company to shut out another. The matter came up in the Appellate Court on the appeal from the order of the United States Circuit Court of the Northern District of California, enjoining the San Jose-Los Gatos Interurban Railway Company from constructing a railroad on San Fernando Street, in San Jose. It was made on petition of the San Jose Railroad Company.

The Geary Street road could thus reach the ferry going five blocks on Market Street and then over Sutter Street tracks on the last five blocks to the ferry. The Sutter Street is a separate corporation, and as such the United Railroads claims its monopoly of four tracks on Market Street, from the junction of Sutter to the ferry. The decision of Judge Sharpstein in the State Supreme Court, which has been considered the law for twenty years, in which he held that the municipal authorities had a right to grant exclusive franchises, Judge De Haven shows was not concurred in by the majority of the court, and, therefore, was not conclusive. In reversing the order of the lower court, Judge De Haven said that the authorities of San Jose had no right under the state of California to grant an exclusive franchise to the San Jose Railroad Company.

TRANSIT MATTERS IN NEW YORK

Fifty-six persons were killed on the railways in the four counties composing New York in September, according to the monthly report of the Public Service Commission. This is the second report of the kind which the commission has issued, and it includes the steam railroads, as well as the surface lines, the subway and the elevated. The figures for one line have not been completed as yet, therefore the increase in the number of persons killed over the figures for the twenty-six days in August which the commission's report for that month covered will be even greater than the present report shows. The report shows that there was a falling off in the total number of accidents, but the number of serious accidents was greater in September than in the twenty-six days of August. In 208 cases the victims of accidents were either killed or suffered serious injury, as against 189 such cases in August. The total number of accidents of all character was 4906, as against 5500. Comparing the reports for the two months, more persons were killed, more persons suffered fractured skulls, and more suffered serious injuries not classified in September than in August. The number of persons hurt in car collisions and on the stairways of stations was also greater. The tables in the commission's report are as follows, with the comparative figures:

	Aug. 5 to 31	Sept.
Persons injured in car collisions.....	145	214
Persons injured in collisions with vehicles.....	465	641
Persons struck by cars.....	405	309
Persons injured boarding cars.....	641	503
Persons injured alighting from cars.....	1263	915
Employees injured.....	641	597
Deraillments.....	33	23
Injuries on stairways.....	26	35
Other accidents.....	1881	1669
Total.....	5500	4906

The serious accidents are further classified as follows:

	Aug. 5 to 31	Sept.
Persons killed.....	42	56
Fractured skulls.....	10	11
Amputated limbs.....	10	7
Broken limbs.....	44	39
Other serious injuries.....	83	95
Total.....	189	208

Inspectors in the employ of the Public Service Commission are engaged in learning the exact extent to which the vehicular congestion on certain streets interferes with the proper operation of the surface cars. It is the intention of the commission to go into this matter thoroughly and to bring about such changes, if possible, as will make it impossible for the traction companies to assert with truth in the future that the poor service they afford is due to the interference of vehicles and the constant blockading of the tracks by broken-down wagons.

It may be that in order to overcome the difficulty on Broadway and that at Twenty-Third Street and Fourth Avenue, the commission will ask the police commissioner to devise rules that will necessitate truck and wagon drivers going a considerable distance out of their way. In any event there is a possibility of trouble with the drivers, and the commission is now studying the methods of street traffic control in vogue in certain European cities with a view to ascertaining how its wishes can best be enforced.

The receivers of the New York City Railway Company have obtained an order from the court permitting them to spend \$3,000,000 for new cars and other equipment. In the petition, the receivers said that the equipment of the roads was destroyed partially in a fire of the car barns at 146th Street and Lenox Avenue last April, which caused the total destruction of 300 cars. On Sept. 9 a second fire destroyed eighty cars. The destroyed cars, it is said, were closed or winter cars, and as the fire occurred during the summer time the public was not then inconvenienced. The receivers informed Judge Lacombe that it is now imperative that winter cars be made ready for service at once. Although the New York City Railway Company had ordered new cars to take the place of those destroyed, but thirty of them have been delivered up to date. The petitioners are advised, they say, that nine new cars can be purchased, ready for delivery, and eighty additional cars of the closed or winter type contracted for, with deliveries on or about Jan. 15 next. It is also possible, the two receivers state, for 155 additional cars of special type and of large capacity to be bought for delivery from time to time before the close of the year.

Properly to operate the system, the receivers, also ask permission to replace the destroyed car barns at 146th Street and Lenox Avenue, where repair shops were located. Since the fire the system has been seriously crippled in its operation, it is alleged, because of the lack of these shops. Cars have to be left at night on open tracks, exposed to the weather, which not only injures the cars, but prevents proper inspection.

RECEIVERS FOR THREE WESTINGHOUSE COMPANIES

Temporary receivers were named Wednesday, Oct. 23, for the Westinghouse Electric & Manufacturing Company, the Westinghouse Machine Company and the Securities Investment Company, as the result of a conference of Pittsburg bankers, who, finding the companies embarrassed by the money stringency, determined that there should be no shutting down of the works or hampering of operations by importunate creditors. T. Hart Given, president of the Farmers' Deposit Bank; H. S. A. Stewart, real estate man and financier, and E. M. Herr, vice-president of the Westinghouse Electric & Manufacturing Company, were named to assume charge of the Westinghouse Electric & Manufacturing Company. William McConway, president of the McConway & Torley Company; W. H. Donner, president of the Union Improvement Company, and E. E. Keller, vice-president of the Machine company, were appointed receivers for the Westinghouse Machine Company. The Fidelity Title & Trust Company, of Pittsburg, was named receiver for the Securities Investment Company. The Westinghouse Air Brake Company and the Union Switch & Signal Company are not affected.

The allegations in the bills were that owing to the stringency in the money market it was found impossible, at the present time, to obtain the money with which to carry on the business of the industrial companies. It was stated that it was deemed for the best interest of the stockholders of the company, the employees and the creditors that the court appoint receivers to carry on the business of the companies rather than close down. The bills set forth that each of the industrial companies has large orders and that it is to the best interest to all concerned that the contracts now on hand be carried out. The court made an order that the industrial companies be operated under the receivers and that they be authorized to purchase such material as might be necessary to carry on the business of the companies.

It is explained that the Securities Investment Company was purely a Westinghouse concern, being practically owned by George Westinghouse, and that the company has been advancing money to the two industrial companies. The receivers were ordered to give bond in the sum of \$100,000 for each company, and the American Surety Company went on the bond.

George Westinghouse issued the following statement:

When the Pittsburg Clearing House Committee, after a full investigation and conference with me, concluded that, although the Westinghouse Electric & Manufacturing Company and the Westinghouse Machine Company were solvent, receiverships were advisable as the best means of protecting the interests of all concerned, it was clearly our duty to follow their friendly advice. The necessity for the receiverships is due solely to the acute financial stringency and consequent inability to renew our maturing paper.

Both the Electric and the Machine companies are solvent, and are doing the largest and most satisfactory business in their history, and each company is earning liberal dividends on its stock, and has quick assets substantially equal to its liabilities. I most confidently believe that every creditor of each company will be paid in full, and that, with wise management, under the direction of the receivers appointed by the court, the properties will soon be restored to the stockholders.

The loans to the Securities Investment Company and myself are secured by the stocks of the Westinghouse manufacturing companies, chiefly stock of the Electric and Machine companies, the sudden decline in the market value of which on Monday and Tuesday of this week has made it impossible for us to margin our loans. I strongly advise all holders of such loans to hold their collateral, the value of which I am confident will in time be sufficient to pay the loans. The sacrifice of the collateral in the present condition of the market can benefit no one. A policy of patience and forbearance is what the situation requires.

On the application of Herman Westinghouse and the Atha Steel Casting Company Judge Ward, in the United States Circuit Court, on Thursday, Oct. 24, appointed E. M. Herr, P. H. Given and Charles C. Burlingham ancillary receivers of the Westinghouse companies and their assets and properties in the judicial district of New York.

CHICAGO LITIGATION—REPORTS OF UNION TRACTION SUBSIDIARIES

Three angles of the traction litigation were before Judge Grosscup Tuesday, namely: Motions of Guaranty Trust Company for accounting by Receiver Sampsell before the master; motion of Central Trust Company for immediate payment of interest on bonds, and, thirdly, foreclosure cross bill filed by the Fidelity Trust Company, of Philadelphia. The Central Trust Company to-day will file a similar foreclosure suit. General Counsel Gurdy, of the Union Traction, says that this new mass of litigation will not delay the final settlement of the North and West Side troubles. The Guaranty Trust also gives notice it will ask leave to file a cross bill preparatory to foreclosing on a mortgage bond held by it. The Fidelity Trust Company's bill states that mortgage holders under trust conditions have deposited \$10,000,000 bonds for the latest reorganization plan, the terms of which will be published this week. Sampsell's reply to attacks on his receivership is a full acknowledgment with justification on the ground of public policy as well as the company's interests. The Fidelity Trust suit is a cross bill to the creditors' bill of the Guaranty Trust; it makes all Union Traction interests defendants.

Clarence H. Venner, of New York, on Oct. 21, filed in the Superior Court a bill asking that a receiver be appointed for the Chicago City Railway Company, which operates in the southern part of Chicago; and also that the traction settlement ordinance passed by the City Council of Chicago on Feb. 11 be declared illegal and void. The bill makes the Chicago City Railway Company, its officers and directors, J. P. Morgan & Company, of New York, and all holders of bonds recently issued by the railway company under a trust deed, defendants. Venner alleges that the bondholders are not innocent purchasers without notices of defect in the bonds, and he, therefore, asks for the cancellation of the bonds and mortgage, and for the enjoining of further payments to the city as compensation. The ordinance is attacked on the ground that it is unconstitutional, and impairs the vested rights and obligations between the State of Illinois and the company.

The Fidelity Trust Company, of Philadelphia, has filed a cross bill for foreclosure of its mortgages on the property in litigation under the Union Traction receivership. The bill is filed against the Union Traction Company and the subordinate corporations through which the Union Traction Company holds control of the lines on the West and North Sides of Chicago.

The Chicago Union Traction Company reports earnings of the several operating companies for the year ended June 30, 1907, as follows:

NORTH CHICAGO STREET RAILROAD

	1907	1906
Gross receipts	\$3,507,014	\$3,518,004
Operating expenses	2,392,684	2,185,694
Net earnings	\$1,114,330	\$1,332,310
Other Inc.	21,069	25,172
Total Inc.	\$1,135,399	\$1,357,482
Fixed charges, etc.	1,111,506	1,260,877
Surplus	\$23,893	\$96,605

WEST CHICAGO STREET RAILWAY

Gross receipts	\$6,850,050	\$6,573,964
Operating expenses	4,651,086	4,335,737
Net earnings	\$2,198,964	\$2,238,227
Other Inc.	34,282	50,404
Total Inc.	\$2,233,246	\$2,288,631
Fixed charges, etc.	2,233,246	2,288,631
Deficit .....	.....	.....

CONSOLIDATED TRACTION COMPANY

Gross receipts	\$1,951,270	\$1,833,559
Operating expenses	1,667,869	1,314,409
Net earnings	\$283,401	\$519,150
Other Inc.	82,452	82,881
Total Inc.	\$365,853	\$602,031
Fixed charges, etc.	689,795	705,010
Deficit	\$323,942	\$102,979

The report of the committee on state legislation recommending the passage of the Fisher bill compelling all steam roads inside the Chicago city limits to electrify their roads within three years has been approved by the Chicago City Council.

NEW TRANSFER REGULATIONS IN PHILADELPHIA

A step toward correcting the abuse of free transfers has been taken by the Philadelphia Rapid Transit Company and notices have been posted in the cars announcing that transfers will be given only on request at the time fares are paid. It was also announced that transfers will not be given on transfers, thus curtailing a privilege heretofore granted at some intersections.

Representatives of the company have compiled a long list of business places where transfers are given as premiums. The slips are reported to have been found on sale at many saloons, cigar stores, billiard and pool rooms and barber shops, and it is even said that conductors have been getting drinks, cigars and their tonsorial work in exchange for transfers.

NEW ENGINEERING POCKETBOOK

The McGraw Publishing Company announces the publication of a new pocketbook for electrical engineers, which is to be on the market by Nov. 15 and will be known as the "Standard Handbook for Electrical Engineers." The field of electrical engineering has been divided into sections, and each section has been treated by a specialist. The section devoted to electric traction is the largest single section in the book.

A few of the authors are: A. H. Armstrong, "Electric Traction"; Geo. C. Shaad and R. C. Beardsley, "Central Stations"; Edw. Lyndon, "Batteries"; A. L. McAllister, "Transformers and Motors"; H. M. Hobart, "Electric Generators."

The book is divided into 20 sections: units, circuits, instruments and measurements, materials, magnets, transformers, generators, motors, batteries, central stations, transmission and distribution, illumination, electric traction, electrochemistry, telephony, telegraphy, miscellaneous applications of electricity, wiring, standardization rules, tables and statistics.

Although the book contains over 1300 pages, it will still be of pocket size, owing to the high quality of "bible" paper employed. The binding will be in flexible red morocco. The illustrations, over 1500 in number, were all especially prepared for the work. The price is \$4 net.

THE STRIKE IN YONKERS SHORT LIVED

The strike of the employes of the Yonkers Railway Company, of which mention is made elsewhere in this issue, is doomed soon to peter out. New men have been engaged to take the places of those who left their posts, and President Maher, of the company, announced on Thursday that cars would be in regular operation again Thursday afternoon. The strikers, however, still insist that their demand for an increase of wages of 5 cents an hour must be granted before they will go back to work.

STREET RAILWAY PATENTS

[This department is conducted by Rosenbaum & Stockbridge, patent attorneys, 140 Nassau Street, New York.]

UNITED STATES PATENTS ISSUED OCT. 15, 1907

867,939. Line Wire Switch-Frog for Electric Railways; Harry J. Beck, Winburne, Pa. App. filed Jan. 7, 1905. Consists of a plurality of splice-pieces, one of which is movable and provided with a pivotal connection with the body part. Provides for shifting at will the angle of inclination of the main line splice-piece with respect to any branch line.

867,971. Wheel Fender for Cars; Joseph Hoefling, Grand Rapids, Mich. App. filed Jan. 29, 1907. Consists essentially of an arrangement of a horizontally arranged front fender and an inclined rear fender connected by such means that when the front fender rises over an obstruction the rear fender is moved downward in contact with or close to the roadbed.

868,035. Car Fender; James T. Tighe, Boston, Mass. App. filed Feb. 14, 1907. Details of construction.

868,043. Railway Brace; Jacob H. Waldschmidt, Fond du Lac, Wis. App. filed Oct. 25, 1906. Details of a brace to prevent spreading of the rails.

868,103. Car Fender; Benjamin Lev, Cleveland, Ohio. App. filed Jan. 23, 1907. Details of a fender adapted to fold and slide beneath the end of the car.

868,197. Derailing Switch; Leroy J. Lindsay and Joseph H. Carroll, Seymour, Iowa. App. filed March 18, 1907. A diagonally grooved plate designed to rest on top of the rail and means for holding the same in place.

868,212. Railroad Tie; William McCloy, Cressona, Pa. App. filed May 14, 1907. The tie consists of a U-shaped channel rail with wooden blocks therein to which the traction rails are affixed.

868,222. Electric Railway Switch and Signal; Alice A. Roth, Buffalo, N. Y. App. filed May 14, 1907. A pair of spring plates adjacent to the trolley conductor, with which a circuit is completed by the trolley wheel. Solenoid magnets have a lever connection with the switch point and are selectively energized according to the way the car takes current.

868,230. Electromagnetic Device for Use in Connection with Railway Appliances; Louis H. Thullen, Edgewood Park, Pa. App. filed March 18, 1905. An indicating mechanism for a lever of an interlocking machine, comprising a core, a coil designed to be traversed by an alternating current, a movable member inclosing a portion of the core and a stem connected with the movable member.

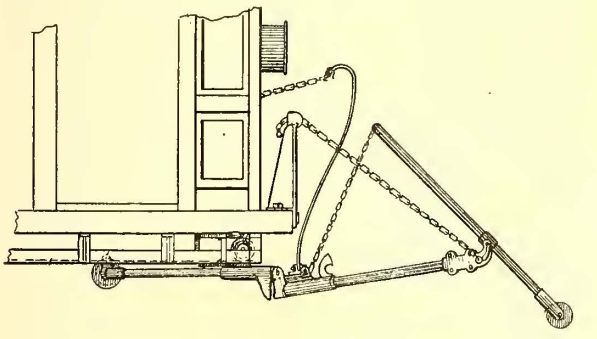
868,231. Signaling System for Electric Railways; Louis H. Thullen, Edgewood Park, Pa. App. filed April 30, 1907. Comprehends the prevention of an improper operation of a signal for one track by the signaling current from an adjacent track.

868,302. Signaling System for Railways; Louis H. Thullen, Edgewood Park, Pa. App. filed May 28, 1906. A block signal system of the type in which the track rails form part of the return path for the propelling current. The rails at the end of each block section are connected by inductive bonds. Has alternating current and polarized rails.

868,354. Signal System; Bernard F. Merkel, Salida, Col. App. filed May 1, 1907. Means for signaling a train from a distant station, consisting of a target containing electric lighting means, said target adapted to slide by gravity to a position directly over the track when released for signaling.

868,376. Rail Bond; Darwin Ulke, Chicago, Ill. App. filed July 28, 1906. Has a terminal with an extended contact surface and an attaching stud integral with the terminal and projecting from the inner end of the contact surface.

868,384. Insulated Rail Joint; Benjamin Wolhaupter, New York, N. Y. App. filed Jan. 26, 1907. The side joint plates



PAT. No. 868,103.

each carry a base section affording a support for one rail end only and are provided with a reinforcing flange. Insulating means.

868,402. Rail Joint; Bancroft G. Braine, New York, N. Y. App. filed Aug. 11, 1906. Contemplates a binding means for insulation or bonding plates which provides for firmly and tightly securing such plates in intimate contact with the opposing bearing surfaces of the rail and the rail joint members.

868,424. Signal System; Julien A. Gehrung, New York, N. Y. App. filed Feb. 15, 1907. A signal system adapted for steam railroads where a less expensive installation than the usual block signal is desired. Has semaphores along the track which may be selectively operated from a dispatcher's station over a single wire connection. In all cases the correct actuation is checked by a return signal. There are also means by which the condition of every semaphore signal along the line is constantly shown at the dispatcher's station.

868,481. Air-Brake System; Henry N. Ransom, Albany, N. Y. App. filed June 1, 1906. Consists in returning again to the source, in releasing the brakes, the air which is supplied from the source to brake cylinder in applying the brakes, so that the same air is used repeatedly.

868,482. Folding Car Step; Nelson L. Reeves and James B. Shane, Chicago, Ill. A swinging car door having a pivot extending below the platform, a turning step thereunder and gearing between the lower end of the pivot and the step, whereby the step is turned into or out of position for use when the door is opened or closed.

868,505. Rail Chair; Joseph W. Trotter, Dora, Ala. App. filed Jan. 19, 1907. Means for anchoring the rail chair to the tie.

868,517. Insulated Rail Joint; Benjamin Wolhaupter, New York, N. Y. App. filed Nov. 8, 1906. One feature of this invention is that of providing a divided rail-supporting base comprising separate complementary base plates, each of which constitutes an independent metal supporting base for one rail end.

868,518. Insulating Rail Joint; Benjamin Wolhaupter, New York, N. Y. App. filed Nov. 8, 1906. See preceding patent.

868,519. Insulated Rail Joint; Benjamin Wolhaupter, New York, N. Y. App. filed Dec. 3, 1906. Means for relieving the base insulation from the load, consisting of an auxiliary bridging rail which serves as a girder to strongly reinforce the joint parts and also presents a carrying head which receives and supports the car wheels in passing the joint.

868,520. Insulated Rail Joint; Benjamin Wolhaupter, New York, N. Y. App. filed Dec. 8, 1906. See patent 868,517.

868,531. Controller Operating Mechanism; Clarence T. Crocker, Norwood, Ohio. App. filed Nov. 29, 1905. Details of a pawl and ratchet whereby a step-by-step movement of the controller handle is necessitated in applying the current.

868,553. Car Axle; Langley Hall, Astoria, Ore. App. filed May 4, 1907. The axles are made of telescopic sections so as to revolve independently of each other. Lubricating means.

868,673. Controller; Charles E. Lorn, Norwood, Ohio. App. filed May 29, 1907. A controller for the motor of electric railways having an interlocking mechanism for the main switch and the cut-out switch of a railway controller.

868,592. Air-Brake System; Charles E. Barry, Schenectady, N. Y. App. filed May 14, 1906. Consists in providing two train-pipes, automatic valves on the several cars controlling the flow of air into and out of the brake cylinders, the pistons for operating the valves being exposed on opposite sides to pressures supplied from the two train-pipes, respectively, with means for varying at will the relative pressures in the two train-pipes.

868,596. Potential Starter Attachment; Herbert W. Cheney, Norwood, Ohio. App. filed Nov. 23, 1906. Consists of a controller biased toward "off" position when in a "starting" position and means for unbiasing the controller when it is moved to "running" position.

868,623. Adjustable Brake Head; Carl E. Bauer and Frank L. Susemihl, Hammond, Ind. App. filed Feb. 4, 1907. The brake head is rotatably mounted on a bearing on the brake-beam, adjacent laterally projecting winds carried by the brake-beam and brake head, respectively, and means for rigidly uniting the wings at various positions of relative angular adjustment.

868,614. Automatic Switch for Railways; Lewis C. McAdams, Sacramento, Cal. App. filed July 1, 1907. Means for actuating a drum and cable mechanism from a moving car to thereby throw the switch.

PERSONAL MENTION

DR. HANS GOLDSCHMIDT, of Essen, Germany, and inventor of thermit, arrived in this country Oct. 22. He will remain about two months.

MR. H. HOLBERT PORTER, of the firm of Sanderson & Porter, engineers, it has just been announced by the Interborough-Metropolitan Company, of New York City, has been appointed consulting engineer of the company.

MR. M. P. HERLEY has been selected by Mayor Busse, of Chicago, as superintendent of local transportation, to succeed

Dr. Maurice F. Doty. Mr. Hereley was at one time superintendent of the Union Traction Company, of Chicago, and has been employed by the company at various times in different capacities.

MR. D. W. McFETRIDGE, purchasing agent for the Lehigh Valley Transit Company, Allentown, Pa., since December 1, 1905, has resigned, to enter the employ of the Lehigh Portland Cement Company in a similar capacity. The duties of purchasing agent will hereafter be discharged by President Stevens and other officials of the road.

MR. JOHN E. OVERTON, formerly State Game Protector, has accepted the position of superintendent for the Suffolk Traction Company, of Port Jefferson, L. I. Mr. Overton states that his company is ready to begin work in Port Jefferson immediately upon receiving the necessary consents. The company is to build a line from Patchogue to Port Jefferson, and from Port Jefferson to Stony Brook.

MR. HENRY L. DOHERTY, head of the American Gas & Electric Company, and a member of the Emerson-McMillan syndicate, was tendered a banquet recently at Montgomery, Ala., at which many of the leading business men of the city made speeches. Mr. Doherty was at Montgomery on a visit to the Montgomery Light & Waterpower Company. Mr. Robert J. Chambers, manager of the local plant, was the toastmaster and introduced the speakers. Mr. Doherty said that his company was preparing to spend \$100,000 in additions, and even more if need be, to keep the property up to the demands of the public upon it. He paid a visit to the power plant at Tallassee.

MR. W. B. TARKINGTON has resigned as superintendent of transportation of the Milwaukee Electric Railway & Light Company, his resignation to take effect Nov. 1. Mr. Tarkington at one time was general superintendent of the Omaha & Council Bluffs Street Railway Company, of Omaha, Neb., and has long been identified with street and steam railroad work. He began his career in the mechanical department of the Chicago & Northwestern Railroad as machinist's apprentice and was later made division master mechanic on the Iowa division of the road. Since then he has been connected with a number of important street and interurban companies. He has not yet announced his plans for the future.

MR. W. H. WILLIAMS has been elected second vice-president of the United Traction Company, of Albany, N. Y., and Mr. W. H. Davies has been chosen as comptroller of the company. Mr. Williams was recently made third vice-president of the Delaware & Hudson Railroad, the parent company of the United Traction Company, in charge of the financial and accounting departments. His election as second vice-president of the United Traction Company will also place him in charge of the same departments in that company. The office to which Mr. Williams has been elected is a new one and was created because of the desire to have in New York City an official of the company who can look after the detail work. President Loree is engaged constantly with Delaware & Hudson Company matters and the other officers of the company are all located in Albany. Mr. Williams was until a short time ago assistant to President Loree. The new comptroller, Mr. W. H. Davies, is now the acting comptroller of the Delaware & Hudson Company. Mr. Luman H. Stewart, who, until a short time ago was comptroller of the Delaware & Hudson Railroad, also acted as comptroller of the United Traction Company. With the resignation of Mr. Stewart because of ill health, Mr. Davies, the assistant comptroller, was assigned to his duties by General Manager Sims.

MR. W. J. HARVIE, for some time electrical engineer of the Utica & Mohawk Valley Railway Company, has been appointed chief engineer of the Utica & Mohawk Valley Railway, the Oneida Railway Company and the Syracuse Rapid Transit Railway. For the present, Mr. Harvie will remain at his offices in Utica, but the supposition is that he will finally be located in Syracuse. Mr. Harvie joined the engineering force of the company, in a subordinate capacity, when work was progressing on the Little Falls extension. The work of electrification on the West Shore Railroad was mainly in his hands, he having charge of placing the sub-stations and the third-rail, and equipping the cars. Mr. H. S. Williams, who has been Mr. Harvie's assistant, succeeds him as electrical engineer of the Utica & Mohawk Valley Company, his duties to remain the same as heretofore. Mr. F. J. Jewell is given the title of chief operator of the Oneida Railway Company, which has charge of the West Shore, with jurisdiction over the power department

and the transmission line of the company. Mr. T. F. Daly, general foreman of the Oneida Construction Company, will devote such time as may be necessary to maintenance of the third-rail and have jurisdiction over the third-rail patrolmen.

MR. D. W. DOZIER, chief engineer and superintendent of power stations for the Twin City Rapid Transit Company, of Minneapolis and St. Paul, has resigned from the company to take effect Nov. 1, and will retire from active engineering to his fruit farm in the Ozark Mountains, near Springfield, Mo. Mr. Dozier has been employed by the Twin City Rapid Transit Company as chief engineer for the past five years and has superintended the construction of the new power station in Minneapolis, which is one of the largest and most complete in the West. The installing and operating of all machinery has been under his supervision, besides operating the old stations of St. Paul and Minneapolis. Mr. Dozier came to the Twin City Company from Kansas City, Mo., where he was for many years with the Metropolitan Street Railway as chief engineer, designing, building and operating power stations. He first entered street railway work in 1886, when he went from the E. P. Allis Company, of Milwaukee, to Kansas City, with the first pair of engines to be installed for the Grand Avenue Cable Railway Company. After erecting the engines and starting the station under the Allis contract, Mr. Dozier was retained by the company as chief engineer, and remained with the company for more than sixteen years. Eight or nine years after he entered the service of the Kansas City Company followed the consolidating of all the cable railways, the equipment of the system with electricity, creating a demand for new power stations, which Mr. Dozier designed and built for the Metropolitan Street Railway, notably the Kaw River Station. Before entering street railway work, Mr. Dozier was for six years chief engineer on river boats and connected with some of the leading engine builders of this country. He superintended and started the large cable power station for the Washington & Georgetown Cable Railway Company, of Washington, D. C., in 1892 and 1893. He will be succeeded in the Twin City Company by Mr. George Caywood, of the Allis-Chalmers Company, of Milwaukee, Wis.

MR. JOHN W. CORNING, the new secretary of the American Street and Interurban Railway Mechanical Association, is a man well known in the affairs of the association, and thoroughly qualified to succeed Mr. S. W. Mower, who, as secretary of that body since its organization in 1902, has worked faithfully in its interest.



J. W. CORNING.

Mr. Corning at present is electrical engineer of the Boston Elevated Railway Company, with which he has been continuously connected since his graduation from John Hopkins University in 1894, when he obtained a position with the West End Street Railway Company on construction work connected with the rewiring of the company's central power station. After this work was finished, in the course of a few months, Mr. Corning was put at work upon one of the regular operating shifts in the power station, where he spent several months. After the first installation of the underground feeder cables was finished, Mr. Corning was assigned to the test house, where the general work of testing and locating faults on the system was carried out. Here he remained for two or three years, when he was made private secretary to Mr. Charles F. Baker, the master mechanic. After two years of service under Mr. Baker, Mr. Corning entered the department of wires and conduits, taking up the general supervision of the lay-out of the feeder and return systems, overhead and underground, the cable testing, and the records of the department of wires and conduits relating to trolley wire, poles, feeders, etc. In 1901 his jurisdiction was increased to cover the general electrical testing work and other duties that had come under the charge of the electrical engineer, who had recently resigned. This work Mr. Corning carried on with gradual increase of duties until in 1905 he was given the title of electrical engineer. Mr. Corning was chairman during the past year of the committee of the American Association on Car Wiring.