Electric Railway Journal

Published by the McGraw Publishing Company, Inc.

Consolidation of Street Railway Journal and Electric Railway Review

Vol. XLVI NEW YORK, SATURDAY, OCTOBER 9, 1915 No. 15

SAN FRANCISCO AS A CONVENTION CITY

In spite of its distance from the East, San Francisco was the logical place in which to hold the convention this year. The exposition was, of course, the great attraction. It was the magnet for the selection of San Francisco as the convention city by nearly all of the national associations which have held conventions this summer. The American Electric Railway Association had another compelling reason. Its members on the Pacific Coast had for many years loyally sent representatives to different cities in the East for the annual convention, and it was only fair that they should have the compliment of a return visit at some time, and this was the logical time. In spite of the distance which the trip required for many of the delegates there was a satisfactory attendance of delegates from the East. While not as many were present as at recent Atlantic City conventions the attendance was good compared with those at other national conventions which have been held in the Far West during 1915. The depression in business undoubtedly kept many away who would otherwise have been present, but the attendance was representative, and those who took the trip were well repaid. There is a spirit of enthusiasm and energy which characterizes all work on the Pacific Coast, including that of the electric railways, which no one can realize until he has actually lived in the Far West and has seen the work accomplished there.

LOWER COMPANY SECTION DUES

The association has been generous to the company section members in reducing the annual dues 60 per cent. These dues are as low as is consistent with the dignity of a national association. A certain minimum is also essential to proper appreciation on the part of the individual, for what costs nothing is valued correspondingly. The association has shown that the individuals are not sought as members for the income they would produce, but that it desires to serve the company members which support it by making their employees better employees. We believe that a chief function of the company section is to foster local loyalty and co-operation. While local associations are excellent they cannot be as effective when independent as when bound to a national society. It should be much easier henceforth to form sections if only for the rather selfish reason that the present local members in a community can save money by becoming section members, and to be such they must have a section to join. But the mere reduction in dues is not alone going to enlarge the membership greatly. The fact of the reduction must be widely advertised and the company section programs kept at such a high standard of attractiveness and value that the men will not only come in but stay in. We anticipate a year of great company section activity as a result of this association action.

SAFETY CODE CONFERENCE COMING

President Allen in his San Francisco address mentioned the work of the National Bureau of Standards in the preparation of an electrical safety code, and stated that the association has been actively co-operating with the bureau. This is a most important matter and time is now at a premium for getting in constructive suggestions, as the Washington conference is less than three weeks off. During the past few days there have been several important conferences in the East, in which the association was represented and much progress was made. Some details in the preliminary edition of the proposed rules aroused considerable opposition, as was natural. It was only by putting something tangible into the hands of the operating and constructing engineers that these objectionable details could be brought to light. They will undoubtedly be eliminated. President Allen has certainly done his best to bring out the facts from the railway standpoint.

AMMUNITION FOR THE PROGRAM COMMITTEE

The award of the company section medal at San Francisco to J. W. Bury, assistant superintendent of transportation Manila Electric Railroad & Light Company, for his paper on courtesy serves to remind the section program makers of a means which is at their disposal for stimulating latent literary talent. It is an honor to the section as well as to the individual to have such an award. Moreover, with the number of sections as small as it now is, there is more chance to obtain the medal than there will be later. Mr. Bury's paper, which was delivered in Manila on April 6, 1915, was briefly abstracted in the issue of the Electric Railway Journal for May 29, page 1033. The spirit of it can be gathered from the following quotation from our abstract: "The platform man has peculiar temptations to be discourteous, and the public blames a great deal of its discomfort in transportation on the car conductors. The motormen, who are to blame for many of the conductors' troubles, should co-operate with the latter in the matter of courtesy. The inspectors have an excellent opportunity to promote pleasant relations between platform men and the public." If the award of the medal will act to help the program committees in bringing out papers of this type it will be worth much more than its cost. An excellent beginning has been made in the past two years.

PAPERS AND ADDRESSES AT SAN FRANCISCO

The San Francisco conventions were characterized by a number of important addresses by men of national reputation on leading topics of the day, notably the papers by ex-Senator Bourne, B. J. Arnold, J. W. Lilienthal and Paul Shoup. The address by Mr. Shoup, which we hope to be able to give in extenso next week, is but briefly abstracted in the present issue of the ELECTRIC RAILWAY JOURNAL. In it he contrasted the governmental policies toward the railroads and agriculture and advocated education of the public. Mr. Lilienthal told of the possibilities of improving the inside conditions of a corporation in an equally large way and of the proper methods of treating the employees and the public. His address is abstracted elsewhere in this issue. We commend both of these papers to the thoughtful consideration of railway men. All such can apply the principles of welfare work for the public and for employees as were clearly enunciated by Mr. Lilienthal. The position of the electric railway companies of the present day would be very much better if the doctrines described by him had been more generally followed in the past. Indeed, his paper might well be considered in the light of an elaboration of the code of principles.

The address of the president of the association is always an important document and should be considered among the notable addresses at San Francisco. Mr. Allen gave a vivid picture of the problems now before the industry and of its present condition. In nearly all sections of the country the situation confronting the electric railways of the country is the same, and the cumulative effect of this condition spread over a number of years has brought new construction of electric railroads to a standstill. The condition cannot be ascribed to the business depression entirely or even largely. The properties, it is true, have suffered from this cause in their gross receipts, but the trouble is far deeper and is one which will not be greatly relieved even if there should be a revival of general business unless there are other alleviating conditions. The differences between the electric railway industry and others which can increase their prices or reduce their service as the occasion demands are not properly understood by the general public, which instead of lightening the burdens of the electric railways seems intent on increasing them.

How best to overcome this is the chief problem, not only before the industry but also before those who believe that the prosperity of the country is dependent largely upon the proper development of its transportation facilities. To assist the association in helping to solve this problem Mr. Allen has recommended certain changes in the organization of the association by which a closer relation will be created between it and the Manufacturers' Association. The committee to which his suggestions have been referred is a strong one, and until a definite plan is formulated no opinion can be expressed. As we view the situation the manufacturers can help in two ways. One of these is the work which they have been doing in connection with the exhibits. This they have done well. The other is a broader work to which they have yet hardly put their hand. Whether the two rather dissimilar tasks can best be performed by two organizations or by one, and whether the plan of making the Manufacturers' Association an affiliated association is the best remains to be determined. These are the questions which the new committee is to decide and upon which it will report, presumably at the next regular meeting.

HELPING THE EXECUTIVE

The address of G. B. Willcutt before the Accountants' Association emphasized in noteworthy fashion the important part that accountants' reports, ordinary and otherwise, play in administrative work when they are properly compiled, compared and analyzed. The problems confronting modern executives have in late years increased so much in volume and complexity that very broad knowledge and experience on their part is necessary for quick and correct decisions on questions submitted to them. In this state of affairs the modern executive to be successful is forced to depend on his analysis of facts that have been collected and arranged for his instantaneous and continuous use. Here the accountant has already done much, as is shown by the comprehensiveness of the work described by Mr. Willcutt, but the end is not yet.

In a sense the accountant and the executive are inclined to look at financial and operating statistics from two widely differing points of view. The accountant, it has been said, primarily wants a bird's-eye view of the status of the corporation at a particular moment or the general results at the end of a particular period. The mind of the executive, however, works differently, for he wants a "cross-index" of the accountant's information at all points and for all periods so that he can study the entire or partial history of all or any portion of the corporation's activities. The difference, we would conclude, is inclusiveness of vision, and it is only by acquiring as far as possible the executive's breadth of view that the accountant can intelligently and thoroughly furnish the executive with all of the data which he requires.

In this connection, we are inclined to believe that the mass of statistical work carried on by operating departments in calculating economies would better be handled by the accounting department to a large extent. Aside from the fact that the resulting figures would probably be unbiased and more reliable by virtue of being compiled in a department having no axes to grind, this plan would by actual practice give the accounting department the desired wider view of the executive's problems and his needed information. Similarly we believe that the accounting department should act on its own initiative in ascertaining the data that are required for successful operation as the industry continues to develop, instead of passively awaiting executive instructions. In other words, what the committee on passenger-accounting has done this year in

hunting down old daily reports now valueless to the traffic and schedule departments, the ideal accountant will correspondingly do for all information, old and new, that the executive is using or can use.

THE SCIENCE OF TRANSPORTATION

To one who reads the reports presented before the Transportation & Traffic Association the impression is inevitable that the problems of this branch of the industry are rapidly approaching the field of applied science, and the time when the transportation official was interested only in personal experiences and measured his success solely by the indefinable qualities involved in the handling of men seems certainly to be passing. In its place has come an era of consideration of mechanical devices, traffic checks, schedule construction and the like, in which the elements of calculations based on definite general factors begin to loom large.

In this light the first report of the newly-formed committee on standards comes at a significant period, and though this committee's work for the past year was limited to the establishment of a code of procedure, the way has now been paved for the establishment of definite data on transportation practices. Naturally the most obvious material of this kind is to be found in the code of rules, and as evidence that the present code has reached a final form may be cited the fact that this year's committee on rules suggested in its report but three revisions. All of them were in the interurban code, one having to do with the flagging rule investigation and the other two, which had been submitted before previous conventions, involving certain modifications in the slow-speed-track indication and in the position of classification signals on the car. The latter revision proposed front-end signals located at the middle of the car end instead of near the roof, providing for a definite indication of the direction of extras and sections that are passed on sidings, and it is somewhat surprising that the association in convention should have failed to approve a change designed solely to avoid confusion.

Practically the whole of the report of the association's committee on passenger traffic was devoted to consideration of one-man car operation, and although no definite recommendations could be made, the data submitted were remarkably comprehensive and especially valuable in view of the comparative novelty of this form of transportation unit. The finding that one-man cars are used by more than 30 per cent of the companies replying to the committee's inquiry was decidedly interesting, as was also the apparent limitation of the service to cities of 25,000 population. However, the statement of car-mile earnings averaging 14.5 cents with operating expenses of 12.7 cents was hardly encouraging. In fact it gave an impression of unprofitable lines that could hardly be operated at all if the one-man car was not used. Certainly so small a margin between revenues and expenses is not going to pay overhead charges and a profit besides, so that as it stands the one-man car can hardly be classed as having demonstrated its success in general. Nevertheless, the fact that but comparatively few cars especially designed for one-man operation are as yet in service makes it certain that better results may later be obtained than are indicated by these figures, and since the report established the perfect practicability and actually improved safety of the one-man car, there are undoubtedly conditions under which it will prove decidedly advantageous.

Consideration of mechanical devices also constituted a large part of the report on fares and transfers, and it is very much to the committee's credit that its agitation of the necessity for issuing transfers mechanically should have resulted in the actual commercial development of such a machine within the last few months. In consequence, the strong argument that was contained in the report for a motor-driven fare box with the penny-counting mechanism eliminated may be expected likewise to produce results. In connection with the general subject of fare collection this committee cited the experiences of three companies with the use of front-end collectors at congested points. In two cities very good results had been obtained, but in one case a rather unsatisfactory statement was submitted, the introduction of the extra fare collectors effecting no increase in the number of cars passed through the congested district. As a matter of fact the movement of the cars in this instance was entirely dependent upon the traffic policemen, and in consequence the decreased loading time produced no improvement. Obviously, failure of front-end collection under such conditions cannot be ascribed to any inherent disadvantages in the system, and as the committee indicates in its conclusions, the value of this method may be said to depend largely upon the circumstances surrounding its operation.

As usual, the committee on express and freight traffic presented a very comprehensive and interesting report. One of the most significant facts put forward was that, judged on the basis of the railways making returns to the committee, the passenger earnings for 1914 were practically 1 per cent less than those of the previous year, while the freight earnings actually showed for the same period an increase of approximately 5 per cent. With this evidence in view it would be difficult to disagree with the implied belief of the committee that many expenditures now made with the expectation of making really negligible increases in passenger business might better be devoted to the cultivation of the far more fertile field of freight and express traffic.

Undoubtedly the discussion on the influence of stops on schedule speed in the report of the committee of schedules and time-tables was one of the most interesting features of all of the wealth of information presented during the course of the convention. Beginning with average figures obtained from a large number of tests in actual city service, the committee developed curves showing the relation between stops and schedule speed, and these indicated that, where a schedule with twelve stops per mile gave a schedule speed of 9.2 m.p.h., a decrease in the number of stops to eight per mile would increase the schedule speed to 10.8 m.p.h.—an improvement of 17 per cent, or more than enough to

make many a bankrupt road pay dividends. It would be difficult to provide a more potent argument than this for the skip stop or any other method of operation whereby the number of stops in city service could be decreased. Indeed, the importance of this phase of the committee's work can hardly be overestimated; primarily because the influence of stops on city schedules and, in turn, on operating expenses has been recognized only vaguely up to the present time. It is well worthy of continued study.

A BUSY YEAR FOR THE ENGINEERS

It is only when one contemplates the accumulated results of the year's work by the Engineering Association committees that he can realize how much there was to be done and still remains to be done. The year's work was not only well done, but the reports were completed promptly and carefully scrutinized by the standards committee. The following bird's-eye view of a few of the high points in the committee work may aid in forming a just estimate of the work.

The scope of the work carried through by the outgoing committee on equipment is extraordinarily extended, and one is led instinctively to wonder whether it would not be better in future to divide it, if necessary forming new committees, so that the present burden of detail borne by the chairman could be lightened. To the ensuing committee, for example, there have been assigned already three subjects for consideration at the suggestion of the standards committee, and in addition, there are investigations of such importance as those on the new designs for a standard journal brass, for a limit-of-wear gage for wheels, and for a standard brakeshoe, head and key, which have been submitted by the outgoing committee as requiring continued study. The investigation of any one of these matters, to say nothing of the new subjects that may be assigned by next year's executive committee, involves a great deal of individual time and effort, and it seems somewhat unfair to impose so much upon a single committee.

In this year's report the committee on power generation departed from its custom of submitting papers on special topics, and although it might be expected that the alternative of making specific recommendations regarding practice and standards would detract from the interest that has attached to previous reports, this proved to be anything but the case. In fact, the report outlined a method for analyzing power station costs that was decidedly novel and contained much material productive of study. In this were presented charts covering operating costs which were based upon the curve of "peak ratio," the reciprocal of the load factor, and it was suggested that this be adopted instead of the load factor as a basis for unit performances. Certainly, this plan has much to recommend it, and it will be interesting to see whether the proposal will aid in clarifying power station cost analyses.

The electrical engineers have contributed liberally to this year's progress most tangibly in the report on power distribution. The specifications on overhead line material are a fitting complement to those on 600-volt, overhead trolley construction. They should be especially acceptable to the small road, for whose particular benefit they were prepared, in enabling it to buy as wisely as the large one with its corps of skilled engineers. These specifications will also simplify the preparation of others for a.c. and higher-voltage d.c. construction, which must be taken up soon. One of the most troublesome little but fundamental difficulties of an electrical nature has been that involved in specifying lightning arrester grounds. Signal operating conditions, electrolytic corrosion and ground resistance all come in to complicate the situation. A compromise seems now to have been reached.

Unquestionably the most notable contributions contained in the report of the committee on way matters were the specifications for track special work with particular reference to its physical and chemical properties, and the quality of workmanship. While in time, doubtless, these specifications will be amended to meet street and interurban railway track requirements, the provision of a definite working standard represents a long stride in the right direction. Moreover, the fact that the manufacturers were deeply interested in seeing these specifications adopted is another important point in their favor. Now that the specifications have been approved by the way committee, the manufacturers and the standards committee, they merit general use by way engineers, especially, so that any weaknesses that may develop can be corrected at the earliest possible date. With these definite standards, special work may be inspected at the mills in a manner which will meet with the approval of manufacturers, or when it is known that these specifications are to measure the quality of workmanship, the liability of controversy, even when special work is inspected at the point of delivery, is practically eliminated.

The feature of the report of the committee on heavy electric traction was a study of modern electric locomotives in which a comprehensive compilation was made of data regarding existing designs both in this country and in Europe. This disclosed a decided lack of uniformity in practically every factor entering into electric locomotive construction, and the committee was led to the conclusion that an attempt to standardize either electrically or mechanically would be premature. No doubt this is broadly true, but it is unfortunate that the committee did not have a chance to express itself (owing to the practically simultaneous dates of publication) on some of the details cited in connection with the ideal locomotive that was outlined in E. H. McHenry's paper before the International Engineering Congress. There would seem to be many points in favor, and few against, the latter's timely suggestion to limit electric-locomotive driving-wheel loads to some such figures as 40,000 lb., and consideration of this matter from a practical standpoint by the committee could hardly fail to be of great interest and real value.

The Industry and the Association*

Electric Railways Confront Serious Problems Due on One Hand to the Attitude of the Public and on the Other to the Business Depression—More Active Participation of Lawyers and Manufacturers in the Work of the Association Is Desirable

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THE association appreciates the support and the loyalty that has always been accorded by its Pacific Coast members, and it was very largely with the idea of showing appreciation of that support and loyalty that it was determined by the executive committee in 1913 that in 1915 the association should hold its convention at a point where its Pacific Coast members could observe at first hand its methods and manner of working, and the association could receive the benefit that would come from the discussion and suggestions of its far Western members. In the early days of the association it was the habit to hold the annual convention in cities in different sections of the country, but when it was decided to hold the 1909 convention in Denver many of us were apprehensive as to the result of holding the meeting in a city so far west. But the benefits to the industry and to the association warranted the expenditure of the money and the sacrifices of time necessary for the journey. In voluntary associations similar to the American Association interest in the work and the welfare of the association can best be engendered and continued when its members are in close touch and are each doing some definite thing for the industry or the association.

The association, in its personal contact with the Pacific Coast members, expects to receive an inspiration and impetus that will make for bigger things to the industry and the future work of the association. The field is a large one and workers with energy and ideas were never in such great demand as they are at the present time.

The committee which has had in charge the arrangements for this convention has done its work well. It has been fortunate in that its membership included capable men on the Pacific Coast who have taken care of the thousand and one details in a highly creditable manner.

As in former years, the committee on subjects has been charged with the duty of providing suitable programs for the midwinter meeting and for this convention. It is sufficient to say that the program prepared for the midyear meeting could not have been improved upon. The program for this convention likewise merits the approval of the delegates.

The Electric Railway Industry

Much has been said in recent years as to the extent to which our industry was suffering from the attacks of political demagogues and irresponsible reformers, but serious as has been the effect of these attacks, it passes into insignificance as compared with the situation that has confronted the electric railway industry during the past twelve months. Municipal ownership, partnerships with municipalities, state regulation and home rule have from time to time been sources of great concern to the owners of electric railway securities and to those who have been responsible for their successful operation. Business depression has prevailed throughout the United States, with few communities excepted, and has wrought such havoc in the earnings, both gross and net, as to most seriously affect the values of securities that have been purchased by investors and has almost completely destroyed the market for electric railway securities with the private investor. Perhaps figures can best demonstrate the condition of our industry.

The bureau of fare research, in our home office, receives monthly the statements of gross earnings, operating expenses and net earnings from a large number of our members. A combined statement from twenty-five of the larger companies in different parts of the country, selected not with a view of seeking extreme conditions, shows that for the year ending June 30, 1915, there was a decrease of $3,601,948 in gross income, a decrease of $1,516,025 in operating expenses, and a decrease of $2,083,394 in net income as compared with the year ending June 30, 1914.

Based on these figures, it can be truthfully said that the gross earnings are showing a decrease over the previous year, operating expenses a relative increase over the previous year, and that the result is a consequent large decrease in the net earnings. This condition does not permit a very attractive statement to be presented to the investment banker or private investor, nor does it permit the conscience of the fair-minded utility man to urge the private investor to invest in securities of electric railways.

The desire on the part of the electric railway men to

*Annual address of the president of the American Electric Railway Association delivered on Oct. 5, 1915, before the convention in session in the Native Sons of the Golden West Building, San Francisco, Cal.

render high-grade service and to meet the wishes of the patrons of the electric railway and the reasonable orders of public service commissions in relation to service, is necessarily restricted by reason of the falling off in net earnings and the consequent failure to interest capital so that improvements can be made that will permit of the higher grade service.

In the operation of the electric railway four parties are at interest—the public, which is the consumer; the employee, who gets his living from the money paid by the consumer; the state and the municipality, which in the form of taxes, receive a share of the earnings, and the investor, who gets his money in the shape of bond interest or dividends on capital stock. If we are to have successful railway operation, all four parties at interest must be satisfied, which means that each must be reasonable in his demands. If the public makes demands for unnecessary service, or for rates that are too low, labor and capital, state and municipality, one or the other or all of them, must forego their fair share. If labor is unreasonable in its demands for increased wages, if the state and municipality take an undue share of the earnings in the form of taxes, and if the rates of fare are too low so that the capitalist is made timid and is fearful that his investment will be jeopardized or made less valuable, the man who has the cash to invest will shrink from the purchase of electric railway securities and put his money at work in other fields where the consumer, laborer and the taxing powers will permit him the security for his capital and a rate of return on the money that he advances which makes it attractive to him.

This is not a theory that confronts the industry—it is a condition—and never has it been quite so clear to the electric railway industry as at the present time. It would seem as if it was but an ordinary business proposition to convince the American people that our business is no different from any other business and that successful business corporations are the corporations that build up the country. No municipality was ever built or prospered by the aid of business concerns facing failure or financial embarrassment. Quality of service to our patrons or consumers is dependent wholly upon the securing of capital to provide the facilities for rendering such service. Put the industry in a position so that capital is attracted to it, and high-grade service can and will be rendered to the consumer. Let the conditions now prevailing throughout the country in the matter of rates of fare, demands from employees for higher wages, the enactment of more stringent laws, or of new forms of taxation, and we will continue to have, until some of these conditions are modified, a timidity on the part of the investor—affecting not only the sums of money now invested, but which will bring about an absolute lack of the offering of new capital, so necessary to the electric railway industry if it is to render that "good service" which we all desire to give to our patrons.

The American Electric Railway Association

The association offers to its members, through its officers, executive committee and standing committees, a means of putting before the American public in such form as can be easily understood, the facts which should make for a better understanding by the American public of the unfavorable conditions that confront the industry and of the remedies that are necessary to put the industry in such a position that the development of existing lines, the extension into new territory and the building of new lines in undeveloped territory will go forward.

President Wilson said to us in Washington: "So I say that if your earning capacity is the capacity to earn the public confidence, you can go about your business like free men. Nobody is going to molest you and everybody is going to say, 'If you earn big profits; if you have treated the people from whom you are making your profits as they ought to be treated; if you treat the employees whom you use in earning those profits as they ought to be treated; if your methods of competition are clear and above reproach; why, then, you can pile these profits as high as the Rockies and nobody will be jealous of it.' Because you will have earned them in a sense that is the handsomest sense of all."

Surely, the President points out a course that should be easy for us in the electric railway industry to follow. We must take the people into our confidence—not partially, but completely. We must treat our consumers and patrons fairly, and we must treat our employees as they ought to be treated. Have we not been derelict in our duty to the industry by a long period of almost unbroken silence and a complete failure to inform the public as to the real conditions confronting the industry? Have we not been too content and too self-satisfied and taken the business offered to us without any sufficient effort to sell our product in the same manner that the merchant undertakes to sell his product? The merchant of to-day does not place his goods on the shelf and wait for the customer to come and select the things that are absolutely necessary to him. On the other hand, he proceeds to sell his goods by informing his patrons and consumers of their high quality and in offering them in the most attractive method possible, and he so makes a satisfied consumer.

Our membership, both company and individual, stands back of and is pledged to the truths laid down in our code of principles, and the tenth principle in that code is, "Full and frank publicity should be the policy of all transportation companies to the end that proper information may be available to the investor and the public." Let us proceed to translate these words into deeds.

The activities of the American Association during this last fiscal year have greatly increased in extent and efficiency, and I believe mark a milestone in association work of which we may all be proud. It would take me too long a time to enumerate all of these activities or to pay proper tribute to those to whose enthusiasm and hard work they are owing, but it is my purpose to call attention briefly to some of the most important.

It was determined early in the year to hold the mid-year meeting in the city of Washington, and two committees, one representing the American Association, the other the Manufacturers' Association, were appointed and worked out the details of this meeting. A program of excellently prepared papers occupied the time of two sessions of the association, and President Wilson, at the afternoon session, in one of the most important addresses he has yet made, clearly announced the policy or attitude of his administration towards the business interests of this country. The dinner in the evening was well attended, and it was with the satisfying knowledge that the meeting had been a great success that the members left for their homes.

The committee on the cost of passenger transportation service has completed in a year and a half the work which, as outlined, would ordinarily have taken three

years. The volume containing its report will be printed and distributed to member companies about Nov. 1, and it is sufficient to say that it is the best authority or book extant dealing with the relation between elements of cost and the elements of service in electric railway transportation.

I feel that the committee on public relations, although hampered by lack of funds, has at least laid the groundwork for its future usefulness to the industry. An enthusiastic meeting was held in January of this year, at which the work to be accomplished was placed in charge of sub-committees and a bureau of public relations was organized and a director appointed. A very large amount of time and thought was devoted to means and methods, and it seems certain that during the ensuing twelve months decisive progress will have been made in the work which the committee proposes to accomplish.

The committee on federal relations this year has once more demonstrated its value to the industry. As the result of a hearing arranged by that committee before the Interstate Commerce Commission on the question of the jurisdiction of the commission over purely urban electric lines in the matter of the reporting of accidents the commission has rendered a decision favorable to the companies. As this has been a point in dispute between a number of companies and the commission this decision is an important one.

This year there has been organized a committee to deal with a subject second to none in its importance to the industry. Our committee on valuation, while proceeding with the care and deliberation that the importance of the subject demands, has completed its organization and will, without doubt, present within a reasonable time a report that will be of great value to every member company.

A special committee was appointed last May for the purpose of investigating the question of the amount of dues paid by members of company sections. This committee has gone into the subject carefully, and in its report to the executive committee recommended that the dues of such members be reduced from $5 to $2 per annum. The executive committee has approved this change and a proposed amendment to the constitution was sent to all member companies some thirty days ago for action at this convention. Those of us who have studied this question believe firmly that this reduction will result in considerably increasing this class of membership. In my opinion, the company section movement, inaugurated in this association with the organization of The Milwaukee Railway & Light Company section on March 18, 1912, is one of the most important and at the same time least appreciated factors for good at the command of our member companies. An investigation of the workings of any one of the six company sections now in existence, ranging in membership from twenty-five to nearly 400, will convince any executive that the formation of such a section upon his property will prove an immediate asset which will bring results of the greatest benefit both to the company and to the men.

The committee on education has during the past year inaugurated educational courses for shop, power house, line and track employees of member companies. Very wisely, in my opinion, it has turned over to a recognized institution the details of solicitation and distribution, while maintaining a strict supervision over the subject matter. In this way it has been able to put at the service of such employees an opportunity for thoroughly educating themselves in their work at a moderate cost.

The industry is under a debt of gratitude to the heirs of the late Anthony N. Brady, who have authorized the American Museum of Safety to make an award of a gold medal to the company which each year does the most toward conserving the life and health of its patrons and employees. Reports submitted in the competition during the year 1914 evidenced the great interest that electric railways are taking in the matter of accident prevention, and the winning company, the Boston Elevated Railway, may well be proud of having secured this award in the face of the competition it had to meet.

Throughout the year the association's magazine, *Aera*, has maintained its usual high standard. As time goes on the value of the magazine becomes increasingly evident. It is the official mouthpiece of the association and offers a means of communication between the organization and its members. It is accomplishing substantial results in its treatment of problems confronting electric railway officials and employees, and one of its most important functions, which it has fulfilled admirably, lies in the giving of widespread publicity to the executive and operating viewpoint of electric railway problems. During this year 367 railway men have contributed material for publication in the columns of the magazine. The necessary and material support furnished by the manufacturers during the past year is greatly appreciated. More and more it is being impressed upon those engaged in this important part of the industry that *Aera* is their magazine and in supporting it they are aiding one of the great forces of our industry.

Last year at the suggestion of this association there was organized a national joint committee on overhead and underground line construction. This year, through its representatives on the joint committee, the association has been an active participant in the work. This committee has a large field of important work before it. The various interests represented in the organization of the joint committee are working in harmony with a hearty spirit of co-operation. The results of its labors will be of great value to the electric railway industry and other utility interests.

Mention should be made of the participation of the association's representatives in the conference called by the United States bureau of standards to consider its proposed safety rules. By means of inquiries addressed to its member companies, the association is collecting a considerable amount of valuable data for the use of our representatives. In this work various state and sectional associations have been invited to co-operate with us and the response to this invitation indicates that the work of our representatives will have an important influence upon the character of the rules to be finally promulgated by the bureau of standards.

That the association is an instrument which at any time can be used to further the interest of the industry was proved by the way in which the question of jitney buses was handled during the past year. Coincident with the appearance of the jitney bus, a special committee composed of four executives was appointed to consider and to make recommendations to the various companies as to the manner in which the menace of the jitney could best be treated. Within a surprisingly short time a report was prepared embodying a very extensive and close study made of the situation by the four gentlemen serving on this committee, and was accompanied by a statistical and technical study of jitney-bus operation prepared by the bureau of fare research. The committee has also arranged for the supplying of the companies with much supplemental information. This was emergency action and clearly demonstrates that in the association the industry has that central organization which is absolutely necessary to meet emergencies of such serious import.

During the year the association's offices in New York

were moved from the building of the Engineering Societies at 29 West Thirty-ninth Street to a new building at 8 West Fortieth Street. The force at headquarters had worked under great disadvantage due to the unsuitble arrangement of the offices. Such arrangement did not permit of an economical use of the space paid for, nor for the efficient transaction of the large amount of work handled. The question was considered carefully by the executive committee and the decision to move was arrived at after several months of study. The new quarters afford an efficient working layout and a saving in rent this year of about $1,700 and an annual saving thereafter of about $1,200.

With our affiliated associations the trend has been in each case for progress. The accomplishments of these twelve months will compare most favorably with any similar period in the past. During the year thirty-eight committees have been at work. The results of their studies and investigations are set forth fully in the reports to be presented at the various association meetings.

In the Accountants' Association, the committees on express and freight accounting and passenger accounting will present a joint report on the allocation of expenses, which will be useful to many of our companies. The joint committee on engineering-accounting has started upon a work which, when completed, will be of great value, and a great number of our companies will welcome its helpful suggestions regarding inventory methods.

In the Engineering Association, the report of the committee on way matters is particularly timely in its recommendation of a standard specification for special work. The specifications submitted by the committee on power generation for fuel, lubricants and boiler tubes will also prove interesting and valuable.

The Transportation & Traffic Association takes a notable step in the institution of a committee on standards. This committee has before it a work of the utmost importance in the standardization of the methods employed in the transportation end of the industry. It brings forth important recommendations as to procedure in the association. Reports of the other committees bear testimony to the fact that the Transportation & Traffic Association is abreast of the times.

Your president, in accordance with past procedure, begs to submit for your consideration the following recommendations:

It seems desirable that the knowledge and experience of those officers of our member companies connected with the legal department be utilized for the benefit of the association and the industry as a whole, and with this in view, I recommend that consideration be given to a plan for bringing the members of the legal department more closely in touch with association work.

In the development of association work and activity, it has been clear to many of the past officers that there was a force vitally interested in the success and progress of the industry which has never been fully recognized or given its proper place in association life and activities, and I refer to those individuals who, though not directly engaged in electric railway operation, make their living from the manufacture of material and supplies that are used specifically in the electric railway industry.

During the period of reorganization of the American Street Railway Association, there was organized as an allied association the American Electric Railway Manufacturers' Association. Our own association has never fully recognized the worth, the strength and the help that the members of that organization can bring to the industry. Our engineers, our accountants, our transportation and our claims organizations are our children —we call them affiliated associations. We have been prone to make use of the Manufacturers' Association in times when they were useful to us, and when we have asked for their assistance it has always been most cheerfully given. The time has now arrived, in my judgment, when full recognition should be rendered to the Manufacturers' Association and a proper charter granted by the American Association, so that it will be co-equal and recognized in all ways the same as the Engineering, Accountants', Transportation & Traffic and Claims Associations.

Some of our member companies in the American Association have undertaken the great work of educating their employees in the details of the industry from which they earn their living. It is a most admirable work and one that will bring most favorable results to the industry when it reaches its full fruition. Some of the smaller companies have undertaken to do this to a lesser degree, and all members recognize to-day the great power for good that the employees engaged in the electric railway industry can have upon our difficult problems when they are educated as to what these details and difficulties are. By taking fully into our confidence and granting the necessary rights and charter to the manufacturers, we will bring to the industry another large body of men who are dependent upon the industry for their living, and who, when they are told the story of what we are trying to accomplish and the difficulties that are encountered, will add thousands of men to the forces that will make for a better understanding on the part of the public as to our problems.

I have talked to the executives of some of the manufacturers and they realize the possibilities that have heretofore remained unused, and I can say to the members of this association that the plan which I suggest for your earnest consideration has their full approval.

Mr. Allen's Quartet of Interests

"*IN the operation of the electric railway four parties are at interest—the public, which is the consumer; the employee, who gets his living from the money paid by the consumer; the state and the municipality, which in the form of taxes, receive a share of the earnings, and the investor, who gets his money in the shape of bond interest or dividends on capital stock. If we are to have successful railway operation, all four parties at interest must be satisfied, which means that each must be reasonable in his demands.*"—C. Loomis Allen.

The Value of Railway Statistics*

Executives and Accounting Heads of Electric Railways Are Realizing Benefits of Statistics in Administration—Various Financial Statements Are Explained from Point of View of Valuable Statistical Information Obtainable Therefrom

By GEORGE B. WILLCUTT
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EXECUTIVES are realizing more and more the benefits to be derived from electric railway statistics, and consequently are constantly calling for new and additional information of this character. The most general compilation of statistics, and one universally adopted, is that contained in the various forms of reports issued by railways. The simplest form of monthly report usually embraces a balance sheet, an income statement, a statement of additions and betterments, and occasionally a statement of profit and loss. Of these the balance sheet, from its comprehensive character, is unquestionably the most valuable collection of statistics available for the executive and financial heads.

Balance Sheet Statistics

It is true that every fluctuation in the financial condition of a company is reflected in the surplus as it appears upon the balance sheet, and that the statement of income and profit and loss for any given period will disclose the details of the difference which exists between the surplus at the beginning and the surplus at the end of the period. Yet there are many other fluctuations in financial conditions which have a vital bearing upon the company's existence and which are not reflected in the income. Too much emphasis, therefore, cannot be laid upon a comparison of the principal fixed assets for the purpose of determining the increases thereof, because such increments disclose the essential disposition of the funds of the company.

A comparison of the current assets of an electric railway, as between two dates, is also important. The value of such a comparison lies primarily in the fact that under normal conditions there should be no great amount of current assets, it being assumed that materials and supplies are not included under this caption. In general an electric railway collects its money as it goes. If it has miscellaneous properties, however, it collects rent. As a matter of accommodation, it sometimes sells a little power. Aside from its regular passenger business, it may also transport freight or other commodities. When the payments for such services are not currently made, the items appear as current assets in the balance sheet. If, therefore, there is any perceptible or distinctive increase in the current asset figures, it is evident that the collections are not being properly made, or that, more to the point, funds are being diverted in the way of advances to subsidiary companies or to individuals, etc.

Any fluctuations in the fixed debt of the corporation should be ascertained, and if an increase is shown upon the balance sheet, a search should be made for a corresponding increase in the fixed or other assets. If there is not in general a uniformity in the increase of the fixed debt and the fixed assets, the question immediately arises as to what disposition was made of funds raised; or, on the other hand, how funds were raised if not disclosed among the liabilities.

An increase in the current liabilities of an ordinary public service corporation suggests that the bills owed by the company are not being paid promptly, or that unusual expenses perhaps involving construction have been incurred. In any event, such fluctuations awaken immediate inquiry, the primary end of any statistics.

Income Statement Statistics

The income statement, as usually prepared, embraces revenues from the various sources, as well as operating expenses, fixed charges and surplus for the month and fiscal year to date with sundry detail statements supporting the same. The form involving accounts for the fiscal year period accrued to date is of much benefit as representing a fair average condition for comparative purposes, but the monthly comparison, in spite of so much time and attention being devoted to its preparation by most companies, unfortunately in many cases has not afforded the satisfactory results expected.

Despite efforts to avoid fluctuations by prorating charges so as to distribute them in an equitable manner over the time that is actually covered by them, sundry and numerous charges for undue amounts occasionally appear. These sometimes result from the operating department forces being engaged in such months upon more than the average amount of work charged to operating expenses and to a lesser extent upon that of an addition and betterment or accounts receivable character, though the total payroll and consumption of material may remain about the same. Deferred and delayed charges beyond the knowledge or control of the auditing department result in lighter charges one month, with a corresponding increase when later received. These fluctuations for lengthy periods are equalized and furnish the true average cost of operation, but the comparison of monthly expenses, for the reasons referred to, generally involves much labor without corresponding satisfactory returns.

*Abstract of a paper delivered before the San Francisco convention of the American Electric Railway Accountants' Association on Oct. 5, 1915.

Much has been written and discussed as to the merits and advantages of the different units of comparison, but without doubt it has been the experience of most companies that no one unit will satisfactorily meet the requirements for the details of the many accounts. Percentage-of-gross-earnings, revenue-passenger, track-mile, car, car-mile, car-hour, car-day and kilowatt-hour bases, etc., all have their merits, and frequently it is necessary to make comparisons on more than one basis to gain the greatest advantages. On whatever basis compiled, the resulting figures are merely an indication of certain conditions existing, all of which must be thoroughly analyzed and investigated to obtain the real, true and full facts and benefits therefrom.

Profit and Loss Statement

The form of monthly report should include a profit and loss statement showing in full detail the character of the various entries, which, by reason of their direct bearing upon surplus, are of the greatest importance. These should receive careful consideration by the executives in connection with the remaining report figures submitted.

With companies maintaining renewal or depreciation accounts, a full detailed statement of all charges against such reserve accounts should be prepared and made an essential part of the report, as otherwise many expenditures or obligations incurred would fail to receive the proper attention. The provisions of the Interstate Commerce Commission's system of accounts and the accounting requirements of many public utility commissions, demanding the creation and use of renewal and depreciation reserves, will undoubtedly lead to the preparation and incorporation into reports of the statement suggested where this has not already been done.

Statement of Additions and Betterments

A statement of additions and betterments is generally made a part of the monthly report, but such a statement should show explicity the full details of the work. Thus it would advise the executives fully as to the work performed during the month, and would also act as a check upon the mechanical and operating departments, which, with a natural desire to reduce their operating expense accounts, occasionally distribute more to addition and betterment charges than an impartial and conservative action would warrant.

Similarly a statement of work performed other than for the company and charged to accounts receivable could be compiled and included in such report to advantage. This should show the various pieces of work under way, the charges to each during the month and the cost to date.

Miscellaneous Statistics for Executives

Supplementing the foregoing statements, others may be prepared. For example, one showing the main details of bills and accounts receivable, and also of bills and accounts payable, as noted upon the balance sheet in totals, will enable the executives to keep in closer touch with such assets and liabilities and to take such action as conditions may require.

A full and complete analysis and statement of sinking fund accounts, showing the invested and the uninvested portions, with detailed lists of securities in the former and the cost prices thereof, cannot fail to prove of interest and service to the officers and directors and to keep them fully conversant with the actual requirements and conditions of such funds.

Detailed statements of "other securities" held in the treasury as temporary investments or otherwise should also be prepared and furnished. These, with the corresponding statements of sinking fund securities, will act as a guide to the officers and directors in connection with any inspections and checking of such securities that they must make.

There are probably no ledger accounts which come in for more attention and criticism from the public auditor in his periodic examinations than unadjusted or other suspense accounts, and none which require more detailed or specific analyses and explanations. Innumerable charges and credits may be involved in the figure shown on the balance sheet, and sometimes for considerable amounts. To furnish full information such entries should be shown separately under proper and distinguishing captions. When suspense accounts are used, a detailed and full analysis should always be prepared, supplementing the net figure shown upon the balance sheet and showing a comparison with corresponding figures of such date as the occasion or conditions warrant.

The usual form of balance sheet comparing totals with corresponding figures of a year previous is of much benefit, as it reflects the business of the year. By reason, however, of the cumulative character of the figures involved, a comparison of the figures of one month with those of the month previous is of further benefit in directing attention to transactions which have occurred since the issuance of the previous yearly statement. To obtain the full benefit therefrom, explanations should be rendered for the fluctuations shown.

While the extent to which the smaller details of the operating, revenue and expense statistics are inspected and considered by the chief executives depends upon the organization of the controlling corporation, those bearing upon the receipts by lines and the principal expenditures for maintenance of track and roadway, maintenance of rolling stock, operation of cars, power expenses and the heavier subdivisions of miscellaneous and general expenses, are unquestionably of much service to them. Among the latter class of statistics, various data and compilations involving injuries and damages, such as lists of the various kinds of accidents with fatalities resulting therefrom, statistics as to claims presented and rejected, settlements effected, damage suits pending, expense of claim and legal departments for the period, car-mileage and passenger figures based on accidents occurring, will also prove of much value.

A general statement of receipts and disbursements for the period since the previous report, properly subdivided, will be of benefit to the executive heads on many occasions, and when supplemented by additional data showing by firms, etc., the heavy or otherwise extraordinary payments which have been made during the period, will in sundry instances prove of special interest. Incident to the disbursements, a report can also be furnished showing the numbers of employees and the total amounts of monthly payrolls by departments, with the same information for the portion of the fiscal year accrued to date.

Statements covering (*a*) extensive pieces of work under way with costs to date and further expenditures of labor and material required for completion, (*b*) heavy purchases to be made in the near future and (*c*) capital and other large and unusual payments of any character required to be made in the next thirty to sixty days, will prove of great benefit and assistance to the executives.

A "forecast," compiling the receipts of the company for months ahead as estimated or otherwise determined and the known or estimated expenditures during the same period in fullest detail, will prove valuable to all interested in the financial prospect of the company, many of whom are frequently at distances remote from

the railway itself and planning and working to finance the property and to provide funds to meet its requirements. It is surprising under ordinary circumstances to find how close one can compute, largely on an average basis, the various classes of receipts and expenditures involved.

The cost of money does not receive in all cases the full share of attention which it requires. At times like the present, when money is scarce and interest rates are high, the subject becomes of great importance. When fully and accurately determined, including all expenses in connection with new loans or extensions, sales of securities, etc., the cost of money is found to be far different from what it appears after a casual or less thorough study of the subject. The interest, discount, commissions and sundry incidental expenses frequently result in a figure from 30 per cent to 40 per cent in excess of the nominal rate.

STATISTICS FOR ACCOUNTING HEADS

It is almost unnecessary to refer to the value of statistics to accounting heads, as such are the essence of accounting and auditing work. It may be said, however, that analyses of many of the items appearing on the trial balance are most essential. Besides the many detailed statements of balance sheet entries, etc., previously suggested for reports, similar ones for interest earned on bonds, notes and other securities with maturities; insurance and taxes, etc., paid and unexpired; interest payable on bonds and notes, and other accruing liabilities will enable the accounting heads to determine the correctness of the various balance sheet entries corresponding thereto. A most important detail is the analysis and prompt checking of entries of bond interest paid and unpaid each month by a comparison of the actual number of each series of coupons unpaid, as shown by an examination of the books or records in which the paid coupons are filed, with the ledger records of them. Any discrepancy existing between the two sets of records should be immediately investigated, for a delay in so doing would probably render the correction much more difficult.

The principle of making an inventory of insurance and taxes paid in advance should be occasionally applied to the more tangible assets, such as material and supplies, live stock and miscellaneous equipment, railway cables (cable operation still being a material factor with a few railway systems), etc. These statistics will enable the accountant to determine any adjustment entries required to correct the figures upon the balance sheet.

The Evils of Government Ownership*

Tendency Toward Centralization of Power Needs Checking—Government Enterprises Have Not Been Efficiently Conducted — Government Ownership Tends to Destroy Individual Initiative and Removes Hope of Reward—It Necessitates a Changed Concept of Government

BY JONATHAN BOURNE, JR.
Formerly United States Senator from Oregon

THE problem of municipal ownership of public utilities involves no fundamental principles different from those involved in the problem of national ownership of such utilities as railways, telegraph lines, water powers, etc. The difference is one of degree and detail rather than of principle.

I am strongly opposed to public ownership, whether municipal or national, except in those cases where it is necessary to have government control in order to promote the public health, as in the case of water supply systems. My opposition is based not so much upon the question of relative cost of operation as it is upon the effect public ownership has upon the government itself, and upon the enterprise of its citizens.

In a comparative way, it matters little if cost be increased and efficiency reduced. More expense and less convenience are ills of a superficial nature and do not affect the larger interests of the people in a vital way. But the bad effect of public ownership upon the government itself, whether municipal, state or national, is of more than temporary concern and cannot be measured in terms of dollars and cents. The evil effect of public ownership upon the creative, constructive spirit of enterprise among the most active and capable of our people, constitutes a menace not only to the welfare of this generation but also to our continued progress.

The desideratum of all government should be the protection of its citizens and only such restraint of individual action as is absolutely necessary to insure the desired protection of all its citizens. As an incentive to individual enterprise and as a stimulant to individual initiative, the government should afford every citizen the largest opportunity for activity with hope of commensurate reward consistent with the rights of all.

Public ownership tends to destroy this initiative and to remove the hope of reward. Except in rare instances, it tends to discourage efficiency by removing competition. This is true in the case of both municipal public utilities and national utilities.

Once established, public ownership will continue until its destruction has been wrought. Once overthrown, individual enterprise will not be restored until public

*An address delivered before the San Francisco convention of the American Electric Railway Association on Oct. 6, 1915.

ownership has brought its own ruin. Legislation can easily destroy but it cannot build up. The most it can do is to give opportunity and incentive for individual activity.

The objection based on the effect of public ownership upon government itself is particularly applicable at this time when there is such a strong tendency toward the centralization of governing power in the hands of a few. We observe this tendency most strongly in municipal government where the city commission is supplanting the city council. With this concentration of power necessarily goes not only responsibility for the exercise of that power, but opportunity for its selfish use. Selfishness and ambition so generally control human action that great delegation of power will always be a menace to popular government. I grant that, in most instances, where power and responsibility have been bestowed upon a few individuals, there will be, in the early stages of the exercise of that power, a special effort to render efficient and satisfactory service. This will be true for two reasons: (1) Public attention will be centered upon the management of the office in which power has been centralized, and, (2) with the change in powers of the office there will go a change in the selection of the incumbent with special effort to secure the services of a man who will be both capable and faithful. With the novelty of the change worn off, and with public attention diverted, there will be placed in power men who will use their authority to promote their own political, personal or financial self-interests.

That they would have the power to do so is readily apparent. If we were to add to the present number of government civil employees all those who are now employed by railway, telegraph, telephone, electric railway, express and water transportation companies, we would have a force of government employees numbering more than 3,000,000. In the last ten Presidential elections, the President has been chosen by a plurality varying from a little more than 7000 to 2,500,000. I have no hesitancy in asserting that under government ownership of all these public service corporations, those employees and their friends would invariably control the government under our political system. There would be insistent demand for service in governmental employment. Outside labor would strive to secure government employment. There would be dissatisfaction in private enterprise.

Thus, there would be established in the public mind the view of the government as an employer. The individual citizen would be encouraged to look upon the government, not as an institution which he should support, but an institution which should support him. With a multitude of government positions available, the citizen denied the privilege of government employment would feel that he had been discriminated against. The higher wages paid, the fewer hours of labor and the longer vacations accorded to government employees would cause constant unrest among those engaged in private enterprise of practically similar character of work and requiring a corresponding degree of ability and effort. There would become deeply embedded in the minds of the people the idea that the government is a great entity, separate and distinct from themselves, to which they can look for every service they may need. This attitude of mind would be entirely destructive of that spirit of patriotism which is nourished by the citizen who regards himself as a supporter of the government rather than its dependent. Instead of studying to devise a new and desirable service which he himself can render in return for satisfactory compensation from his fellow citizens, his tendency will be to think of some new service the government can render for him.

An employer of workmen in private enterprise would come to look upon the government not as an aid to him through maintaining of equal opportunity, but as a rival since the government would be competing against him in the employment market. Where the activities of the government are limited, as they now are, to practically those operations which are necessary for the preservation of public peace, health and safety, that rivalry in employment between public and private enterprise does not exist, but just to the extent that the government engages in undertakings which can as well be left to individual enterprise, it becomes a competitor with its own citizens and the destroyer of equal opportunity.

The magnitude of the public service, under a system of government ownership, would inevitably throw public employees into politics and make them a factor in every campaign, municipal, state or national. While it is true that in former years public service corporations were a factor in politics and had undue influence in nominating conventions, that situation does not exist to-day. Public service corporations are not a controlling factor in American politics and their managers have no more influence than should be exercised by any other citizens having similar personal and property rights and interests.

Instead of taking public service institutions out of politics, public ownership would throw them into politics. For the purpose of promoting their own selfish interests, public employees would organize and pursue whatever means might seem most likely to secure legislative and administrative changes for the advancement of their own interests. Their influence would be directed to the support of that candidate who promised most for the fulfillment of their desires. Aided by an organization of public employees scattered throughout city, state or nation, an administration would possess a practically overwhelming advantage over any party or faction which sought to succeed it.

Some people profess to believe that the political influence of an army of public employees could be overcome by the establishment of a system of classified civil service examination. Theoretically this is true, but it must be remembered that although appointments may be made in part as a result of competitive tests, yet in every system of government employment the higher officers control promotions, demotions, transfers and removals, thus exercising such power over subordinates as to make them practically subservient in politics, where the administration in power is concerned. The President of the United States, the governor of a state and the mayor of a city have under their direction a body of men who may be easily organized as an active factor in politics.

Whether that organization shall exert its influence in support of the administration or against it will depend upon the attitude the administration has maintained toward the employees themselves. The extent of the influence of the employees will be measured largely by their numbers. So long as government activities are limited to ordinary government purposes, this influence will not be a menace. If extended by adding to the present government employees all those engaged in public service enterprises, the influence would be large enough and active enough to wield the balance of power in every political campaign.

Advocates of government ownership of public utilities assert that government regulation has been a failure, and assume that government ownership and operation will be a success. But possession of a certificate of appointment to public office does not bestow upon the

recipient any supernatural powers. The men who have been unable to solve successfully the problems presented under government regulation will likewise be unable to solve the problems presented by government operation. Quite likely their mistakes and shortcomings would be less conspicuous, but since they would have more problems to solve it must be assumed that their mistakes would be more numerous.

Every question of rates, character of service, or protection against unfair discrimination, which is now presented for the consideration of regulating commissions, would also be presented for determination by a board having control under public ownership.

If any man believes that government ownership will solve the rate question, let him study the parcel-post rates established by the Postmaster-General, under which the postage charged for a long haul is greater than the sum of two charges for two shorter hauls making up the longer distance.

If any man believes that discrimination can be avoided by public ownership let him study the facts in the blue-tag order under which in 1910 the Postmaster-General ordered certain publications transported on freight trains, although paying exactly the same rates and therefore entitled to the same service, while competing publications of practically the same character and catering to the same trade were transported on mail trains.

Let every student of this phase of the subject consider the manner in which the lines of the Federal Reserve Bank districts were drawn, resulting in favoritism to certain sections of the country.

Let him keep in mind the efforts of the Secretary of the Treasury to extend special financial favors to certain districts and certain industries.

If there can be such discrimination in the postal service and in the management of the Federal Reserve Banking system, upon what theory shall we assume that there would not be discrimination in the government operation of railroads, telegraph and telephone lines, and other public utilities? Under government ownership of the telegraph there would be swung over the heads of the press of the country a club no less threatening than that which now swings over the heads of the bankers of the country.

As I have already indicated, the question of cost and efficiency under government ownership is of relatively slight importance. It is of little consequence compared with the problem of keeping our government free from paternalism, giving equal opportunity to all citizens and encouraging individual enterprise, and yet this economic question must not be overlooked. No doubt the government as owner and operator of public utilities could make some improvements, and eliminate some duplications that would result in diminished cost of operation, but these savings would be more than offset by waste, increased expense and diminished service in other respects.

Many people assume that our own Post-office Department is efficiently and economically conducted, but reference to the report of the joint Congressional committee on railroad mail pay, submitted to Congress on Aug. 31, 1914, and published as House document No. 1155, will show by citation of numerous instances that government methods of accounting are inadequate and unreliable, and that supervising officials are vacillating and unbusinesslike in the handling of large problems presented for their official determination.

Study of the records of the reclamation service shows that in a large number of instances government engineers, in whom great confidence was placed, made estimates of cost of construction which proved so grossly inaccurate that settlers were deceived, to their injury.

The records of the forest service show that during the period from 1900 to 1914, inclusive, the total receipts from sales of timber, grazing privileges, timber settlements, fines, etc., amounted to $17,060,528, while the government expenditures for the maintenance of forest service amounted to $40,927,109.

Across the border in Canada we have had a very practical and convincing demonstration of the kind of efficiency we may expect from public ownership. Canada undertook the construction of the National Trans-Continental Railroad from New Brunswick to Manitoba, 1804 miles in length, and government officials estimated the cost at $61,415,000. By the end of 1914 the commission having charge of construction had spent a total of $173,000,000, or $95,899 per mile, or nearly three times the original estimate. Another commission was appointed to investigate the work of the construction commission, and reported that $40,000,000 had been absolutely wasted through bad judgment, carelessness or maladministration. The character of construction was in many instances not suited to the territory traversed, or determined by a judicious estimate of the traffic to become available. Incompetence was apparent in almost every branch of the work. The road cost three times as much as other roads constructed by private enterprise. The company which had agreed to lease, equip and operate the new line refused to carry out its agreement on the ground that the road was not completed even after the enormous expenditure stated, and that, because of the large construction cost, the company could not pay a rental equivalent to 3 per cent on the capitalization, as provided in the agreement.

These practical illustrations of results of government ownership and operation are exactly what might reasonably be expected. It would be absurd to expect that the government could pay higher wages, reduce the hours of employees, dispense favor to political or personal friends of public officials, and at the same time give service as good as could be rendered by private enterprise and at a less cost.

Undoubtedly many evils exist in private operation of public service enterprises. Improper acts should be prohibited by criminal statutes imposing penalties so severe and making punishment so certain that violation would be extremely rare. But prevention of dishonest acts does not require government ownership. Advocates of that policy propose a remedy far worse than the disease. They base their theories upon the false assumption that efficiency goes with public employment. They close their eyes to all dangers arising from the construction of a huge public service machine which could be, and certainly would be, utilized by administrative officials to perpetuate themselves and their friends in control of government, national, state or city.

Most of the dishonest management of public service corporations has been due to the failure of directors to direct. Manipulation of the affairs of a concern for the benefit of a few officers or stockholders has been made possible and encouraged by centralization of control in the hands of one or two men. The dictator has subordinated the interests of all to the interests of a few. Such also has been the world's experience in government.

What we need in this country to-day is a check upon the tendency to centralize power. In private corporations we need directors who will perform their duties even against the desires of a would-be dictator. In government we need legislative officers who have full appreciation of the responsibility resting upon them and who have the courage to perform their duties even in defiance of an arbitrary executive, whether in a mayor's chair, in a governor's mansion or in the White House.

Selfishness and ambition so generally control human action that great delegated power must always be a menace. It is certainly axiomatic that centralized power in an individual or commission can only produce results commensurate with the integrity, ability, experience and unselfishness of the individual or individuals constituting the commission.

Government ownership necessitates government regulation. Failure of government regulation necessitates the failure of government ownership. Success of government regulation eliminates the necessity or desirability of government ownership.

Because public ownership inevitably increases the political power of the executive, because it tends to overthrow popular or truly representative government, and because it destroys individual initiative, I am opposed to it as a policy to be adopted by either local or national government.

The Larger Aspects of Welfare Work*

Welfare Work in Its Relation to Public Interests as Well as to Employees—Analysis of San Francisco Welfare Platform and the Public Response—Code of Commandments Based on Confidence in Ultimate Fairness of the People

By JESSE W. LILIENTHAL

President United Railroads of San Francisco, San Francisco, Cal.

THE subject of this address may have been meant to have reference to what an employer does for his employees or to what the utility does for the public at large, or both. It will be assumed, however, that welfare work for any is for the welfare of all.

Public welfare is a varying quantity and very often an elusive quantity. For one thing, public welfare may mean what is actually for the public weal or it may mean what the public believes to be for its own welfare. And it may mean one thing at one time and another thing at another time, or one thing in one place and another thing at a different place. So it may be, as it has now become the fashion to proclaim, that what is best for the public is best for the utility. Yet even with this conceded, we shall still find ourselves always brought back to the question of what is really best for the public. It sounds Machiavellian to declare that for all practical purposes that should be assumed to be for the public's greatest good which for the moment it deems to be for its greatest good.

In the man of conscience the feeling is strong that he wishes to guide the people into the right path; that it is not necessary that they must first stumble and fall and bruise themselves before they can find the right path. We are not all agreed as to this, and yet it is a very practical question that those charged with the duty of managing public utilities ought to endeavor to solve correctly, because on its correct solution depends the success of our management and the right standing before the bar of public opinion. We certainly cannot succeed with the public if it has in its mind any question in regard to our absolute good faith, whatever the merit or lack of it, in the things that we offer.

One of the things making up the so-called public welfare program of the United Railroads of San Francisco was the establishment of a monthly magazine, distributed to each of its 3500 employees, as a means of communication between the men and the company. I contribute in each number a short talk to the men over my signature as president. A little while ago I received a very bright, well-written letter from the wife of a motorman, saying, among other things, that she judged from my articles I often felt "lonesome." I have been taking a long time to weigh that statement. I may not yet have caught her meaning. Was it that, notwithstanding the earnest effort made to propitiate the public, it had turned the cold shoulder? And yet we have been doing those things which were intrinsically right under every code of morals and which also appeared to be the things demanded by the existing state of public sentiment.

A brilliant journalist, who had read one of these messages to the men in which I asked why we had apparently not overcome the popular ill-will toward us, recently said that I was striking a false note. I was told that I should not lose sight of the fact that the company, whether willingly or unwillingly, was a prize participant in a rising economic battle, and that armed peace was the best we could hope for. Furthermore, the only way to make popular what was undoubtedly an unpopular corporation was to grant to employees all that they wanted and whenever they wanted it; to do the same thing for the city for the benefit of its competing municipal lines; to surrender to the jitney for love of the little fellow; to extend service whenever asked for; to equip and operate lines regardless of expense and to reduce fares to the Cleveland basis.

I am still smarting under that criticism. This doing your duty by the public costs money, and if it breed resentment rather than good-will, or even if it only fail to eliminate existing ill-will, would not the expense better be withheld? I do not forget the exceptional circumstances under which our particular utility is operating. We have a successful and growing mu-

*Abstract of an address delivered before the San Francisco convention of the American Electric Railway Association on Oct. 5, 1915.

nicipally owned and operated system, all of it competitive to our own, and consequently our company is constantly a thorn in the city's side. The municipal lines pay wages and provide conditions that we cannot afford, and this makes it necessary for us to take the ordinarily indefensible position of preventing, while we can, the organization of our men. This in turn makes us anathema with organized labor and its sympathizers. Then, too, the public accepts it as an undoubted fact that we have secured valuable franchises through the bribery of public officials, and the press does not allow it to forget that the so-called graft prosecution failed to secure more than one conviction.

Welfare Platform of Company

I accepted the presidency of the United Railroads of San Francisco only because I thought that I saw an opportunity to render public service. I meant to start right with the public, and to that end began my administration with a formal statement—a sort of confession of faith—in which I acknowledged it to be the primary duty of a public utility to serve the public adequately and considerately. I pledged the company to keep scrupulously out of politics and promised that, if an attempt were ever made to influence public opinion, it would be done openly and in the name of the company. I declared it as my only motive for taking office that I was ambitious to improve the relations between the people and the company and invited the frankest criticism and the most cordial co-operation on the part of the public to that end. Finally, in recognition of the strong sentiment in favor of municipal ownership that had been manifested in a recent election held to provide money for the extension of the city lines, I declared that I had no fault to find with the advocates of municipal ownership even of street car lines, but believed that if such ownership should obtain, the properties themselves could be operated with the greatest good and with the largest profit to the public if intrusted to private management under public regulation.

Treatment of Employees

Then, with the desire to treat the employees as generously as the revenues of the company would permit and at least as well as they would be treated by impartial arbitrators (in the case of an organization formed, demands made and refused, and a strike threatened), we voluntarily granted a substantial increase of wages. We devised a plan for insuring the lives of all employees for a period of three years and upward, without any physical examination on behalf of the insurance company and without any cost to the men for premiums or otherwise, the families of the three-year men receiving $250 in case of death in the service, of the four-year men $500, and of those having served five years or upward $1,000. Each employee was allowed to select his own beneficiary arbitrarily. This insurance meant giving to the men something that many of them, quite apart from the expense of insurance, could not give themselves. The man with tuberculosis, with cancer, with Bright's disease or with a weak heart was insured along with those who were organically sound. This was better than a wage increase, for there was no assurance that any of the latter would be husbanded.

Then, realizing as a paramount duty that as far as possible we must stop killing and maiming people and that to accomplish this we must depend on the vigilance, the loyalty and the intelligence of the platform men, we said that, taking the sum paid in the previous year by way of damages for injury to persons or property as a basis, we proposed to give the entire amount that might be saved over this sum in succeeding years to these platform men in the exact proportion represented by the time contributed to the service.

Finally, it appeared upon investigation that many of our employees had fallen into the hands of loan sharks and were paying as high as 10 per cent a month for loans. Many of these men had the best of records, with excellent characters, but through stress of outside claims, sickness in the family, financial distress and the like, had found their wages inadequate for meeting abnormal conditions and had nothing to take to the pawn-broker or remedial loan association as collateral. We said to such men: "We will lend you the money that you need, without any security, taking from you simply your own promissory notes, payable in such installments as you may yourselves determine to be practicable in view of other demands upon you, and bearing interest at the rate of 5 per cent per annum." Our files are now full of graceful acknowledgments for this aid, testifying eloquently to the good accomplished.

Response of the Public

When this program was announced we felt that the new management was keeping faith and looked for grateful response on the part of the public. There was a great deal of commendation, to be sure, but I am not certain that the true sentiment of the people at large was not voiced by a prominent and influential local newspaper, which said editorially in double-leaded type: "The street car workers are men; they are not children to be coddled. President Lilienthal and his directorate should have heard what Lincoln Steffens and Austin Lewis told the New Era Club about welfare work the other day. Welfare work! The United Railroads might as well save its time and money. 'The only way to help labor,' said Lincoln Steffens, 'is to help labor to help itself.'" In other words, employees want nothing from employers that they do not demand and demand in a position where they can enforce their demands.

I have always believed in labor unions. Perhaps I do not believe in them so much as formerly. It is, of course, an indefensible position to maintain that employees shall not be permitted to organize. Even advocates of the open shop stop short of that. Yet in San Francisco we are confronted by a condition and not a theory. Organization of the company's employees would mean inevitably and logically a demand for the same wages, hours and other conditions that are conceded by the municipal lines, under the terms of the city charter, to men working on a track literally alongside of our own. A demand would mean a refusal, because the company cannot concede the demand, and a refusal would mean a strike, which would be a calamity for the company, the public and the men. We have, therefore, been placed in the incongruous position of having to discharge men whose only fault may have consisted of joining the union, because the alternative was inevitable disaster.

It does not seem to be enough to be good 364 days in the year. You must be good the whole 365 days, and to be good you must do the things that the public wants you to do and refrain from doing those things to which it objects. We have tried, in the interest of peace and good feeling, to meet this view, too. At the outset of my administration I said that I would always grant to the city anything that it wished, but that I had no right to forget that, just as officials of the city were trustees of the people, I was a trustee for the creditors and stockholders of the company and therefore must exact a reasonable equivalent for any property rights surrendered. Yet we discovered in a recent experience that we had been sowing the wind.

Such an equivalent for a right proposed to be surrendered was recently asked by the company and promptly conceded by the Board of Supervisors. Their ordinance carrying out the terms of the agreement, however, was vetoed by the Mayor, a majority but not a sufficient number of the supervisors voting to override the veto. The right in question was therefore exercised by the city without giving the equivalent. Upon an appeal to the courts the company's motion for an injunction to restrain the exercise of the right was granted. Unfortunately, however, this has proved to be a case of being good only 364 days in the year, and apparently in consequence of our legal victory the company is once more under the ban of excommunication. The injunction, at this time of writing, is being violated, and boastingly violated, forcing the company to contempt proceedings.

What moral shall we deduce from all this? What is the public welfare? And what should be the course of conduct of a public utility? It is, of course, axiomatic that in things done or omitted the presumption is in favor of a popular public utility, assuming that any such exists, and against the unpopular public utility. When the latter takes a step forward in a matter that should win popular approval, it is likely to be charged with moving from fear and not from public spirit or the desire for public welfare. Yet is that a reason for not making the effort to propitiate the public—shall we refrain from taking this step forward because our motive in so doing may be impugned?

Code of Commandments

I have laid down for myself the following code of commandments to govern my management:

1. Accept loyally and without reservation the now universally proclaimed doctrine that a public utility is the servant of the people. The courts of last resort have so declared, and the public utilities have bowed their heads in meek submission. Whatever the resources or lack of resources of the utility, adequate service must be rendered. The requisite capital must somehow be provided, the matter of adequate return being irrelevant, except in the sense that the right exists to appeal to the rate-making bodies to provide for reasonable compensation for the service rendered. Do not wait until pressure is brought to compel adequate service. Anticipate the public demand. Keep your door wide open to every complaint. Forestall criticism by inviting recommendations, and in all close cases give the public the benefit of the doubt.

2. Give the affairs of the utility the widest publicity. The public is entitled to know what you are doing and how you are getting on. Conditions may be unfavorable, and you may fear that publicity might affect your credit, but you should not ask for credit that you do not deserve, and perhaps your misfortunes when frankly told may beget the public sympathy and good-will which you so sorely need. Nothing is so engaging as complete candor. When I have been interviewed by the reporter of a newspaper, however unfriendly, I have answered every question directly and fully. As a result it has happened to me at least once that when such candor has not changed the tone of the unfriendly newspaper the reporter has insisted that this attitude be changed or that someone else be assigned to his task. I have gone to men who have assailed me and sought to explain to them my reasons for doing the things that they have criticised. This has sometimes led to a change of front or, as in the case of at least one newspaper editor, to a statement that my position was justified, but that his newspaper to hold its circulation must continue to print the news to please patrons.

3. Treat your employees fairly and, as far as your resources will permit, generously. The man who is well fed and well clothed, who has a reasonable amount of time for play and recreation, who is in a position to save a little for a rainy day or toward the owning of his own home, who feels that his superiors are always ready to receive suggestions or to redress real or imaginary grievances, who is not exposed to nagging and hectoring by officious subaltern officers, who enjoys the right of appeal, who is made to feel that all the employees of the company, from the president down, are members of one family, each having the same paramount duty to serve the public and the employer—such a man will give the best results.

It might be well to have a council, composed of representatives of the men and the chief executive officers of the company, meet once a month to consider measures for the improvement of the service and the increase of efficiency. The representatives of the men should be selected for a certain period by secret ballot—say one from each carhouse. In that way the most popular man would be chosen and through him all the employees of that carhouse would feel that they had a mouthpiece. A new election should perhaps be held every six months or year. This plan will at least furnish a sort of safety valve without providing much of a nucleus, if any, for agitation or organization.

4. Keep out of politics. The public utility is the target for the politician. Those who are not venally dishonest have, at least in recent years, found that attacks made upon it are the short cut to popularity. Those who are venal have found the strike bill the most lucrative source of revenue, and it has seemed necessary to go into politics to keep such men out of office. Where the only purpose of the utility in so doing has been to eliminate such as these, the motive is, of course, ethically justifiable. But all know to what abuses this has led. The utility, to accomplish practical results, has had to build up a political machine. Having through this machine acquired the power to defeat injustice, to stifle bad bills and prevent biased judgments, it is tempted to use this power for affirmative selfish ends and the temptation generally proves irresistible. Then the people, feeling themselves throttled, are driven to rebel and are themselves led into excesses by the desire for revenge. It is from these excesses that we are now suffering.

5. The alternative remedy involves the next commandment—appeal to the public for fairness and justice. Deem it your right and duty to influence public opinion. Complain of the wrongs that are done to you. Expose the methods of corrupt or unfair politicians. Combat the arguments of muckrakers and pseudo-reformers. Never allow an untrue charge to remain unchallenged. Circularize the public. Buy space in the newspapers. Participate in public discussions. Above all, however, remember that whenever you do anything along these lines you must do it openly and in the name of the company. Do not hide behind reading notices. Do not have paid agents masquerading as independent gladiators.

I place my confidence in the ultimate good sense and fairness of the people. Our salvation must be worked out through them, because after all, under our system of government, the power to deal with us rests with them, and we shall not win our battle until we make them feel that we are doing our duty by them. We must be politic enough to recognize our masters and public-spirited enough to be willing to make every effort to deserve the good-will of the people. The task will not be so difficult, if, as we should, we cultivate a frame of mind that makes this a labor of love.

Foundation Principles of Valuation*

Address Based on Electric Railway Resettlement Cases—Author Discusses the Purpose of Valuation, Detailed Methods, Overhead Expenses, Non-Physical Values, Depreciation, Amortization, the Purchase Clause—Social Aspect and Needs of the Industry Are Also Treated

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IT is purposed to circumscribe this discussion and deal largely with the serious condition in many cities where a resettlement or readjustment of franchise rights, privileges and corporate equities is under way, either by sale of the property direct to the city, or better, by giving the city a sufficient interest in its management to insure its understanding of the many and complex problems which are involved.

Purpose of Valuation

Fundamentally it would seem strange that a given property could have more than one definite value, but a little study will reveal the fact that different viewpoints may require quite different methods of procedure. Thus at the present time valuations are being made with the following purposes in mind: (*a*) The purchase or transfer of the property; (*b*) rate-making; (*c*) capitalization; (*d*) taxation, and (*e*) accounting.

The tendency of the later valuations is to cover a much wider scope than formerly, such as the following classification of elements of value:

1. Physical Value—Representing the bare construction cost of the existing tangible property "used and useful" in the operation of the company:

2. Overhead Percentages or Super-Charges—Representing actual expenditures which are incurred in addition to the bare construction cost to obtain the true cost of reproducing new a completely organized and operative property, known as "cost to reproduce new" and for brevity sometimes called "cost new."

3. Development Expense.—Covering all items of cost actually incurred in producing the property over and above those appearing in the existing plant. These may be grouped under:

(a) Semi-Physical or Plant Development Cost—Representing certain charges incurred during the years of development of the property which are not likely to appear in the inventory of the present property.

(b) Non-Physical Values.—Representing the cumulative cost of developing the business.

4. Other Non-Physical Values—Such as remaining franchise value or future earning capacity of the property under the franchise terms, and any other miscellaneous values or rights held. Both purchase value and cost of developing the business are more specific definitions of two of the several elements which are ordinarily included in the omnibus term "going value"† as usually understood.

5. Present Value—Cost new, less depreciation which has accrued from the time of organization of the property to the date of valuation. This involves a determination of the present condition of the physical property with regard to the remaining life of its various constituent parts.

These various elements are sometimes reduced into two main groups, viz.: Tangible and intangible values. The commissions usually carry the investigation still further, including all other tangible assets, usually represented on the balance sheet by other assets, bills receivable, and cash or working capital. They also inquire into the history and status of the stocks and bonds and the "book value" or "original cost" or both.

Thus the valuation of a modern property has now reached an exceedingly complex stage, involving not only a detailed historical analysis of the property from the beginning, but also a prediction as to its future possibilities up to the end of its franchise. This in turn requires a very definite knowledge of the past development of the community itself with respect to other communities similarly situated and a fairly accurate estimate of its future growth. Hence in a complete valuation there are many elements of value to be considered, of which the bare construction cost represents only one important element. Which of these elements of value should be given the greatest weight will be determined by the purposes in view.

The frequent misconception of the necessity of separate valuations for different purposes largely arises from the failure to understand the economic relations between the purposes above cited and the various elements of value that should be determined in a complete valuation. With a complete valuation based upon scientific methods of analysis, there necessarily need be no inconsistency in the use of its various component parts for different purposes. Thus, present value plus development charges or franchise values may become the

*Abstract of an address delivered before the San Francisco convention of the American Electric Railway Association on Oct. 7, 1915.

†"Going value" is a term that has been widely used to represent values in excess of the cost new value of the property. It was used for many years to represent the values that were commonly accepted as existing, although the method of determining this value usually consisted in capitalizing the profits from operation. In this case the going value represented that part of the commercial value, on an earning basis, in excess of the physical value or cost new. In later years, when the question of rates based on a fair return on the value of the property was much discussed, it became evident that going value should be defined more clearly, or, better still, be replaced by other well-defined and computable elements of value, which should be based on consideration other than income from rates, themselves in question. This has resulted in the substitution of the values above mentioned and similar elements of value for the more general and indefinite term "going value."

basis for sale or transfer; cost new plus development charges or franchise values for capitalization purposes; cost new for rate making purposes* (except where contractual relations specifically require the recognition of other elements of value), and finally, present value for taxation purposes.

Detailed Methods of Appraisal

In connection with the detailed methods of appraisal the following points should be noted:

Verification: In an appraisal the methods, unit prices, quantities and sub-totals at least should be clearly set forth for future verification. Lately there have been several flagrant instances in which the appraisals submitted in very important cases have been so curtailed in statement, either deliberately or otherwise, as to make it practically impossible to check them without further retention of the appraiser and part of his force. This submersion of details may be brought about either through the loading of unit prices with overhead percentages or by the failure to make a complete statement of unit prices and quantities, or both. Any reputable engineer should be willing to have his appraisal analyzed in detail by those competent to do so.

Alternatives: Where questions are encountered which cannot and ought not to be settled by the appraiser, these should be set forth as alternative totals or values. For example, it is often desirable to set out questionable items of joint ownership, plant development—such as change of grade, repaving, reconstruction of bridges, removal of obstructions, etc.—and to compute such elements of value as are dependent upon rate of return upon several different rates.

Construction Schedule: As the cost to reproduce new basis of valuation is generally accepted, at least as a starting point, the property should be assumed to be built up on a definite and reasonable construction schedule. In the case of obsolete property it is often practically impossible to reproduce to-day a property built under a different state of the art, and it therefore becomes necessary to set out as "development expense" the values representing additional inventory or work done in constructing under "original conditions." The total thus represents "full reproduction cost" of existing property covering not only expenditures under present-day conditions but also those in addition thereto necessarily incurred under former conditions.

Unit Prices: Unit prices constitute the most important element of judgment in the appraisal. In general, they are usually taken as of to-day. Yet in cases of commodities of widely fluctuating prices (for example, copper), average prices over a considerable term of years are certainly justified, or else trend prices in the case of price movements clearly in one direction. The real reason for pricing as of to-day is to give the owners of the property, as far as possible, credit for such appreciation in value as has taken place since its organization and to give the prospective purchaser knowledge of the value of the items involved.

Sub-Contractor's Profit: Unit prices are usually made on the basis of a sub-contract for items of purely construction work in which sub-contractor's profit is included; this also in the case of fabricated equipment installed by the manufacturer.

Substitution: Critics of the cost-to-reproduce-new theory point to the inconsistency of valuing property and using prices as of to-day, when these prices are applied under conditions which governed during the actual construction of the plant. This contention is not serious, for in usual cases the problem of a substitute plant is not being considered—that is, a plant of new and modern design, laid out to accomplish the same work as the old plant. Appraisers must reproduce in kind and under present conditions and take care of any injustice done thereby under development expense.

Land Values: Usually land is appraised on the basis of a willing seller to a willing buyer, as shown by the reported values of transactions in adjacent territory. For street railways this plan would seem to be eminently fair, inasmuch as present-day prices unquestionably reflect appreciation in value. Particularly is this so in the case of right-of-way, which may show an appreciation far in excess of the normal rise in values for corresponding territory unserved.

Appreciation: Basic land values, exclusive of improvements, are now increasing approximately as the 1.7th power of the population of a normal city—in some districts as rapidly as the square of the population. As the same law appears to hold for the normal earning power of property within the last decade, it appears that normal appreciation is going on at about the same rate as the increase in earnings. The fair and proper basis for land values would seem to be to appraise the land for free sale as of to-day, exclusive of all building improvements thereon. In addition thereto damages resulting from the destruction of original buildings may be admissible as development expense unless absorbed by the appreciation on the land.

Right-of-Way: In the case of right-of-way the factor of increase over normal sale value of adjacent land necessary to reproduce prices actually paid by railways for a continuous right-of-way, clearly reflects the result of damages to adjacent property. This factor of increase has been recognized by many commissions as applying to agricultural lands. The same fundamental reasoning applies to private rights-of-way in cities. But it is clear that extraordinary appreciation in land values served by rapid transit lines will in time far outweigh any factor of increase originally considered.

Overhead Charges or Contingent Percentages

Overhead percentages, dependent upon the character and continuity of construction and methods employed as well as upon the completeness of the appraisal and of the basic records of construction, should be included as part and parcel of the physical value. In general such overhead percentages include the following:

(a)—Construction Overhead

Organization, engineering and incidentals, ranging from 5 per cent to 15 per cent on equipment and construction accounts respectively, are herein included. Organization covers general office expense, securing bids, preparing contracts, purchasing materials, construction salaries, superintendence and legal expenses of construction, etc. Engineering covers the preparation of plans, specifications, contracts, supervision, progress reports, estimates for payment, shop inspection, tests and field engineering. Incidentals cover all construction expense outside of the contract, such as extras due to change in design, interference with work, trial operations, insurance during construction, etc. Real estate usually should carry 5 per cent to cover cost of title, survey of tracts and legal fees. For rolling stock 5 per cent is usually sufficient. Stores, tools, furniture and fixtures, etc., may carry 5 per cent for purchasing, handling and drayage, and possibly an additional percentage

*Later, under amortization, the necessity for ultimately reducing to a present value basis is discussed.

for omissions in case of an approximate checking of the inventory.

(B)—CORPORATE OVERHEAD

Legal expenses, carrying charges, bond discount and brokerage usually total about 10 per cent, applied to all items or to the primary totals. Of this, 5 per cent represents the cost of securing the money. Carrying charges, or interest and taxes during construction, are derived from the prevailing interest rate applied to the actual investment during a definite period of construction, but over only one-half of the period. Bond discount should be considered as legitimate cost incurred in the creation of an operative property.

The foregoing physical or semi-physical items of value are grouped with the items of tangible property and should be considered as such. They should, however, be clearly set forth so that their relative values in the appraisal are easily ascertainable.

General Contractor's Profits: These may or may not be included, depending upon the scope of the primary overhead. The general contractor is supposed to turn over a completely organized, equipped and operating property, without involving extra administrative cost to the owner. This method, however, is not always followed now, and it seems a better plan to cover the necessary items in the construction and corporate overhead percentages, especially where the company has a completely equipped organization, capable of constructing as well as of operating.

Promoter's Profits: Such profits have been definitely excluded on the ground that the company should be compensated in some way for past losses if any were incurred. Yet legitimate costs of promotion are included in the corporate overhead on all properties, and in the case of new properties on which no development expense is computed promoter's profit in some form should be allowed commensurate with the risk involved.

Unprotected Investment: In the absence of a definite contract between the city and the company as to investment, service or return, it has been found necessary to compute the corporate overhead charges on two bases—one assuming the investment protected by such a contract, and the other assuming an unprotected investment. While a total of 10 per cent seemed fair in the first instance, a total of 15 per cent did not seem unreasonable in the second—that is, 8 per cent for bond discount and 7 per cent for carrying charges, etc.* Thus there is a clear distinction between a situation where the company is forced to admit the possibility of partial confiscation at the end of its franchise period, and one where both parties desire to perpetuate the property on a sound and mutually fair financial basis provided for by contract.

NON-PHYSICAL VALUES OR INTANGIBLES

It is a source of gratification that in the later resettlements and decisions intangible values are receiving more and more recognition. Of course, everything depends upon the purpose of the valuation and the theory of its application.

(A)—FRANCHISE VALUE OR REMAINING EARNING CAPACITY

When the contractual relationship between the municipality and the company is such that a franchise value is clearly recognized and admitted, the method of ascertaining this is simple. The accounting process is to find the present worth of future net earnings under the actual franchise conditions, agreements (inter-corporate or otherwise) and ordinances. There is nothing visionary about this value provided two important conditions are fulfilled—namely, that the contractual relations between the city and the company be maintained, and that the company do justice to the public in the matter of service and the preservation of its physical property. The determination of franchise value involves a complete study of the financial, operating and historical development of the property. It may involve a readjustment of accounts to provide for reasonable service, proper maintenance charges (to operating expenses instead of capital account), depreciation caused by age and wear, amortization of non-physical values and possible equalization of franchise grants. It is very likely to involve also a study of the results of unification versus competition or severance of the property into two distinct operating parts, such as urban and interurban (there being kept in view, of course, the possible purchase of the urban lines by the municipality). With the correctness of the accounting as reflected in the operating ratio assured, a determination must then be made of the probable growth of the community and the revenue resulting from its riding habit. Conservatism must be employed in scaling down abnormal rates of growth in population, riding habit and the resulting revenue. The difference between the estimated net income and the amount of interest assumed to be paid, thus represents franchise value.

Allocation of Earnings: The simplest case arises where all franchises expire at the same time, but such a condition is rare. In many cases franchises may run into the dozens and overlap on account of original competitive conditions now removed by consolidation. Owing to the different franchise terms the allocation of earnings over several different parts of the same line or route becomes necessary. This has usually been done by simply distributing the earnings according to the car mileage operated. This method approaches more nearly the theoretically exact method, as the car mileage over the various sections is proportioned to the traffic.

Severance: Here arises the perplexing question where the central part of an extensive district traction system is taken over by the city, the outlying lines being required to stop at the city limits and transfer passengers. Severance and dismemberment cannot result in other than decreased operating efficiency, decreased public convenience and riding habit of the public, increased administration expenses, etc. If this were not the case, the already proved and generally accepted theory of the advantages of unification, both to the public and the company, would fall to the ground. The severance of an outside interurban system, depending largely upon the urban lines for its entrance into the city, seems even more serious than the dismemberment of a local city system, the parts of which are not absolutely codependent.

Rights at Expiration: The Chicago resettlement plan of 1906-1907 presents some interesting phases. Although many of the franchises had admittedly expired, the valuation commission allowed franchise value for eighteen additional months, this being the minimum time which would be required by the city to acquire the property through court proceedings. Note that the commission recognized the absolute necessity for service to the public, or conversely, if the public denied the existence of value until a new system was completed, it should go without service in the interim.

Contractual Rights: The Toronto situation is also of extreme interest, for although the company restricts its operations to the thickly settled district within the old city limits and will not make extensions outside, its right to continue to "skim the cream" is unquestioned.

*For one line the average bond and note discount for recent years was more than 10 per cent. In San Francisco, between 1906 and 1909, the average bond discount for improvements, betterments and extensions was about 20 per cent on a 5 per cent bond interest basis. (The bonds were issued at 4 per cent.) In Chicago, after the rehabilitation, the average bond and note discount was more than 5 per cent, while at the present time in Chicago and Cleveland first mortgage securities approximate par.

At present the company is paying more than 20 per cent of its gross earnings to the city, but when valued in 1913 the earning power under its franchises running until 1921 was found to be more than the value of the physical property then existing.

Service: The right to regulate service directly offsets franchise value and when unreasonably or fully exercised may lead to its entire extinction. It thus follows that the company can expect to substantiate franchise value only when entrenched behind adequate service. Yet what is an adequate service standard? This subject, however, is too complex and far-reaching for more than its bearing on franchise value to be here mentioned.

(B)—DEVELOPMENT EXPENSE

Two significant items of value are here involved: (1) The "plant development expense" incurred in the construction and development of the property existing at the time of the valuation, but for which nothing appears in the inventory; (2) the cost of producing or developing the business as a "going concern." This second item again involves a distinction between the cost of purely commercial development or business organization and the expenditures arising out of property superseded in the past. These development items, therefore, classify themselves into major groups—physical and non-physical—the former pertaining to the property and the latter to the business.

Plant Development: In physical development charges it is not difficult to draw the line between existing property and superseded property. In the Third Avenue Railroad appraisal in New York, these development charges on existing property were separated still further into "operative" and "investment." The former covered preparation for construction, piecemeal construction, repaving over duct lines, etc. The latter covered leased and non-operative property and new construction not yet in commission. Under existing plant development would also come the expense of change of grade and street improvements, the building and rebuilding of bridges, tunnels and viaducts in which no title is allowed to the company, the removal of obstructions preparatory to construction, the excess cost of plant and real estate over that allowed at the time of the appraisal, etc.

Superseded Property: In determining the cost of superseded property everything depends upon the completeness and correctness of the existing records of historical development of plant. In several recent instances it was found possible to go back forty or fifty years and trace the development from horse to cable, from cable to electric, and finally from distributed to centralized power plant operation. A few companies have religiously preserved books and even vouchers, so that the entire plant can virtually be reconstructed from year to year with reasonable accuracy from detailed capital additions and subtractions.

Developing the Business: In determining the commercial development charge or cost of attaching the business, a fundamental assumption must be made—namely, that the company is entitled to a "fair return on the actual investment" honestly and judiciously made, not only at the present time but also during the preceding "lean" years. This assumption forms the basis for accrued deficits or "deferred earnings." It is indeed a hopeful sign that this theory is receiving more and more consideration from regulative authorities. It has been used by the French and Swiss governments in the acquisition of their national railway systems, and also by the Wisconsin and Michigan commissions. In its application the plant is reconstructed year by year, the true operating ratio being adjusted for incorrect distribution of expenses as between operating and capital accounts, and proper reserves for depreciation and other necessaries being included. The balance, or net income, is applied to the actual investment as found. Then the cumulative difference between the fair return assumed and the actual return, compounded, represents the development charge if there is a deficit. Naturally there will be some difference in the final result as superseded property is left in capital account year by year or charged to operation through the depreciation reserve. This is caused by the different compounding effect in the two cases. Where radical changes in the system are involved, such as from cable to electric, it seems more logical to spread the cost over a term of years, while small items can be charged against each year's account.

In this connection a clear distinction between street railways and other utilities should be recognized. Since the cost of developing the business of a street railway is not comparable with that of producing a light, gas or telephone business, going value applies in a far less degree to the railway and may in fact disappear in a system having enjoyed a monopoly from the start. The only item of cost that could then be considered as constituting going value would be the cost of extending non-paying branches into sparsely settled territory under municipal compulsion or for forestalling competition. The resultant operating loss constitutes an element of value, by some termed going value but more properly included as a part of development expense.

Fair Return: The author makes no attempt to specify generally what constitutes a fair rate of return upon which to base this development charge. Unless specifically instructed by a court or commission, or guided by some unusually definite principle or local development, it is usually advisable for one to compute alternative values at 6, 7 or 8 per cent or higher, according to the cost of money during the period and in the locality considered. The most tangible principle that has apparently guided both courts and commissions is that the percentage of "fair" return should increase with the risk involved: i.e., should depend upon the probability of guaranteed revenue, the security of the franchise, the character and powers of public supervision, the character of service demanded, etc. Here again the matter of rates, service and return are completely interwoven. There is one situation, however, in which the foregoing principle must be modified—that is, in the case of a distinctly losing return or a property financed and constructed on too optimistic a plane. Here the owners must be content with a lower rate of return than might be reasonably expected for a property more judiciously built. Hence, the theory of deferred earnings must be based upon a reasonable expectancy of ultimate profitableness.

DEPRECIATION

It is a curious commentary upon the rapid progress of utilities that some operators still deny the existence of depreciation and solemnly proclaim their ability to keep a property in a condition 100 per cent good, whatever that may mean. It can be proved that, when a property is old enough so that the cycle of life of its longest-lived depreciable element has expired and a renewal is due, the average "condition" of all the depreciable elements cannot be more than 50 per cent good—i.e., 50 per cent of the service value (plus salvage)—and that a higher percentage would be economically unsound. This does not mean that half of the total investment has disappeared, because some elements, such as land values, do not depreciate. With 85 per cent depreciable and 15 per cent salvage, the 50 per cent theory would result in an economical over-all condition of only 65 per cent.

Renewals an Operating Expense: In obtaining the true operating ratio for computing intangible values, it is essential to include an adequate charge for renewals. It is unfortunate, however, that a distinction is ever made between the maintenance and renewal accounts. Wherever possible there should be a blanket reserve to cover both in order to do away with fine and arbitrary distinctions. Part of such reserve, however, should be represented by actual cash or some negotiable securities. Paper reserves do not buy cars and rails when the time comes for the renewals if the money market is unfavorable. A depreciation or renewal fund is the best guarantee of the permanence of the investment and the good-will of patrons.

Appreciation: It is not well to place any faith in the assumption that appreciation will exactly offset depreciation. In using present land value rather than the value at which the property was acquired, a company receives the benefit of appreciation. Consequently the present value must be obtained to determine the extent of depreciation.

Distinctions: In two recent valuations depreciation was determined by considering the life and the salvage value * * * for all items of property that are normally considered "depreciable," and by using a wearing life for each article based upon the length of time during which it should be able to render efficient service. In some valuations it has been thought desirable to distinguish depreciation caused by one or more of the following: normal wear, obsolescence, inadequacy, age, deferred maintenance and casualties. In most cases, however, these distinctions have not been made, and the tendency of official bodies to do away with the finer distinctions seems to be increasing.

Overhead Charges: Some controversy has arisen as to the propriety of depreciating overhead charges, as well as physical property. For practical reasons these should be depreciated, and the necessity therefor is pointed out under the later heading of "amortization."

Straight-Line-Payment Method: Much confusion seems to have arisen in the terms describing the method of computing depreciation. The practical problem, however, resolves itself into a very simple proposition. Given a cost new and a salvage value at the end of the life (which may either be scrap value or relaying value, in the case of rails), then how much money will be required annually on the average to renew the worn part at the end of its life? This is the simple straight-line or uniform method. The only distinction arising is whether this annuity is to be compounded. For example, the annuity for a twenty-year life would be in the one case 5 per cent flat; in the other case, 3.02 per cent. This method has been erroneously termed the "sinking-fund method," but it is simply the real "straight-line method" of depreciation with annuities compounded on a sinking fund plan. It is general practice to consider the annuity as being set aside at the end of the fiscal year. It is not clear, however, why an amount should not be set aside monthly, as in Cleveland. This would still further reduce the equivalent annuity rate.

All the variations in computing the annuity are caused by the different methods of handling it. A graded rate of compounding might even be devised so as to make it easier on the company now and heavier in the later years. Yet it is a question whether this is sound financing, unless there is assured future protection for the continuing investment by an indeterminate franchise or an adequate purchase clause. Some have suggested a method of depreciating at a fixed rate upon a decreasing principal (present value), but by itself this does not seem to meet conditions at all.

The renewal fund should receive full credit for all salvage value returned from the sale of scrap and all interest on the fund. In this connection it is manifestly unwise for a fund to earn only 2.5 per cent in the bank while it could earn from 5 per cent to 7 per cent in the property. Under proper safeguards as to public supervision of investment, there is no logical reason why the fund should not be thus reinvested for extensions and betterments, thus automatically decapitalizing as much of the property as is constantly disappearing.

Equal Annual Payments: In an exhaustive analysis of this subject of depreciation and valuation, a special committee appointed by the American Society of Civil Engineers came to the conclusion:

1. That rates should be based upon present values —that is, cost to reproduce new less the accrued depreciation.
2. That the equal-annual-payment method of computing depreciation should be used.
3. That depreciation allowances should be credited to the capital accounts from time to time and not distributed as dividends, and that replacements should become charges against capital.

This committee, having apparently accepted the dictum of the courts for present value as the basis of rates, proceeds to apply the straight-line method accordingly and computes depreciation on a decreasing investment value. This, of course, would result in burdening the company during its later years. The net result is, therefore, a composite one, based upon: (*a*) A decreasing original investment on account of depreciation; (*b*) an increasing rate of depreciation, as applied, and (*c*) a fixed return on said decreasing investment. While apparently this method will result in lower rates than that using cost to reproduce new as the basis of rates, this is actually not so. The author prefers the simpler straight-line method in which the annual depreciation is applied uniformly upon the original cost to reproduce new, and not figured as an adjusted rate upon a decreasing investment from year to year.

Until a better understanding is had by the industry in general it is recommended that the straight-line method in its simplest form be studied in connection with the establishment and maintenance of a renewal fund so invested as to earn interest at as high a rate as possible. Unless the fund grows faster than the cost of renewals, the compounding automatically will not ensue and the resultant lower annuity charge for depreciation cannot be utilized.

Amount of Charge: Usually operators look aghast at the proposition of applying from 15 per cent to 20 per cent of the annual gross earnings for upkeep of property, including maintenance and renewals. Formerly 7 per cent to 10 per cent was all that could be spared for upkeep, and occasionally 12 per cent to 14 per cent. From experience with the results of railway operation, however, even 18 per cent to 20 per cent (on a 5-cent fare) may not be found too much.

Basis of Analysis: The use of a certain per cent of gross earnings is simply an empirical method. To arrive at such a percentage scientifically the cost of upkeep should be studied more accurately—that is, on a car-mileage basis for rolling stock; on both a track and a car-mileage basis for track; on a kilowatt-hour basis for power stations; on a car-mileage basis for overhead trolley, and on a life basis for the remaining property. These studies may then be reduced to a fixed percentage of gross earnings for the particular railway. This percentage may not apply to any other line except very approximately, as will be evident in contrasting a short-haul prosperous property like that in Toronto with a

long-haul property which may be just barely able to make a living.

AMORTIZATION

The most significant step taken by the courts and the commissions in recent decisions is the recognition of intangible values under certain restrictions, the clear intent of which is that, if recognized, these intangible values are to be amortized as rapidly as possible* so that the non-physical part of the values thus recognized in a resettlement plan shall be retired within a reasonable period. This is eminently sane and practicable and the only way in which to secure the one desirable result aimed at—that a utility shall be conceived, organized and operated as a perpetual or continuing investment, and at the same time be so managed that the public will ultimately pay such a rate of fare as will result in a fair return on the present value of the property.

The Purchase Clause: The public and the courts have definitely set their faces toward resettlement. Let no more time be spent, therefore, in worrying about whether immediate municipal ownership or ultimate municipal ownership is the thing the people want. Time will decide which one of these planks, if either, is to go into municipal platforms. Companies should cease wasting their energies in opposing a public movement that will surely come in spite of opposition if it is economically sound, and direct their energies toward the terms of the purchase clause and the conditions of a resettlement franchise.

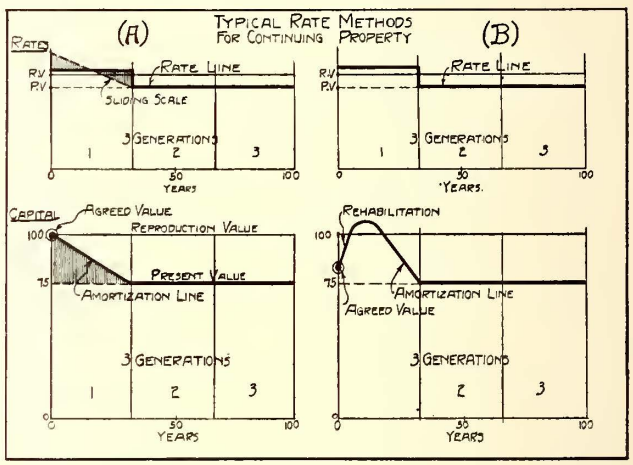
Continuing Investment: First let the tangible part of the agreed valuation stand absolutely as a perpetual and continuing investment, carrying a funded debt which will automatically refund itself under the conditions imposed because the real or tangible property is there upon which to base a new issue of certificates. The property will be there if properly maintained and renewed, and the courts will not permit confiscation. Then retire the intangible values and provide for the accrued depreciation, and the fundamental investment will take care of itself.

Typical Resettlements: It is time to prove to the courts and the commissions that railway investments can be made practically as sound as savings bank investments. Several plans have been worked out, notably those in the Chicago, Kansas City and San Francisco resettlements. They differ somewhat in franchise conditions, but the central idea is to put tangible property behind intangible values, so that if ultimate municipal ownership should prove to be the policy of the country it will come without destroying investment values or curtailing service during the time of its coming. On the other hand, if it does not come the companies will have so managed their properties that the public will have repaid out of earnings every honest dollar invested. And the public in time will eventually receive its service from the companies' hands at a price which will pay a legitimate and agreed return upon the actual physical value of the property then producing the service.

SOCIAL ASPECT

It is necessary only to refer to the financial history of railroad, industrial, light and power, and electric railway properties during recent years to show that something is radically wrong in the methods of development. While a street railway property is as near a guaranteed monopoly as could be devised, it has apparently fallen behind other utilities in which there is considerably more risk. Under the crucial test of the last year this is particularly true. Thus, in comparing the five months, July to November, inclusive, 1914, with the same months of the previous year, the net earnings of a selected group of utilities and steam railroads show relative growth in the following order: Electric light and power systems, total utilities (including earnings not apportioned), gas companies, steam railroads (decrease) and electric railways (decrease).

The general effect of the war abroad seems to be a decline in the gross and net earnings for all of the utilities. The decline in electric railway net earnings evidently was not caused entirely by the jitney bus and the automobile, for the same characteristic decline occurred in the electric light and power and gas fields. Yet these factors were felt, and while the inroads upon city lines by the irresponsible jitney bus seems to be becoming less dangerous, owing to the adoption of suitable regulations and the realization on the part of the jitney owners as to what cost of service and depreciation mean, the outlook for interurban roads is not so encouraging. This is caused by the constantly increasing number of privately-owned automobiles in the country districts and the rapidly-growing good-roads movement.



FOUNDATION PRINCIPLES—CHARTS SHOWING TWO TYPICAL RATE METHODS FOR CONTINUING PROPERTY

Cost New versus Agreed Value: Probably the majority of railway men will contend that higher fares offer the only solution for the future. The problem must, however, be analyzed further. For the purpose of argument, the accompanying figure contrasts two methods of meeting the tendency of the times toward the rates based on present value, which condition is presumed to be consummated at the end of only one generation:

A. Rates for the present based on reproduction value or cost new, with gradual amortization of the intangible values and shrinkage during the first generation (thirty-three and one-third years).

B. Rates based upon an agreed or resettlement value (including some intangible allowances), with a certain period of rehabilitation during which renewals are added to capital, and with a similar amortization of intangibles.

The first method represents conditions that are desired; the second, conditions that are being forced upon the industry. It can be proved mathematically that, even with completely amortizing within one generation the shrinkage caused by depreciation, the total payment required during the 100-year period shown will be some-

*Such values may be classified generally as follows: (*a*) Superseded property or values extinguished through the rapid development of the art; (*b*) plant development cost incurred on items of existing physical property; (*c*) general development expense, or amount of deferred earnings accumulated through lean-paying years; (*d*) franchise value where contractual relations provide for same; (*e*) corporate overhead as previously defined—including legal expenses, carrying charges, bond discount and brokerage, cost of consolidations and reorganizations, preliminary legal and technical expense prior to actual construction, etc.

what less than if rates are based perpetually on cost new. This assumes a normally operating property, requiring only normal renewals and not rehabilitation. The illustrations, however, both Case A and Case B, start with existing conditions in the railway industry working toward the present value basis, and it appears that during the first generation the average rates in Case A, starting with reproduction value only, will be actually somewhat lower than if based on present value or agreed value plus rehabilitation costs, as in Case B. Yet both rates will be higher than if based perpetually upon the reproduction value only, owing to the amortization assumed.

Sliding Scale: If one could assume a sliding scale of rates which would result in the same average rate required during the next generation, there would be a gradual transition from present-day to future conditions. This is indicated by the sloping rate line in Case A. The rates would necessarily be higher at first. This may be thought impracticable, but consider the converse proposition—that is, percentage return on investment. For in Massachusetts the sliding-scale system of both rates and return has already been put into effect by one of the utility commissions, with results far better than anticipated. In this case (Boston Gas Company), the company deliberately reduced its rates from 90 cents to 80 cents per 1000 cu. ft. in order to earn the higher rate of return allowed by the commission.

The author therefore submits the proposition of a combined sliding-scale method of railway fares and return on investment. Railways have already had experience with the flexible-fare principle in Cleveland, which is a long step in advance, although one is not at all convinced that the American public prefers the kind of service that 3 cents will buy rather than that which 5 cents should buy. But Cleveland did not go far enough. There should be an element designed to encourage the maximum efficiency in operation with a definite reward therefor. Let a combination of the Chicago, Cleveland and Boston methods be worked out, giving both flexibility and reward for efficiency. Obviously, too, adequate service must be an essential factor. The exact basis of rates will not become so important a matter, for in the end the sum total appropriation through a long term of years for return on investment plus amortization will not vary much, whatever the original basis of capitalization. This is the all-important point and the one usually lost sight of, owing to the rapidity of growth of railway properties in this country. Of course, if no amortization is considered, the reproduction or cost new value basis will be easier on the rate payers of this generation, while the present value basis will cost less in the end.

The Needs of the Electric Railway Industry

The electric railway industry should frankly meet these new conditions by a policy that is founded upon the desire and the necessity of correctly informing the public. It should use the new weapons of publicity, standardized accounting and efficiency methods of management. The preservation of records should be encouraged. Co-operative resettlement plans with equalization of franchise terms, adequate service standards and the protection of the investment should be worked out fairly and sanely. The industry should give its moral support to valuations clearly made in the spirit of fairness to both sides, and not oppose all valuations, fair or unfair, as a sort of trespass upon some imaginary rights, even though established by long practice. Finally, the American Electric Railway Association, representing $2,500,000,000 of funded debt and the same amount of invested capital and contributing to the economic and social welfare of perhaps one-half of the population, should take advantage of probably the most important opportunity of its career, and cheerfully and intelligently assist the commissions, the courts and the public gradually to educate themselves to a thorough understanding of the problems of the industry.

Summary

Intangible or non-physical values are receiving more and more recognition, including past losses on a fair actual investment.

Historical development and predictions for the future are becoming essential in the comprehensive study of values.

Detailed inventory is apparently essential to acceptance by courts and commissions.

Every valuation should be so presented as to be readily checked by a competent authority. Submersion of essential details is not in accord with proper procedure.

Definite construction schedules should be assumed in reproducing the property, estimating carrying charges and computing life.

Fluctuating commodity prices should be averaged over a term of years, using trend prices or the weighted average.

Reproduction cost new should consider original as well as present conditions of construction.

Appreciation cannot be held to offset depreciation, as a general principle. It may be computed as well as depreciation if necessary.

Overhead percentages of from 15 per cent to 25 per cent in addition to the bare inventory are to be considered reasonable elements of the cost new of a physical property.

Franchise values can be based only upon definite contractual relations. Adequate service as defined by public rights thereunder is essential to the computation of correct franchise values.

Cost of attaching the business, or going value, can be definitely computed only where accurate records have been preserved.

Renewal funds and amortization of intangible values are a first and prime condition of the permanency of investment.

Depreciation (renewals) is an operating expense to be provided for by a definite monthly reserve or appropriation, compounded.

Renewal funds should be invested and preferably put back into new property, in order to secure the maximum compounding effect.

The simple straight-line method of depreciation, compounded, serves all essential purposes.

Maintenance and renewals appropriations should be consolidated wherever possible.

All resettlements should be made on the basis of a continuing investment, carrying permanent funded debt irrespective of ownership.

Amortization may then be confined to the intangible values, not to the funded property.

A fair rate of return should be dependent upon the risks involved and should increase with the risk.

Valuation and rates form a problem for the second and third generation, not alone the present.

A sliding scale of fares and return best meets conditions of maximum productivity.

Resettlement valuations are of the maximum ultimate importance at present. The industry should support fair methods and not oppose all valuations.

The electric railway industry should meet new conditions with the weapons of publicity, standardized accounting and friendly co-operation with the courts and the commissions.

Electric Railway Accounting Review*

Formation and Early Development of Accountants' Association —Body Has Broadened the View of Electric Railway Accountants and Solved the Many Problems Accompanying the Industry's Growth—The Spirit That Should Rule the Accountants

By P. V. BURINGTON

Secretary The Columbus Railway, Power & Light Company, Columbus, Ohio

ON March 23 and 24, 1897, there was gathered in the Hollenden Hotel, Cleveland, Ohio, through the personal appeal of a few accountants of the principal street railways of the United States, a group of sixteen representatives for the purpose of forming an accountants' association. Such an organization was then formed under the name of the Street Railway Accountants' Association of America as a separate body from the American Street Railway Association. At Philadelphia on Sept. 29, 1905, the association was reorganized under the name of American Street and Interurban Railway Accountants' Association as an affiliated part of the American Street and Interurban Railway Association. At the 1910 convention at Atlantic City the name of the association was changed to correspond with the change of name in the railway association to that of the American Electric Railway Accountants' Association, which is the name now borne.

The first meeting at Cleveland was one of great interest, made so by the fact that electric motive power was so rapidly taking the place of horse and cable power that the old system of accounting was fast becoming obsolete and something had to be done to meet the requirements of the new condition. One of the principal things accomplished was the appointment of a committee on standard classification of accounts. This committee was very active in its work and submitted a tentative classification to the first annual convention at Niagara Falls in October, 1897. With some revision this was adopted at the Boston convention in September, 1898. Owing to its directness and elasticity this classification, with but minor changes, stood the test of ten years' use by the greater part of the street railways of the country until the advent of the interurban railways.

It was then recognized that another new condition must be met and the association proceeded in a thorough manner to solve the problem. The Interstate Commerce Commission and the railroad commissions of various states were now becoming interested in what the railway accountants were doing, and as a result the association was importuned to work with them to the end that a system of accounting might be formulated that would harmonize with the needs of both the railways and the commissions. Through laborious work of the committee of this association an exhaustive classification was adopted and promulgated in 1909 by the Interstate Commerce Commission and the association, and from that time to the present only a few changes have been made. Railway commissions of many states have adopted the system, the last one being Ohio, as of Jan. 1, 1915.

Aside from this important work the association has been the means of bringing out in accountants the best that is in them by intelligent and wholesome contact; by creating a spirit and enthusiasm which has annually returned them to their duties with higher ideals of responsibility and usefulness; by creating a broader view of things involving both their personal welfare and the welfare of those with whom they are associated in interest, and by opening up to them countless other things of greater value connected with the utilities they represent. Each meeting of the association has been filled with thorough discussion of every subject presented, and it would be difficult to name at this time any one theme relating to the needs of the accountants during these past years that has not been brought to a satisfactory conclusion.

Every member of the association has always been assured of the fact that if he had accounting troubles and perplexities of his own, he would receive the most patient and interested hearing possible at the meetings and, in ninety-nine cases out of a hundred, would obtain a complete solution of his difficulties either at the meetings or through the proper committees or literature of the association. The organization has therefore been worth while and has proved beyond question the wise foresight and earnestness of the few who gathered in Cleveland in March, 1897. In its progress it of course owes much to the loyalty and valuable assistance of the managing heads of the railways, as well as the American Electric Railway Association as a whole.

In connection with this brief review it is proper to consider what this organization stands for under the present day methods of financing and management. Paul R. Jones, secretary Cities Service Company, New York, makes these pertinent remarks in the September number of *Doherty News:*

"When the public utility company was largely a family affair, simple accounting systems and methods were the rule. In recent years certain factors have raised the auditing department of the public utility organization from a purely clerical status to that of one of its most important departments. The need of immense volumes of capital for improvements and extensions in growing communities required a more comprehensive accounting system. The old system of accounting proved unsatisfactory to the financiers and to the bond and stockholders, as well as to the managements of public util-

*Abstract of a paper presented before the San Francisco convention of the American Electric Railway Accountants' Association on Oct. 5, 1915.

ities, and the rule-of-thumb methods were no longer accepted. The need of accurate information regarding the financial and operating conditions of the properties in which money was to be invested became apparent, and the accounting departments were called upon to furnish and devise satisfactory systems of accounting which would give the necessary information to the investors and at the same time assist the management in economical operations."

This statement briefly but distinctly covers the accounting requirements of to-day, and every accountant should not only realize his advanced position but should imbue himself with the spirit of making good—(1) by knowing the things required of him; (2) by setting about to do them; (3) by taking the initiative when he sees that ideas and facts he may possess would be valuable to his company, for under the business methods of to-day the thirst of aggressive managers is for the best there is, and (4) by maintaining unquestioned loyalty to his company, as in no other way can he merit a return of loyalty. This spirit has been the ruling incentive in all of the work of the association, and who shall say that its members are not making good after this struggle of eighteen years?

Prepayment Cars and the Accountant*

Non-Statistical Review of Prepayment Idea in Relation to Development of Car Construction, but Particularly in Relation to Devices for Collecting Fares—Fare Boxes Analyzed and Compared—Old Accounting Reports Too Often Still Prepared

By R. J. CLARK
Comptroller Metropolitan Street Railway, Kansas City, Mo.

IN general, prepayment cars have demonstrated their ability—all other things being equal—to increase earnings, reduce expenses, decrease accidents and provide an outlet for inventive genius that has in some cases deferred charges to obsolescence and in all cases resulted in the position of the company being improved with the traveling public. Yet if managers and accountants generally have been interested in the wonderful ingenuity and variety of the new types of car construction, what can be said of the equally great development made in collecting and accounting for fares. It is but natural that the accountant should become as much interested in the wealth and variety of fare devices as he is, or has been, in the development in car construction and reconstruction with the attendant effect on capital, income and expense accounts.

The first prepayment car was ordered by an American company in 1907, the chief idea, or the one receiving the greatest attention, being that of having the fare registered instead of accounted for by the employee. Since then it has been interesting each year to watch the development of the money-counting fare box and see how the inventors strive not only to overcome the mechanical difficulty of counting coins accurately according to value with the small differences in diameter between some of them, but also to overcome service and climatic conditions and the untiring efforts of dishonest conductors. These developments have continued until last year there were exhibited electrically-operated recording fare boxes, and no doubt at this convention recording fare boxes capable of receiving and recording not only coins but ticket fares are exhibited.

It is possible that the installation of fare boxes may overcome an objection sometimes heard that prepayment cars in spite of their separate and enlarged exits and entrances slow down the schedules and thus more than offset the saving effected by redeeming lost and overlooked fares, because the passengers having the exact fare ready may board and deposit it and pass on into the car without waiting for those needing change, as is now necessary where fare boxes are not employed.

The principle of fare-box collection is to relieve the conductor of all inconvenience and responsibility of handling cash and incidently to remove any temptations from handling it, to prevent substitution of fares, and finally to insure the company against carelessness or negligence on the part of even honest conductors whereby fares are lost through failure and oversight to ring them up. The development of this principle has resulted in two well-known types of fare boxes being placed on the market—the locked box and the non-locked recording fare box. The former receives and retains every fare deposited, and the conductor is supplied with change by satisfactory and inexpensive methods. The non-locked box records the fare, and the money is afterward released to the conductor for the purpose of making change. It is certain that with the prepayment type of car a fare box is essential or at least advisable.

There are two types of locked box, portable and stationary. The principle is exactly the same, i.e., the reception and secure retention of all money collected. The portable boxes cost about $10 each, but on account of having to provide a box for each conductor instead of a box for each car—as in the case of the stationary locked box and the non-locked recording box—about twice as many portable boxes are required as stationary boxes. In the case of the Metropolitan Street Railway, three times as many would be required on account of having to account for earnings between states.

The great advantage (exclusive of original cost and maintenance) of the portable fare box is that it can be removed from the stand on which it ordinarily rests on the prepayment car and at rush-hour periods be passed by the conductor to those passengers who cannot get near enough to the stationary locked or non-locked recording box to deposit their fares. Moreover, it can be used on cars not yet converted to the pay-as-you-enter type. From many years' experience the writer knows that their cost of up-keep is very small and the cost of operating, i.e., distributing, collecting and counting contents and keeping conductors supplied with change, would not be much more expensive than the present method. The lower original cost and lower maintenance charges of this type of box recommend it, and in addition it has not the intricate mechanism to get out of order or to be tampered with or manipulated by the dishonest conductor, that recording fare boxes have.

*Abstract of a paper presented before the San Francisco convention of the American Electric Railway Accountants' Association on Oct. 5, 1915.

The comparative advantages and disadvantages of the different types of fare boxes may be briefly summarized as follows:

Non-Locked Recording Boxes

Disadvantages or defects as compared with

(*a*) *Register System*

1. As these boxes are stationary it is possible to use them only on the prepayment type of car, and only about 60 per cent are of that type.

(*b*) *Locked Box (Portable)*

1. Johnson, Dayton and International, with the fare register each reccommends, would mean high installation costs and correspondingly high maintenance expense.
2. On account of the stationary feature it is not always possible for passengers to get near enough to deposit their fares.
3. Their adoption would perpetuate the present cumbersome system of handling cash, and it would be counted six times where it is now counted five and where it should be necessary to count it only once.

Advantages as compared with

(*a*) *Register System*

1. They embody the principle of fare-box collection—that is, they insure the company against carelessness and negligence, even on the part of honest conductors, whereby fares are lost through failure or oversight to ring them up, and they prevent the substitution of one class of fare for another by dishonest conductors.

(*b*) *Locked Boxes*

1. The coin, having passed through the machine, registers its value and is immediately available for change-making purposes.

Locked Boxes

Disadvantages or defects as compared with

(*a*) *Register System*

1. It is asserted that their operation would necessitate a system of collecting or distributing the boxes, counting the contents and providing the conductors with change. This objection is greatly exaggerated and is possibly caused by inexperience and the fear that naturally arises when a change is first contemplated.
2. It has been asserted that the company loses because slugs, mutilated coins and counterfeit coins are deposited as fares. This is not so serious a loss as might at first be expected. American silver is not mutilated to the extent that Canadian silver is, and yet the losses in Toronto were comparatively insignificant. As regards slugs, conductors are usually human enough to dislike having anything "put over" on them, and they watch very carefully the fares deposited and never hesitate to call the passenger's attention to an improper coin.
3. It has been stated that because no register readings accompany the fares deposited in the locked boxes, petty stealing is made possible in the treasurer's office. It is always difficult to eliminate this type of dishonesty, but during the writer's seventeen years' association with the Toronto Railway this happened only once. With a proper system installed this sort of petty thievery is practically impossible.
4. It has also been stated that there is the possibility of the box and contents being stolen, but this is not likely to happen any more frequently than hold-ups occur at the present time.
5. Another argument against the portable box is that the conductor may substitute a box for the company's regular box. This is a remote possibility, but such an occurrence has never been heard of.

[Note: The only serious objection in the writer's opinion to this type of box is the fact that as it becomes filled with nickels it may become heavy enough to cause the conductor inconvenience in operating on cars not converted to the pay-as-you-enter type.]

Locked Boxes

Advantages as compared with

(*a*) *Register System*

1. They relieve the conductor of all inconvenience and responsibility in handling cash, and incidentally remove any temptation that might arise from such a source. Moreover, they prevent the substitution of one class of fare for another and insure the company against carelessness and negligence even on the part of honest conductors, whereby fares are lost through failure or oversight to ring them up.
2. Cash is handled and counted only once and not five times, as now occurs.

(*b*) *Other Boxes*

1. While recording boxes prevent the substitution of fares and insure the company against carelessness, they do not relieve the conductor of the inconvenience and responsibility of handling cash or remove the temptation that arises from this to the extent that locked boxes do.
2. The locked boxes offer absolute security.
3. The locked boxes also have greater efficiency in that they can be used as stationary or portable boxes.
4. Their low installation and maintenance cost has already been mentioned.
5. The portable locked boxes can be used on any type of car without waiting for it to be converted to the pay-as-you-enter type. (The stationary locked box is limited in use to prepayment cars.)
6. They can be used on a route where two collections are made on each half trip.
7. Cash is handled and counted only once and not six times, as would be the case with the recording boxes.
8. In the early stages it was possible to "pick" the locks, but assurance is now given that the locks have been so improved that this is no longer the case.

Inventors and manufacturers have improved upon the register until they have exhibited registers which not only record the cash and different ticket fares on each trip but total same, print in the time, car number and conductor's number. It would appear that the time is approaching when the progressive accountant can fulfill his long, long wish to procure an earnings sheet on which neither pen nor pencil is required by the conductor or in the auditor's office. Possibly these things would have come without prepayment, but they did not, so that prepayment must be credited with instituting progressiveness in fare receiving and recording devices.

In the future, too, the prepayment car may be responsible for a transfer-issuing machine. The writer hopes that some one will invent a machine whereby without increasing the burden of the conductor he can record the number of passengers boarding and alighting from his car at different points along the route. Such a machine would be of incalculable value to the transportation department in regulating service.

All the past developments brought problems to the accountant. When he had only to accept the driver's turn-in and later merely count and record the contents of the receptacle, things were easy. But difficulties increased when he had to compare the conductor's turn-in with the register readings, and many and extensive checking systems were developed. Too often, however, in addition to making the new reports and meeting the new methods of accounting made necessary by the adoption of prepayment cars with fare boxes or improved recording registers, he has had to prepare statements and reports along lines laid down before the invention of these devices. The ordinary accountant revels in statistics and reports, but he delights to have his reports used. One of this year's committees has referred to the time and effort spent each day in preparing reports of daily earnings by routes, by car-hour, by car-mile, etc., although the accountant and the management know that these reports do not show traffic conditions.

Development of the Electric Railway*

Electric Railway History Divides Itself into Definite Characteristic Periods—The Development Has Been Accompanied by Marvelous Technical Progress—The Public Service Character of Electric Railways Is Coming to Be More and More Generally Understood

By JAMES H. McGRAW
President McGraw Publishing Company, Inc., New York

A TREMENDOUS industry has been created in about thirty-five years. Its inception was largely due to American genius, and its early development to American courage and capital. It has kept pace with the best in American industrial life and has gone hand in hand with other important developments that have made this country the leader of the world in material prosperity and those things that make for the convenience and comfort of its people.

The magnitude of this great industry is indicated by the present capitalization of more than $4,500,000,000, exclusive of the large amount of capital invested in the immense industries required to supply these railway companies with apparatus in the way of cars, electrical equipment, generating apparatus and rails. But it is not alone in the increase in passengers carried by these railways, from 2,023,010,292 in 1890 to more than 12,000,000,000 in 1912, that the importance of the electric railway as a factor in the comfort, health and prosperity of the citizens of this country can be measured. The new means of transportation thus created gave a quicker and more comfortable way of traveling from home to place of business, from city to country and between adjoining cities.

The history of the development of the electric railway divides itself naturally into three periods which appear in the history of all great developments. First there is a period of preparation in which mystery veils important physical and economic facts and laws, but hardy and curious pioneers gradually bring these facts and laws to light. Then comes a time when invention crowds invention as the accumulated knowledge demands application and, in fact, we may call this the period of application. And finally there comes the period of adjustment as the world learns to use effectively the new tools placed in its hands.

Period of Preparation

In the period of preparation I shall pause only long enough to pay my tribute to those now nearly forgotten pioneers whose scientific curiosity lead eventually and naturally to important inventions. Hardly had Faraday and Henry discovered the laws of the electromagnet and the principles underlying the electric motor before attempts were made to apply the new motive power to transportation. Davidson, Davenport, Farmer, Page and others constructed operative electric cars but were handicapped by the limited supply of electric power available, the only source in their day being the primary battery. Professor Page, under the patronage of our government, constructed a high-speed electric locomotive in 1857 and demonstrated the possibility of electric traction. The commercial future of the electric railway, however, was determined by the invention of the dynamo when the nineteenth century was about two-thirds passed, and then practical inventors hastened to apply the crude experience of the earlier pioneers.

Period of Application

Most of my hearers will remember that about 1888 Frank J. Sprague had just completed the installation of an electric railway at Richmond, Va., the largest of the kind by far in the country. His principal competitors were Stephen D. Field, formerly a resident of this city, Charles J. Van Depoele, the brilliant Belgian whose early death was a great loss to the industry, Leo Daft, still living, Sidney H. Short, who was later to play an important part in the electrification of the tramways in Great Britain, and H. H. Bentley and Walter H. Knight, who together built the first underground electric conduit railway in the country, on Euclid Avenue in Cleveland. The work of these men marked the beginning of the period of application.

The statistics of 1890 show a total length of electric railway track of 8123 miles, of which 1262 miles, or 15 per cent, had been equipped for electric operation and 488 miles with cable, while on 5661 miles animal power was still used and steam power was employed on 711 miles. Some 2,000,000,000 passengers were being transported every year and the gross income from all sources was a little more than $91,000,000 annually.

The next twelve years were characterized by expansion and great hopes. During this time most of the city railways in the country were changed over to electric operation and many lines were projected into the suburbs, although the development of the system of polyphase transmission at high tension with converter substations had not proceeded far enough at that time to make the modern interurban railway possible. The total number of miles of track of street railways in-

*An address delivered before the annual convention of the American Electric Railway Association in San Francisco, on Oct. 8, 1915, on the occasion of the presentation of a testimonial from the Panama-Pacific Exposition Company to the associations commemorative of the 1915 meeting.

[NOTE—In opening his address, the speaker referred first to the important influence exercised on the industry by the American Electric Railway Association and the allied Manufacturers' Association. He then gave a short account of the first meeting of the Railway Association held in Boston in 1882, at which no papers were read, following this by stating some titles of papers presented at early meetings. He also mentioned the organization of the American Electric Railway Manufacturers' Association at Saratoga in 1903. He then continued in part as above.—EDS.]

creased from 8123 to 22,577, or an increase of 178 per cent. Of these 22,577 miles, 21,908 miles were equipped with electricity, leaving only 259 miles operated by animal power, 241 miles by cable power and 169 miles by steam power. During this period also the number of passengers paying fare had much more than doubled, increasing from 2,023,010,202 to 4,774,211,904. At its end there were 140,769 electric railway employees drawing annually $88,210,165 in salaries and wages.

Period of Adjustment

The satisfactory development of electric railway traffic along well established lines is indicated by the increase in the number of fare-paying passengers to 7,441,144,508 by 1907, a 56 per cent increase, with a nearly proportionate track mileage increase from 22,577 to 34,403, or 52 per cent. There were 221,429 employees who received annually $150,991,099. But the corporate organizations inherited from the horse-car days were found to be as crude and to grow obsolete almost as rapidly as the apparatus used during those times. It soon became evident that the small property was much more expensive to operate proportionately than the larger one, and consolidation became the order of the day. In fact, the half decade from 1902 to 1907 might be called the period of consolidation, and in the latter year the existence of more than one electric railway company in any city was exceptional.

Then came a period of regulation which might be termed the characteristic of the next half decade, from 1907 to 1912. Up to ten years ago railway companies, both steam and electric, had been considered by the public as well as their owners more in the light of private enterprises than of public utilities. But a change had to come. The growth of the railways had made the public more dependent upon them and led to a perfectly legitimate demand that the public should have something to say as to the operation of these lines and at the same time should throw its protection about them by preventing them from becoming the victims of destructive competition. Publicity of accounts was also required. For many years previous a few states had had boards of regulatory commissions known usually as railroad commissions. In most states, however, the power of this board was enlarged or a new board was established under the title of Public Service Commission, and the responsibility of the company to the public as well as the public to the company was more generally recognized.

As I intimated at the outset, we are now in a period of adjustment. The importance of the modern railways to civic development has been demonstrated. The electric railway is one of the most important factors in the growth and prosperity of any city. It has become so necessary to the life of the ordinary person that, while in 1890 the average number of times which every person in the entire country paid fare on the street cars each year was only thirty-two, but this figure rose to sixty-one in 1902, to eighty-seven in 1907 and to 100 in 1912. To render this service required 282,461 employees who were paid $200,890,939 annually.

An important element of the progress described has been in the coincident technical development. In the generation of power, for instance, the sizes of the units are constantly on the increase, and whereas a decade ago 5000 kw. was about the maximum for a single machine, the builders of turbine generators are now producing units of six or seven times that size. Improvements in the art of insulation manufacture and of high-tension transmission-line construction have proceeded at equal pace. Voltages of from 10,000 to 15,000 were regarded as high not very long ago, but to-day plants are being designed for voltages of 100,000 or more. Similarly inventive genius has been at work in improving the methods for transforming this high-tension energy to lower voltages for distribution purposes.

In my belief, we are passing now only across the threshold of an enormous development in the application of electricity to the transportation problems on the continent. Indeed, the wide diversity of the possibilities in its use under heavy electric traction conditions has received a very practical illustration during the past year, through the opening of the new lines of the Norfolk & Western Railway and of the Pennsylvania Railroad in and near Philadelphia, and the adoption of the same motive power for one of the links in the transcontinental line of the Chicago, Milwaukee & St. Paul Railroad.

It would not be fitting for me to close this review without a reference to the growth of the idea of the public service character of electric railways as well as other utilities. Their primary obligation is now recognized to be that of giving good service, and this idea is the foundation of the code of principles which was adopted by the American Electric Railway Association as a guide to its members just one year ago. The railway is the servant of the public, but the public must not forget that the servant is worthy of his hire. The railways sell transportation but they give service, by which I mean those benefits which come with good transportation. For example, the agency which permits the city toiler to live in the country, which raises the value of real estate, which reduces physical fatigue and which conserves the worker's time is giving service.

And there is need for more service which will be furnished if capital can be attracted to the railway business. The population of this country is growing rapidly, but it is a well-known fact that the needs for transportation in any community increase in even a greater ratio than the population. Nevertheless, the agencies to supply this need are lagging behind. Unless capital can be assured of a fair return on a fair investment in these properties, it will go to other fields. Vast as are the figures of the traffic done by the electric railway companies of the country, but few cities are yet adequately supplied. The possibilities in the way of a light package express and freight service within the boundaries of the urban community and between city and country have hardly been touched. A few trunk lines have installed electric locomotives, but many more would find it advantageous to do so.

The foundation of the civilization of the Roman Empire lay in the magnificent roads which it built connecting its provinces and main cities. Wherever Roman influences went the roads followed, making access easy from one part to another and carrying not only the soldiers of Rome, but its greater armies of peace and commerce. With the boundless possibilities of this country in the way of progress and undeveloped lands improvements in this modern means of communication between the city and country and between different parts of a city should be encouraged. With the close of the present terrible war in Europe this country is bound to receive, in my opinion, the largest flood of immigrants which it has ever experienced. From the desolated fields of Europe and from its grinding burden of taxes man will come to this land of ours where those of different nationalities and different tongues live in amity together. We must provide for better means of communication and transportation than are now possessed so that our transportation facilities will keep pace with the needs of the increasing population. If this is done I believe that we may look forward to the years following the close of the war as the most prosperous which our country has ever known.

The American Association Convention

The Delivery of Two Striking Addresses, the Reduction in Section Members' Dues, the Proposal to Enlarge the Allied Family, the Presentation of Reports on Cost of Passenger Transportation Service and Taxation Matters Were Notable Features

Tuesday Morning Session

PRESIDENT C. LOOMIS ALLEN opened the thirty-fourth annual convention of the American Electric Railway Association on Tuesday, Oct. 5, 1915, and introduced as the representative of Hon. Hiram W. Johnson, Governor of California, Hon. Chester H. Rowell, editor of the *Fresno Republican*, who delivered the address of welcome. He referred to the invention of cable cars used for climbing San Francisco hills as the first mechanical street transportation. Dwelling upon the subsequent sociological development, he said that modern city transportation has meant the growth of cities, the breaking up of slums and has made possible the industrialization of modern life. Modern sanitation and modern transportation, which make it possible to concentrate work and distribute residences, are the two things that make the modern city possible. They have a social value beyond estimate.

President Allen then read his annual address which is abstracted elsewhere in this issue. On motion of C. L. Henry, Indianapolis & Cincinnati Traction Company, the reading of the executive committee report was dispensed with and Secretary-Treasurer E. B. Burritt read a recapitulation of his report, which was accepted. Mr. Burritt first outlined briefly the status of the association in regard to membership and finance, and told something of the routine work of his office. He also gave the usual data, summaries of which appear in the accompanying table. He stated that comparatively few resignations had been received as a result of the increase in dues. Also fifteen new company members and 626 new individual members had been received during the year, the total of company section members now being 853.

The principal activity, in point of time, of the bureau of fare research has been the making of a number of special studies concerning the various phases of the cost of passenger transportation service. The collection of financial and statistical data and of information concerning the progress of various rate cases has been continued and information has been furnished to a number of member companies and to association committees. The information collected is an integral part of the association files.

The information bureau received 377 requests for information from 184 companies, in complying with which a number of special investigations were necessary. The bureau has followed closely the spread of the jitney movement and has endeavored to keep its files up to date on all phases of this problem. It has on file practically all ordinances enacted so far and in addition a number of legal decisions relating thereto as well as the rules formulated by a number of public service commissions.

On account of the fact that the space occupied by the association at the United Engineering Societies Building was not adapted to the requirements of the office force, after a thorough investigation by a special committee the new quarters at 8 West Fortieth Street, New York, were secured. As a result the association has an efficient working layout at a saving of something over $1,200 annually in rent.

CONDENSED FINANCIAL STATEMENT

Cash on hand, Oct. 1, 1914	$5,175.80
Receipts, year ending Sept. 30, 1915	87,164.67
Total cash	$92,340.47
Expenditures during year ended Sept. 30, 1915	81,675.69
Balance in bank, Sept. 30, 1915	$10,664.78
Bills receivable Sept. 30, 1915	8,209.68
Total	$18,874.46
Bills payable, Sept. 30, 1915	9,388.71
Balance as of Sept. 30, 1915	$9,485.75

MEMBERSHIP STATISTICS TO SEPT. 30, 1915

	This Year	Last Year
Company members enrolled	364	379
Number which have paid dues	343	361
Individual members enrolled	3,012	2,884
Number who have paid dues	2,787	2,762
New company members	16	23
New individual members	630	900

Program for Tuesday

ADDRESS OF WELCOME—
Annual Address of the President.
Annual Report of Executive Committee.
Annual Report of Secretary-Treasurer.
Reports of Committees:
- Subjects—C. L. Henry, chairman.
- Education—H. H. Norris, chairman,
- Representing Association at the American Good Roads Congress—E. C. Faber, chairman.
- Valuation—L. S. Storrs, chairman.
- National Joint Committee on Overhead and Underground Line Construction—W. J. Harvie, delegate.

ADDRESS—"Welfare Work," Jesse W. Lilienthal.
Reports of Committees (Continued):
- Company Membership—James E. Gibson, chairman.
- Company Section Medal—S. G. McMeen, chairman.
- Federal Relations—Arthur W. Brady, chairman.
- Anthony N. Brady Medal—A. W. Brady, chairman.
- Compensation for Carrying United States Mail—Capt. A. R. Piper, chairman.

Program for Wednesday

Reports of Committees:
- Electrolysis—Calvert Townley, chairman.
- Ways and Means—J. H. Pardee, chairman.
- Company Sections and Individual Membership — Martin Schreiber, chairman.
- Dues of Company Section Members—J. D. Mortimer, chairman.
- Changes in Constitution and By-Laws —R. I. Todd, chairman.
- Relations with State and Sectional Associations—R. P. Stevens, chairman.
- Public Relations—Thomas N. McCarter, chairman.

ADDRESS—"Evils of Government Ownership," Hon Jonathan Bourne, Jr.
Reports of Committees (Continued):
- Operation of Motor Vehicles—B. I. Budd, chairman.
- AERA Advisory — H. C. Donecker, chairman.
- Insurance—H. J. Davies, chairman.
- Standards for Car Loading—S. W. Huff, chairman.

Program for Thursday

Reports of Committees:
- (a) Cost of Passenger Transportation Service—including Report of Bureau of Fare Research—J. D. Mortimer, chairman.

ADDRESS—"The Foundation Principles of the Valuation of Electric Railways," Bion J. Arnold.
General Discussion.
Reports of Committees (Continued):
- Taxation Matters—T. W. Wilson, chairman.
- On Recommendations contained in President's Address.
- Resolutions.
- Nominations.

Unfinished Business.
Election and Installation of Officers.

Program for Friday

Presentation of bronze plaque by C. C. Moore, president Panama-Pacific International Exposition, to C. Loomis Allen, president American Electric Railway Association, followed by an address on "The Development of the Electric Railway," by James H. McGraw.

Sixty-seven committeees appointed by the five associations have held seventy meetings during the year. During the year eighty companies sent in 17,227 reports to the Hooper-Holmes Information Bureau and the bureau returned reports on 2135 names.

After the acceptance of the report President Allen announced as members of the convention committee on resolutions C. S. Sergeant, Boston Elevated Railway; J. J. Stanley, Cleveland Railway, and Jesse W. Lilienthal, United Railroads of San Francisco.

On motion of Mr. Henry, naming the following committee on recommendations contained in the president's address, the convention confirmed the nomination of A. W. Brady, Union Traction Company of Indiana; T. N. McCarter, Public Service Railway; E. W. Rice, General Electric Company; Guy E. Tripp, Westinghouse Electric & Manufacturing Company, and Gen. George H. Harries, Omaha Electric & Power Company.

C. L. Henry then read the report of the committee on subjects, including the mid-winter meeting program, which the committee had arranged, and stating that the San Francisco program had been prepared after several meetings. The report was signed by the chairman and M. C. Brush, H. C. Clark, L. P. Crecelius, R. E. Danforth, C. S. Mitchell and William Tichenor.

In the absence of chairman H. H. Norris, Electric Railway Journal, President Allen commended to the attention of members the printed report of the committee on education. In its report the committee explained that the courses for shop, power-house, line and track men, approved last year by the association, had been inaugurated, and that on July 1, 1915, the following number of students were engaged in the courses mentioned: Electrical shop courses, thirty; mechanical shop course, six; combined mechanical and electrical course, twelve; line and track-work course, six; power-house and substation course, forty-one, and combined line and track-work, and power-house and substation course, four. Employees of forty-four electric railway companies are represented in the enrollment. The committee pointed out the limitations of correspondence construction, warning students against expecting too much from it, but pointing out how gratifying results can be achieved.

The report was signed by H. H. Norris, chairman; H. A. Bullock, Martin Schreiber, W. L. Robb, A. M. Buck and V. Karapetoff.

The report of the committee representing the association at the American good roads congress was not read at the appointed place on the program but an abstract will be found later in this report.

VALUATION

The report of the committee on valuation was read by C. S. Sergeant. In the report the committee recognized the general dissatisfaction with the existing methods of valuing public utilities, the diversity of opinion among public service commissions and the lack of consistency in the decisions of state and federal courts. To establish a set of sound and defensible principles out of this mass of conflicting opinions will require a vast amount of painstaking labor in the accumulation and critical examination of the material for the purpose of determining whether principles can be evolved which have not heretofore governed the consideration of this question. This will require the work of a specialist and necessarily a fund to carry on such work. It would be advisable to have the report of the specialist critically examined, not only by the members of the committee, but by the representatives of utilities not represented on the committee, in order that all viewpoints may be considered. The committee recommends a preliminary appropriation of $500 to create a fund for starting the work. Outside contributions could be obtained for carrying the work to a conclusion.

The committee has made arrangements for the publication of a complete and up-to-date bibliography on the subject of valuations for distribution to member companies, the funds for such work having been appropriated by the executive committee at its last meeting.

The committee's report was signed by L. S. Storrs, chairman; H. H. Crowell, Gerhard Dahl, C. S. Sargent, W. H. Sawyer, J. N. Shannahan, Martin Schreiber, B. E. Tilton and C. G. Young.

Secretary Burritt next read the report of the national joint committee on overhead and underground line construction, which is abstracted briefly below:

As the accredited representative of the American Association on the national joint committee on overhead and underground line construction, W. J. Harvie reported that eight meetings had been held and that the following standing sub-committees had been appointed: On underground and undergrade crossings; on electric wires over electric railway tracks; on trolley contact wire crossings; on structural works; on insulation; on conductors, and on clearances. The meetings have been largely attended and, as the committee is large, a committee on plan and scope was appointed to direct and co-ordinate the work of the sub-committees. The sub-committees are now actively engaged in a study of the newly-suggested specifications for wire crossings for public utilities, produced by a committee representing the different classes of utilities in interests of the State of Pennsylvania, and recommended to the Public Service Commission of that State by that committee for adoption.

Jesse W. Lilienthal, whose address on welfare work was the notable feature of the day, was then introduced by President Allen. An abstract of this address appears earlier in this issue. As his address closed, Mr. Lilienthal was greeted with an outburst of the warmest applause, which was continued until he was obliged to rise in acknowledgment. President Allen then called upon James H. McGraw, Electric Railway Journal, to lead the discussion.

Mr. McGraw who, like the others present, had not had an opportunity to read the paper in advance and had not expected to be called upon to discuss it, said that no offhand statement could give adequate expression to what he felt regarding the paper read by Mr. Lilienthal. It was not a mere statement of welfare work, not a mere statement of personal experience covering two years as president of this great property. The address, said Mr. McGraw, points the way, it goes to the heart of the greatest problems confronting the electric railways. Their problems to-day are serious and many, from many angles more serious than ever before. It has been said that no public utility can permanently succeed so long as it has the public sentiment of its community against it. Mr. McGraw dwelt upon Mr. Lilienthal's code advising the telling of the whole story honestly and fairly. The electric railway properties, he said, should and must be saved. They can only be saved through the proper winning of public support. He believes, as all do who have given this subject of public relations some thought, that public approval can be won. He predicts that the method adopted by Mr. Lilienthal in San Francisco will win out so that public sentiment in the city, which has been so bitter and so hostile toward the electric railway corporation, will come around and the public will thank it for what it has been doing and the way in which it has been doing it.

Gen. George H. Harries was next called upon to discuss the paper and said there was no question as to the accuracy of reasoning set forth with uncommon clear-

ness and a frankness for which all should be grateful. Thanks to the continued preaching of a few faithful apostles, the policy of open and frank discussion has been welcomed in the association meetings, as an example of the possibility of winning public approval to this policy of actively seeking to educate the public to a knowledge of the companies' position. He cited a personal experience with a property which had been managed in the old-fashioned way, quoting the proverb of the British army to the effect that an Afghan properly attacked is less formidable than an Afghan attacking and said, there is nothing in being afraid of your community.

He had taken the sting out of an editorial accusing the company of being in politics by printing a vigorous statement of its impartiality and lack of interest in politics, in paid advertisements in all the newspapers, including the one running the editorial. The Businessmen's Association is now conducting, through a committee with the assistance of expert investigators, a study to determine the cash cost of the property from the beginning and will next consider with expert assistance the question of a fair return on the investment. General Harries said that this property will ultimately have peace and a square deal. Absolute honesty and frankness based on a desire to serve will win.

Chairman James E. Gibson presented the report of the committee on company membership. In its statement the committee merely reported briefly upon its activities during the year in securing additional company members for the association. The report stated that fifteen companies had joined during the year, and that those still remaining outside of the Association are all small companies, and it is probable that they will gradually be absorbed into membership.

The report was signed by James E. Gibson, chairman; J. J. Caufield, C. S. Ching, F. W. Hild, George L. Radcliffe, Samuel Riddle, M. S. Sloan and R. W. Spofford.

FEDERAL RELATIONS

General Harries then read the report of the federal relations committee. The report first called attention to the fact that the various measures which were strongly urged during the previous year and occupied much of the time of the committee were scarcely heard of during the past year. It cannot be assumed that these measures have been permanently abandoned, but doubtless Congress will be slow to enact legislation which will add to the embarrassments and burdens of carriers in these unusual times. The committee, however, referred to the Cummins act, approved on March 14, 1915, providing that the shipper of baggage and other merchandise shall state in writing the value of the goods. While this act was aimed primarily at steam railroads it is also of interest to the electric carriers.

The committee's report also contained an extended reference to the hearing held by the Interstate Commerce Commission on Dec. 18, 1914, at the request of the association in regard to reporting by electric carriers of purely urban accidents and the decision of the commission that such accidents need not be reported. Thus far the Interstate Commerce Commission has not taken up the valuation of the electric lines. The committee finally urged the importance of securing recognition by Congress and the Interstate Commerce Commission of substantial differences between electric and steam railways. When federal legislation affecting carriers is proposed, the operation of steam railroads is ordinarily in mind, but there is always danger that the wording of the act will include electric lines as well.

The report was signed by A. W. Brady, chairman; F. W. Brooks, L. S. Cass, E. G. Connette, H. H. Crowell, Frank R. Ford, E. C. Foster, George H. Harries, Paul Shoup, L. S. Storrs and J. T. Wessels.

The company section gold medal was next awarded to J. N. Bury, local superintendent Manila Electric Railroad & Light Company, and George G. Whitney, Washington Railway & Electric Company, Washington, D. C., received honorable mention.

Before closing the session President Allen announced the appointment of R. I. Todd, Indianapolis Traction & Terminal Company, Indianapolis, Ind.; L. C. Bradley, Birmingham Railway, Light & Power Company, Birmingham, Ala., and Gen. George H. Harries as a committee on nominations. The two committee reports remaining on the morning's program were put over for early attention on Wednesday.

Wednesday Morning Session

At the American Association held Wednesday morning, Oct. 6, 1914, the first business was the presentation of the report of the committee on the Anthony N. Brady medal, by C. S. Sergeant. This report recommended a few slight changes in the conditions of competition for the medal.

The report of the committee on compensation for carrying United States mail was then read by W. H. Collins, Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.; and on the president's recommendation the convention moved a vote of thanks for the courteous consideration given the committee by Senators Bourne, Weeks and Bankhead. An abstract of this report follows:

COMPENSATION FOR CARRYING UNITED STATES MAIL

The report of the committee on compensation for carrying United States mail consisted of a résumé of its activities during the year. In pursuance of the work begun under the preceding committee, data sheets were sent out early in October, 1914, by the bureau of fare research, to which was delegated the work of compiling and preparing the needed detailed information. The results of the analysis handed to Senator Bourne, chairman joint Congressional committee, on Nov. 11, 1914, included the following material:

1. Letter of transmittal, containing draft of proposed bill and Exhibit I, showing mail revenue together with operating revenues, expenses and taxes, and car-miles for all companies rendering full and compartment car service.

2. Exhibits II and III, consisting of an itemized study of costs as prepared by the Boston Elevated Railway and the Omaha & Council Bluffs Street Railway.

3. Exhibits IV and V, consisting of a copy of a previous communication to the Hon. John A. Moon, chairman of the House committee on post-offices and post roads (dated Dec. 11, 1913).

After Nov. 11, 1914, a large amount of additional information was furnished to the joint Congressional committee, and a second conference was held in Washington on Nov. 30, 1914, at which a tentative draft of a bill prepared by the joint Congressional committee was presented and discussed. This bill was further

analyzed and criticised in a letter to Senator Bourne, dated Dec. 2, 1914, and substitute provisions were therein proposed.

Prior to expiring on Dec. 1, 1914, the joint committee presented to Congress on Nov. 30, 1914, a preliminary report, reading in part as follows:

"Early in our investigation hearings were granted to representatives of electric lines, but we found that conditions applicable to transportation over steam roads and over electric and cable car routes were so entirely different as to necessitate independent investigation and reports. Since our report of Aug. 31, 1914, we have devoted our attention to the matter of transportation over electric and cable car routes and have collected a vast amount of data and worked out a tentative plan. We find that the time has been insufficient to verify the data collected and to satisfy ourselves of the desirability of the tentative plan evolved. * * * Should Congress desire the electric and cable mail pay study completed it will be necessary to extend the life of our joint committee. In such event, we respectfully recommend that the time for submission of our final report be extended from Dec. 1, 1914, to on or before April 1, 1916."

The life of the joint committee, however, was not extended and it expired on Dec. 1, 1914. Pending developments concerning the continuance of this committee, a bill has been prepared embodying the results of the studies which had been made. It was planned in case the committee was not continued to have this bill introduced in Congress by one of the members of Senator Bourne's committee, as representing, although of necessity unofficially, the conclusions reached by the joint committee. It appeared later that this was not feasible, and under date of Jan. 11, 1915, Henry S. Lyons for the A. E. R. A. committee submitted to Senator John W. Weeks of the Senate post-office committee certain amendments to the post-office bill, H. R. 19,906, the adoption of which would not have placed the handling of United States mail by electric lines on a remunerative basis, but would have helped to lessen the loss which the present basis of pay constantly entails. At the same time there was submitted to Senator Weeks by the bureau of fare research certain desired information, together with a copy of a proposed bill approved by the A. E. R. A. committee, authorizing and directing the Postmaster-General to adjust the compensation to be paid electric and cable car companies for the transportation of mail. A conference was held in Washington on Jan. 29, 1915, which availed nothing and Congress adjourned without affording the electric railways relief.

Since that time the activities of the A. E. R. A. committee were confined to the giving of such assistance as possible to individual companies in their efforts to have their compensation for carrying United States mail placed by the Postmaster-General on a less unsatisfactory basis. There is said to be hope for ultimate success along the lines on which it has been working, and it is recommended that provision be made for further prosecution of the work.

The report was signed by A. R. Piper, chairman; W. H. Collins, P. N. Jones, H. S. Lyons, J. K. Choate, T. C. Cherry and H. A. Nicholl.

Next the association received and accepted with businesslike dispatch the reports of the committees on electrolysis and ways and means, read by the secretary, on company sections and individual membership, read by E. J. Blair, Chicago Elevated Railways, on dues of company section members, read by W. F. Ham, Washington Railway & Electric Company, Washington, D. C., on changes in constitution and by-laws, read by R. I. Todd, Indianapolis Traction & Terminal Company and on relation with state and sectional associations. These reports are abstracted below.

ELECTROLYSIS

The American Association committee on electrolysis stated that it has stood ready to act upon any matters which might properly come before it, but has felt that it could best accomplish the purposes for which it was appointed by keeping in touch with the activities of a similar committee of the Engineering Association and with the association delegates to the joint national committee to consider electrolysis. The joint national committee is making satisfactory though slow progress in harmonizing the various interests, while engineering and technical questions were understood by the committee to be under study by the Engineering Association committee on electrolysis. The continuation of the American Association committee was recommended. This report was signed by Calvert Townley, chairman; R. P. Stevens and L. E. Woodbridge.

WAYS AND MEANS

The committee on ways and means of the American Association reported that at the 1914 convention there was approved an amendment to the constitution and by-laws by which the dues of the company members of the association were increased from a minimum of $15 and a maximum of $600 to a minimum of $25 and a maximum of $750. The new scale became effective as of the fiscal year 1915, during a period of great financial depression which has seriously affected the revenues of the railroads throughout the country. Despite this, however, the member companies accepted the new scale with barely a word of complaint, thus manifesting not alone that they were satisfied that the increase was a necessity but also that they were convinced that the returns justified the additional expenditure.

The substantial character of the returns to the association from company members under the new arrangement is shown by the fact that during the entire year, ended Sept. 30, 1914, the receipts from company annual dues amounted to $38,328, whereas up to Sept. 13 of this year the total of dues from company members was $51,806, an increase of $13,478 or 35 per cent, with seventeen days of September, 1915, remaining in which to obtain additional collections.

The resignations during the year owing to dissatisfaction with the increased dues were, without exception, from companies paying comparatively small amounts of dues, the highest paid under the old scale by any one of these companies having been $100. The total number of companies withdrawing on this account was twelve, the total amount of money involved, on the basis of the new scale being $900. The total number of companies withdrawing during the year was thirty-five, which, on the basis of the new scale of dues means a loss to the association of $2,675, this, of course, including the amount which would have accrued from companies which resigned because of the institution of the new scale. Another very satisfactory condition is the small number of delinquent member companies on Sept. 13, 1915, these totalling but twenty-one, with a maximum amount of dues involved of $1,775.

The individual membership, while showing no increase in the net, should be considered as satisfactory, inasmuch as during the year between 600 and 700 new members were enrolled, which would have brought about a substantial increase in the total had it not been for the loss of Manufacturers' Association members because of their failure to attend the San Francisco convention.

The bureau of fare research has been maintained throughout the year and data of permanent usefulness have been developed by its director. It was the understanding that the association would appropriate $2,500 per year toward the maintenance of this bureau and that the balance, up to a maximum of $5,000, would be contributed by various member companies. The members of the committee on the cost of passenger transportation service have already contributed $2,000 toward the cost of the bureau, but it has not been thought wise to ask for contributions from the members generally in view of the fact that the receipts of many of the companies have shown serious reductions in the past year. It is expected, however, that the committee on the cost of passenger transportation service will underwrite the bureau to some further extent so that, if possible, the resources of the association will not be drawn upon for anything more than the total amount originally set aside for the maintenance of the bureau.

The ways and means committee indorses the proposal to reduce the dues of members of company sections. This would undoubtedly result in material increases in the individual membership of the association, as well as broadening substantially the scope of its influence. The recommendation contemplates the distribution only of the magazine *Aera* to such members, therefore reducing the expense to the association, though not altogether proportionately to the reduction in dues from $5 to $2. The increased membership, however, will readily compensate for this reduced fee.

Measures of economy have been practised during the year just closed, the most obvious of which is the removal of the headquarters of the association from the United Engineering Societies' Building to the building at 8 West Fortieth Street, New York City. This change brought about a gratifying reduction in the amount of rent per year and in addition provides a more convenient and advantageous layout of space for the headquarters officers.

The report was signed by J. H. Pardee, chairman; H. C. Clark and H. C. Donecker.

COMPANY SECTIONS AND INDIVIDUAL MEMBERSHIP

The American Association committee on company sections and individual membership reported that the membership of the association has been increased during the year to approximately 3700 and that the list of company sections has been increased by the addition of the Chicago Elevated Railway Company section, No. 6, which, beginning on April 17 with 139 members, has increased its membership to 178. A number of companies are interested in the formation of sections. The committee issued during the year a pamphlet explaining the advantages of company section work. The committee indorsed the recommendation of the special committee on company section dues, stating that the proposed lowering of the dues would remove the objections of a large number of railway employees to affiliation with the association.

The report was signed by Martin Schreiber, chairman; E. J. Blair, H. A. Bullock, B. C. Edgar, H. H. Norris, R. P. Stevens and G. G. Whitney.

DUES OF MEMBERS OF COMPANY SECTIONS

The American Association committee appointed to consider the matter of dues paid by members of local company sections, recommended the creation of a class of membership to be known as company section members to which any employee of a member company shall be eligible. It was recommended further that the dues should be $2 per year, that each such member should receive a copy of the association magazine and that all members of sections should be entitled to vote for officers of company sections under the conditions prescribed by the section by-laws.

The committee pointed out that company section membership at the present dues will probably be limited to those employees who may be drawn from the supervisory force, or who by virtue of technical training feel that they are entitled to look forward to supervisory positions in the future. The present dues place membership beyond the reach of all but the better-salaried employees. Utility of membership in a company section is not appreciated by the ordinary run of mechanics and trainmen. Electric railway operation presents many problems, the control of which lies largely with the employee. One of the prime purposes which led to the inauguration of the company section movement was to give an opportunity for discussing these problems, and this requires that the membership be drawn liberally from all departments and occupations in the employer companies. The committee did not believe that subsidies in the form of payment of parts of annual dues for employees would solve the problem, but they believe that a reduction in the dues as recommended would do so.

CHANGES IN CONSTITUTION AND BY-LAWS

The committee on changes in the constitution and by-laws of the American Association recommended the changes necessary to provide for a new grade of members to be known as company section members, as recommended by the special committee appointed to consider the matter of dues of individual members who are members of company sections, and to permit revision of the constitution and by-laws at special as well as regular meetings.

In place of specifying the publications which are to be received by company section members, the committee recommended that this be left to the discretion of the executive committee in order that these members might be furnished with as many publications as can be afforded. With the exception of the implied limitation as to the publications to be furnished to company section members, it was recommended that they have all the privileges of individual membership.

The purpose of the recommended changes as to amendments was to make it possible to amend the constitution and by-laws at the mid-year meeting. In order, however, to safeguard the by-laws, it was recommended that in all cases the same provision be made as previously existed in connection with changes in the constitution, namely, that a copy of the proposed amendment shall have been sent to each of the active members at least thirty days prior to the date of the meeting at which it is to be acted upon.

The report was signed by R. I. Todd, chairman; L. S. Storrs and E. B. Burritt.

RELATIONS WITH STATE AND SECTIONAL ASSOCIATIONS

At a meeting of the committee to consider relations with state and sectional associations on Jan. 11, 1915, it was decided to collect information concerning electric railway associations touching on the location, functions, affiliations, dues, costs, membership, etc., in order to determine, if possible, ways and means by which the expense to members of associations might be lessened and the duplication of work eliminated.

As a result of a consultation with T. C. Martin, executive secretary of the National Electric Light Association, concerning the working of that association in

its geographical sections, the committee concluded that the plan maintained in that association is impracticable so far as the American Electric Railway Association and other electric railway associations are concerned. At this time there does not appear to be any feasible way of affiliating state and sectional organizations with the national association involving the matter of dues.

The committee suggested that the association arrange to insure the attendance at the annual meetings of representatives of the various associations so that the work of the year in different localities can be discussed. If the suggestions offered later are carried out, at subsequent conventions there will be better results as to attendance of association representatives at such meetings. It was further recommended that the executive committee of the American Association arrange to insure the attendance at the annual meetings of each state and sectional association of a representative of the American Association who will set forth the need for co-ordination of effort and explain the methods by which this may be brought about.

Another suggestion was that the committee on sectional associations be instructed to consider the development of standards to the end that matters of standard practices or equipment may develop ultimately through the American Association and thus avoid the adoption of a standard by a sectional association which is inconsistent with one already approved by the national association. If the electric railways of the country were a unit in pushing the adoption of a basic code of operating rules the advantages to this industry would be apparent.

The committee also recommended that there be instituted a plan by which the state associations will keep the national headquarters in touch with legislation in their respective districts. Laws of the utmost importance to railways are constantly being passed in the various states. The association headquarters could serve as a clearing house for information of this kind.

The report was signed by R. P. Stevens, chairman; H. C. Donecker, Patrick Dubee, Ernest Gonzenbach, J. F. Hamilton and C. L. S. Tingley.

The report of the committee on public relations was next read by Charles N. Black, United Railroads of San Francisco. It referred to the appointment of four subcommittees at the meeting held in New York on Jan. 25, 1915. On account of the illness of J. H. Pardee his sub-committee had been unable to meet, but the others have done considerable work. They have found, however, that the carrying out of their proposed plan on a large scale will require a fund larger than it has been possible for the association to provide out of its regular revenues. The committee recommended that its work be continued and that it receive an appropriation sufficient to enable it to do its work in a broad way.

The address on "The Evils of Government Ownership," prepared by former United States Senator Jonathan Bourne, Jr., was read by Charles L. Henry in the necessary absence of the writer. The address is given in full elsewhere in this issue. The convention passed a vote of thanks for the very able paper prepared by Mr. Bourne, following which A. H. Ford, Cumberland County Power & Light Company, Portland, Me., read the report of the committee on insurance abstracted below.

INSURANCE

The committee on insurance reported that data sheet 140, for 1914, calling for information in regard to insurance, fires, fire losses and fire-prevention equipment, was filled out and returned to the association by 160 companies. The combined reports showed the following data: Amount of insurance carried, $205,684,548; amount of premiums paid, $964,383; amount of fire losses, $202,512; amount recovered, $167,408; ratio of recoveries to losses, 82.6 per cent; premiums per $100 of insurance, 47 cents; losses per $100 of insurance, 10 cents; recoveries per $100 of insurance, 8 cents; ratio of losses to premiums, 21.3 per cent; ratio of recoveries to premiums, 17.35 per cent, and number of fires, 235. Table A attached to the committee's report shows these data by states. The committee expressed its regret that so few companies furnished the statistics called for. Compilations of the causes of fires and the classes of property damaged could not be made at all on account of lack of data. The committee appended to its report an index of all reports made to the American Association and the Engineering Association on the subjects of fire prevention and insurance and the discussions thereon. A similar table was made a part of last year's report, but was not printed in the proceedings.

The report was signed by H. J. Davies, chairman; E. J. Cook, A. H. Ford, F. A. Healy and F. J. Spaulding.

J. J. Reynolds, Boston Elevated Railway, read the report of the committee on the operation of motor vehicles, J. V. Sullivan, Chicago Surface Lines, that of the *Aera* advisory committee, and W. F. Ham, the report of the committee on standards for car loading, all of which were passed without discussion. Abstracts of these follow.

MOTOR-VEHICLE OPERATION

The report of the special committee on motor-vehicle operation to the American Electric Railway Association stated that in sixty cities reporting, the number of jitneys show varying decreases from 100 per cent to 19 per cent. Wherever the requirement of a reasonable bond or license is exacted, the immediate effect has been to decrease the number of vehicles operated. There has also been a decrease due to economic causes, irrespective of regulation, and where railway companies have tried the operation of the jitney, in spite of the efficient methods employed, it has been proved conclusively that the business is unprofitable, notwithstanding the fact that in these instances overhead or shop costs were absorbed in other operations of the companies.

Statistics covering 163 cities in which jitney buses are operated show that 112 of these cities have passed regulatory ordinances and that such measures are under consideration in fifteen other cities.

The committee again urged that railway companies should place before the public the fullest information in regard to the jitney. A quantity of data concerning the operation and regulation of the jitney has been collected by the secretary of the association and is on file for the use of member companies, and the widest use should be made of this material. Some companies have not as yet been confronted with the jitney problem, but the history of the movement shows that it may come upon them without warning, and it is especially important that they inform themselves, through the association's data, of the experience of other companies and by so doing be prepared to meet such situations as may arise.

It was recommended that the work of the committee be continued during the ensuing year, to consider among the other phases of the situation the following: (1) A study of the legal phases of ordinances and state laws regulating jitney traffic. (2) A compilation of rules adopted by public service commissions for the operation of jitney buses. (3) A study of the procedure of regulating commissions in granting applications for the right to operate jitney buses.

The committee recommended also that the association should at this time begin a thorough investigation of the motor bus (distinct from the type of automobile known as the jitney) as a feeder, auxiliary or competitor of electric railway traffic, and that a committee should be appointed to consider the subject.

The report was signed by Britton I. Budd, chairman; H. G. Bradlee, William A. House and C. L. S. Tingley.

THE ASSOCIATION MAGAZINE

The *Aera* advisory board directed attention to the fact that the magazine is now in its fourth year. It was founded for the purpose of furnishing a means of intercommunication among the members and a convenient means of reference, and to give permanency of record of the association work. Since its institution it has given monthly an authoritative and lasting account of the association's activities, has marked the progress of the tremendous volume of committee work conducted continuously, and has kept the members in close touch with plans for the future. It is a needed and dignified form of advertisement for the association, being the association's publicity *per se*.

The committee includes representatives from each of the affiliated and allied associations who are charged with the duty of developing interest among the different associations along their respective lines, such interest manifesting itself in contributed articles touching upon the work of the various departments. Despite the pronounced business depression during the year, a very satisfactory quota of advertising has been obtained and the committee expressed its appreciation of the work of Charles C. Pierce, representing the Manufacturers' Association, for what he had done in this direction. The committee believed that the current year would see the magazine nearly if not entirely self-supporting. The circulation is 5800 copies. Attention is drawn in the report to the change in typographical arrangements made during the year and particularly to the new cover design.

The report is signed by H. C. Donecker, chairman; E. H. Baker, J. K. Choate, J. H. Hanna, L. T. Hixson, C. G. Rice, J. V. Sullivan and C. B. Wells.

The American Association Committee on Standards for Car Loading stated that while there had been a number of responses to a request for data on standards for car loading it had proved impracticable to get these into form for presentation in time for the October meeting. The committee therefore requested that it be permitted to present its report at the mid-winter meeting of the association.

The Wednesday session ended with a statement by Gen. George H. Harries, Omaha Electric & Power Company, Omaha, Neb., of the value of the publication of the decisions of public service commissions begun the first of this year. He said that only fifty member companies had subscribed for the reports and urged that more companies take advantage of the service.

Following the session the members of the association attended an illustrated lecture on the methods of illumination employed at the exposition, by W. D'A. Ryan, illuminating engineer General Electric Company.

Thursday Morning Session

The first item on the program for Thursday, Oct. 7, 1915, was the presentation of the report of the committee on cost of passenger transportation service, which was read by Charles N. Black, United Railroads of San Francisco.

COST OF PASSENGER TRANSPORTATION SERVICE

In its report the committee directed attention to the report of the director of the bureau of fare research to the association, which covers the scope of the work performed by that bureau under the general direction of this committee. The committee states further that F. W. Doolittle, director of the bureau, has nearly completed the preparation of the monograph on "Studies in the Cost of Urban Transportation Service," the completion and printing of which could not be accomplished in time for submission to the convention. It should, however, be completed in time for distribution with the volume of current proceedings.

The committee recommended further that the work of the bureau of fare research be discontinued upon completion of that now in hand and revised when funds for the support of the bureau become more readily obtainable.

The report of the committee was signed by James D. Mortimer, chairman; Charles N. Black, Henry D. Bradlee, Thomas N. McCarter and Paul Shoup.

An outline of the monograph mentioned above is given below.

STUDIES IN COST OF URBAN TRANSPORTATION SERVICE

PREFACE

PART I. THE OCCASION FOR COST OF SERVICE

CHAPTER 1. CREATING THE STREET RAILWAY

Introduction. Obtaining of franchises. Promotion expenses. Financing the enterprise. Cost of change of motive power. Expenses incurred in consolidation. Receivership. Unproductive capital expenditures. Influence of capital investment on cost.

CHAPTER 2. THE STREET RAILWAY AS A GOING CONCERN

What creating and operating the going concern contributes to cost. Organization of the corporation. Organization of the traction utility. The work of the transportation department. Rolling stock department. Way and structures department. Purchasing and stores department. Accounting department. Legal department. Employees' welfare. Work of safeguarding the public.

PART II. ELEMENTS OF COST

CHAPTER 3. THE ANATOMY OF THE 5-CENT FARE

Proportionate division of 5-cent fare. Street railways of United States, 1912, 1907 and 1902. Typical urban surface railways. Elevated and subway. Proportionate division of labor, material and expense. The street car nickel and the jitney nickel. Proportionate division of fixed and variable costs. Proportionate division of terminal and movement cost. Proportionate division of revenues and expenses throughout day.

CHAPTER 4. TENDENCY OF OPERATING COSTS

Growth of the industry. Increase of service furnished due to area served and consolidation. Increased length of ride for the single fare. Decrease in receipts per passenger due to increased use of transfers. Effect of changes in speed, change of equipment and frequency of service on cost. Increase of municipal requirements. Increase in unproductive investment. The decreased purchasing power of the 5-cent fare as compared with the general increase in the cost of money, labor and material. General conclusions.

CHAPTER 5. UTILITY CAPITAL AND ITS REPLACEMENT

Relation of utility capital to cost of service. Purposes of valuation of street railway property. Sale, taxation, basis of reasonableness of public requirements, condemnation. Theories: market value, sacrifice and equivalent agency. Methods: security values, book values, reproduction estimates, appreciation and depreciation, going value. Replacement of utility capital: adequacy of provisions for insuring replacement, inadequacy of statistical data, theories of measurement of replacement insurance reserves.

CHAPTER 6. ACTUAL RETURNS IN THE TRACTION BUSINESS

Relation of reasonable return to cost of service. Actual returns upon various theories of value. Factors determining the reasonableness of returns in the traction business.

CHAPTER 7. UNITS OF COMPARISON

Unreliability of the single unit of comparison; adaptability of specific units to general analysis. Use of units of comparison in cost analyses. Practical limitations of accounting classifications and statistical data. Fixed and variable expenses, treatment of specific accounts. Typical schedule of apportionment. Technical notes on statistical processes to determine functional relation between units of comparison and operating cost items.

PART III. ELEMENTS OF SERVICE

CHAPTER 8. TRAFFIC CHARACTERISTICS

Peculiarities of the public demand for service. Typical traffic characteristics. Use of models. Statistical measurement of traf-

fic variation. Effect of variations on loading. Difficulty of estimating service required. Seat-miles and passenger-miles. Controlling factors in the plan of study to be adopted.

Chapter 9. Traffic Surveys

Function of the organization. Field work. Office work. Supervision. Type of organization. Purpose of survey.

Chapter 10. Traffic Observations

Frequency and regularity of collection of data. Preliminary work. Length of period of observation. Data to be taken on field. Loading estimates. Data to be recorded. Recording data.

Chapter 11. The Application of Traffic Data

The determining factors in schedule making. Minimum headway. Meeting points. Use of trippers. Traffic requirements. Transition period. Short routing. Other considerations. Average length of ride. Average length of ride of standing passenger. Traffic data in service cases. Frequency of heavy loads. Factors affecting ratio of seats to passengers. Factors affecting determination of standard of loading. Relation of maximum to average loading. Instantaneous ratios not significant. Necessary factors in loading rules. Permissible variation from normal service.

Chapter 12. Prescribed Standards of Service

Regulation of service. Methods of defining adequate service. Prescribed standards: New York, Milwaukee, St. Louis. Variation in prescribed standards. Recommended standards: Chicago, Philadelphia, St. Louis, Pittsburgh, San Francisco, Kansas City, Providence, Cincinnati, Winnipeg. Difficulty in formulating standards. Diversity. Car capacities. Variation of passenger demand. Cost of service. General conclusions.

Chapter 13. Psychological Aspects of Street Railway Service

Importance of the psychological aspects of car service. Results of tests in Cleveland and Milwaukee as to impressions of actual and reasonable headway, comfortable load, rate of fare and service. Definition of satisfactory service. Satisfaction with service. Impressions of courtesy of conductors, route and destination signs, transfers, reasonable walking distance, trail and center-entrance cars, service in other cities. Conclusions.

PART IV. SPECIAL PROBLEMS

Chapter 14. The Paying Haul—Cost of Extending Fare. Limits and Lines

Effect of expansion of cities on area served for single fare. Relation of extensions of passenger haul to other service and cost. Methods proposed for determining paying haul. Ford "car-mile" formula. Bradlee "car-haul" formula. "Load factor" formula of C. N. Duffy. Typical problems analyzed: (1) Cost of extending single-fare point into second-fare zone; (2) cost of extending existing line by construction. Determination of paying haul upon passenger-haul or car-haul basis.

Chapter 15. The Paying Haul—Cost of Service and the Zone System of Fares

The American system of flat rates for urban passenger transportation service. Reasons for adoption. Advantages and disadvantages. Recent progress away from flat rates. Factors opposed to and favorable to change. Zone system of fares: advantages and disadvantages. Cost factors involved in construction of zone system of fares: necessary information, basis apportionment of cost. Typical problem analyzed.

Chapter 16. Cost of Complying with Service Standards

Effect on cost of variation of number of car-hours required under service standards at various periods during the day. Index of concentration of service as a function of cost. Typical problem analyzed: (1) analysis of cost of service during various hours of the day; (2) effect on cost of increase of rush-hour service; (3) effect of uniform service throughout twenty-four hours. Comparison of cost per car-hour and return on investment during various periods of the day under above conditions.

Chapter 17. Cost of Extending the Transfer Privilege

Growth of the transfer privilege and effect on revenues and cost of service. Causes of development of transfer ratio: advantages and disadvantages of free transfers. Typical problem analyzed: effect on revenues, diversion of traffic from old to new routes, possibility of fraud, influence on riding habit, increase of number of rides on cost.

Chapter 18. Cost of Competing Forms of Transportation

Influence of transportation on city growth. Effect of competing transportation agencies on cost of service. Forms of transportation developed in American cities: walking, private conveyance, public conveyance. Field of competition as limited by cost to individual, cost to community, comparative service and costs of jitney and street railway.

Chapter 19. Effect of Rate of Fare on Riding Habit

Public interest in rate of fare. Purposes of studies of riding habit. Factors affecting riding habit: facilities, topographical conditions, climatic condition, temperamental characteristics, competitive facilities, special conditions. Experience of various cities. Increase in riding habit with increase in population. Technical notes on statistical processes to determine degree of correlation of riding habit and rate of fare.

Chapter 20. The Problem of Rapid Transit

Time as a factor in transportation. Comparison of transit facilities in other cities. Unwarranted conclusions. Cost factors of rapid transit systems. Necessary traffic density. Comparison with cost of operation with surface lines. Suggestions for improvement of present surface traction facilities: skip stops, trail-car operation, traffic regulations and routing.

PART V. REGULATION AND THE COST OF SERVICE

Chapter 21. Regulation and the Cost of Service

Cost and value of service theories. Considerations which have made cost of service a controlling question in rate regulation. The cost of service theory and efficient management. Importance of cost of service in the two types of regulation: regulation by contract and continuous regulation.

Chapter 22. The Cleveland Experiment. Events Preceding the Tayler Ordinance.

First proposals of Tom L. Johnson in 1903. Results of trial of 3-cent and 4-cent fares. Status of competitive franchises and in the courts. The "holding company" plan. Rejection of proposals for renewal of existing franchises after arbitration. Joint use by competing companies of track to public square. Abandonment of Central Avenue line. The "curative ordinance." Mayoralty campaign of 1907. Further efforts for a "holding company." Neutral railway company. The "security franchise." Lease of property to municipal traction company. The beginning of 3-cent fare. The Schmidt street railway law. Defeat of "security franchise" on referendum. Receivership of Municipal Traction Company. Increase in fares under receivership. Preliminary proposals for a settlement franchise. More efforts at competition. Arbitration. The mayoralty campaign of 1909. Decision of Judge Tayler.

Chapter 23. The Cleveland Experiment (Continued). The Tayler Ordinance and Defects in Its Operation as Disclosed at Arbitration

The provisions of the Tayler ordinance. Difficulties during first period of operation. Amendments of July 14, 1911. Changes in rate of fare. Events preceding arbitration. Defects of plan based on allowances. Issues presented at arbitration. Difference between interest fund and corporate surplus. Deficiencies in allowance for maintenance, depreciation and renewals. Deficiencies in allowance for operation. Findings of arbitrators on allowances. Status of sundry reserves under the ordinance. Legal right of company to overexpend allowances. General conclusions drawn from facts presented at arbitration.

Chapter 24. The Cleveland Experiment (continued). Efforts Since Arbitration to Reduce Cost of Operation to Permit Continuation of Low Fares

Termination of lines in center of city. Designated stops. Increased schedule speed. Decreased accident hazard. Policy with respect to extension of lines. Paving costs. Control of traffic. Short-routing.

Chapter 25. The Cleveland Experiment (continued). Service Rendered Under Ordinance Regulation

Factors affecting service. Density of traffic. Short-routing. Type of district served. Types of rolling stock. Loading and collection practice. Car movement as assisted by skip stops, trailer cars, near-side stops, traffic ordinances. Transfer points. Car loading. Basis of investigation. Measurements of service as compared with standards applied elsewhere. Length of ride. Riding habit. Psychological factors in measuring service. General conclusions.

Chapter 26. The Cleveland Experiment (continued). Actual Cost of Service Under Ordinance Regulation

Financial results for two ordinance years ended Feb. 28, 1915. Deficiency in allowances under the ordinance. Lack of provision for depreciation. Analysis of balance sheet of Dec. 31, 1914. Unit costs of service. Paying haul. Cost of increasing service to Wisconsin and Chicago standards. Conclusions.

Chapter 27. The Milwaukee Experiment. Events Preceding the Railroad Commission of Wisconsin Decisions of Aug. 23, 1912

Agitation for 4-cent fare in 1896. Determination of reasonableness of ordinance by United States Circuit Court. Early adjudications of value and cost. The 1900 franchise. Railroad commission law of 1905. Agitation for 3-cent fare in 1906. Audits and appraisals. Testimony on cost

Chapter 28. The Milwaukee Experiment (continued). The Decision of Aug. 23, 1912, and Its Rescission Jan. 30, 1915

Synopsis of decision on reasonableness of rates of fare. Cost factors determining reasonableness, joint costs of urban, suburban and interurban service, basis of valuation, depreciation allowances, and rate of return. Appeal on contractual nature of 1900 franchise. Events preceding the Woehsner appeal. Cost calculations for succeeding years. Synopsis of rescinding decision of Jan. 30, 1915. Withdrawal of appeal by city.

Chapter 29. The Milwaukee Experiment (concluded). Cost of Service and Decisions on Line Extensions, Zone Systems, Transfers and Service Requirements

Commission's cost basis of extending fare limits. Events preceding order of zone system of fares. Synopsis of Commission's order. Cost factors in orders extending transfer privilege. Service standards: description of factors affecting service in Milwaukee; synopsis of Commission's orders on service, cost factors and service standards; experiments of short-routing and skip-stop practice. Conclusions.

FOUNDATION PRINCIPLES OF VALUATION

The address on the above topic was then read in extended abstract by the author. An abstract of this address is printed elsewhere in this issue of the Electric Railway Journal. A supplementary abstract will appear in a later issue. The speaker was listened to with close attention and he was warmly applauded at the close. A vigorous discussion followed.

Prof. C. L. Cory, Dean of the College of Mechanical and Electrical Engineering University of California, was called upon to open the discussion. He stated his agreement with, and emphasized the significance of the fundamental features of Mr. Arnold's statements. The importance of fully understanding that a property may have different values to be used for different purposes he considered to be very great. He gave a closely-reasoned statement pointing out that a community should protect the downtown traffic of the electric railway company. His argument was based upon a statement which formed an underlying feature of Mr. Arnold's paper. This was to the effect that it does not make any difference who owns the street railway system, but the service

is all important. The public must be served for all time, hence the investment must be perpetuated. As soon as one begins to think that the investment may be depreciated, it follows that service must deteriorate. The greatest economic result is obtained when the best service is given at the lowest cost that gives a fair return on the time, money and brains invested. A depreciation fund invested in extensions is better for the community than a sinking fund. By way of illustration Professor Cory stated that he is familiar with a large property on the Pacific Coast which has made extensions amounting to 50 per cent of its entire property in five years, when it would have been unable to obtain all of the money for these extensions on reasonable terms through investment bankers. He said that there is another important point, the importance of which professors of political economy do not always realize. This is the social side of the problem. He mentioned the development of numerous attractive suburbs resulting from a uniform fare and believed that a suburban fare varied according to mileage is against the common good.

In this connection he asserted that it is quite impossible for a railway of the ordinary kind to maintain its investment if the public allows any economic change to come about which will rob that system of its exclusive enjoyment of the downtown business. If some other transportation system takes the cream of the downtown business, the fares to the suburbs must be greater. Such a plan is against the common good. It makes no difference in this respect whether the investment is made by a municipality or by a private company. Regarding the question of divorcing urban and interurban lines, which Mr. Arnold had discussed under the head of severance, as an item which must be considered in value, Professor Cory cited a recent case in a city of the Northwest which is the center of what is popularly termed "an empire served by a unified urban and interurban system." There was an investigation of the possibility of divorcing the urban and the metropolitan system, and after careful study it became apparent to the public and the city authorities that a separation would cause the public to suffer. As level streets and good paving shortly made the municipality a favorable field for jitney buzzards, the city had no great desire for the local business and the lack of necessity for readjustment stood as a demonstrated fact.

C. E. Grunsky, president American Engineering Corporation, San Francisco, read in discussion a carefully-prepared statement which he opened by agreeing with Mr. Arnold's statement in regard to the unfortunate results to owners from the invention by somebody of the word "depreciation." Depreciation has nothing in common with amortization except that the current lessening of worth which the word denotes has been made a measure of the rate at which capital should be amortized. Any writing off of the depreciation when a rate base is to be established is fundamentally wrong.

Mr. Grunsky did not favor land appreciation in valuation, although it has been forced upon engineers and accountants who have been put to it to find some fair way to protect owners against unreasonable handling of depreciation. He protested strongly against the assumption that because depreciation exists the service lessens in value, or that capital has been amortized because a certain amount of depreciation has accrued. In other words, the amortization of capital is a matter apart from depreciation and it is unfortunate that the loose use of terms has led the courts and some of the public service commissioners into error. Early losses are not elements of value but should be taken into account when a rate is being determined so that the owner may receive protection. On the theory of unlimited life no change in efficiency is to be assumed. Lessening of worth of any shares should have no bearing upon the charge for the service rendered. The San Francisco Municipal Railways, although pointed to now as a financial success, have not yet stood the test of the cessation of exposition traffic and nothing is said of the added burden on passengers who can no longer travel where they wish on a single fare or of the burden upon the competing company. In conclusion, he agreed with, and emphasized the importance of Mr. Arnold's statement on necessity for an arrangement which would give both flexibility and reward for efficient service.

General Harries referred to Mr. Arnold's paper in an appreciative way, saying that it might be taken by member companies as a safe and sure guide prepared in the form of a text-book. Commenting upon the unfair competition with electric railways that has recently developed, he pointed out that though it may endure for a time in violation of the fundamentals of honest policy it was, because of that violation, predestined to certain failure. Mr. Crecelius explained that the subject matter of Mr. Arnold's paper has long been under consideration by the association, and that there has been a strong sentiment in favor of preparing a suitable property ledger.

TAXATION MATTERS

The report of the committee on taxation matters was next received and filed. This report directed the attention of the association to changes in tax laws affecting street railways as reported by the following States: California, Connecticut, Maryland, Oregon, Pennsylvania, Rhode Island and Virginia. The most important of these follow. In California Senate amendment No. 38 (Chapter 46) will be presented to the voters at a special election on Oct. 26, 1915. The

TABLE I.—TAXES PAID BY ELECTRIC RAILWAY COMPANIES OVER A PERIOD OF YEARS

Year	Operating Railway Revenue	Taxes	Taxes Percentage of Operating Railway Revenue
1902.....	$247,553,999	$13,078,899	5.28
1907.....	418,187,858	19,755,602	4.27
1912.....	567,511,704	35,027,965	6.26
1914.....	308,579,255	21,583,158	7.00

Figures for 1902, 1907 and 1912 from United States Bureau of Census—for 1914, the result of summary from data sheet 138.

amendment abolishes the State Board of Equalization and substitutes therefor a Tax Commission, but does not provide in any way for the appointment of the Tax Commission or for the number of members of same. The provisions of this amendment are very broad and can be construed to mean that the Legislature, at each biennial meeting, can define that certain classes of property can be assessed solely for State purposes or otherwise. Another bill in this State provides that a fund of $75,000 be appropriated to investigate and report upon the existing matters of revenue and taxation.

In Connecticut every corporation operating a steam or electric railroad, or street railway, and carrying on business for profit in the State, must pay annually a tax upon the gross earnings from all sources from its operations in the State, that is, its gross operating income as defined for railroads by the Interstate Commerce Commission. The tax rate on gross earnings of steam or electric railroads, other than street railways, is 3½ per cent; the rate on gross earnings of street railways is 4½ per cent. The amount of taxes paid during the year in any town on the real estate not used exclusively in the business of such corporation, or of any corporation all of whose property is operated by such corporation, is to be deducted from the amount of the tax upon such gross earnings.

In Oregon a bill was passed which prohibited the

TABLE II.—SHOWING SUMMARY BY STATES OF TAXES PAID BY ELECTRIC RAILWAYS, 1904 AND 1914

State	Companies Replying	Year Ended 1904: Railway Operating Revenue	Municipal Tax	State and County Tax	Federal Tax	Total Tax	Year Ended 1914: Railway Operating	Municipal Tax	State and County Tax	Federal Tax	Total Tax
Alabama	2	$1,324,088	$18,477	$14,957	.....	$33,434	$231,658	$101,461	$101,937	$2,961	$206,359
Arkansas	1	290,091	4,963	10,688	.....	15,651	580,346	21,606	33,070	2,870	57,546
California	2	1,794,833	37,193	74,398	.....	111,591	5,548,050	37,612	260,546	3,997	302,155
Colorado	1	2,040,146	98,298	2,940	.....	101,238	3,212,881	64,726	10,833	5,946	81,505
Connecticut	1	4,584,795	19,890	245,218	.....	265,108	8,085,399	37,351	520,305	23,853	581,509
District of Columbia	1	1,930,359	111,618	1,913	.....	113,531	3,003,273	153,779	6,387	9,989	170,155
Florida	2	306,100	2,184	2,650	.....	4,834	639,427	11,850	10,735	1,410	23,959
Georgia	2	1,347,256	20,286	19,872	.....	40,158	3,232,050	76,873	78,523	5,345	160,741
Illinois	3	6,305,971	361,988	82,486	.....	444,474	9,743,901	679,274	125,689	15,487	820,450
Indiana	2	2,218,489	39,976	109,297	.....	149,273	3,925,306	54,986	222,564	8,472	286,022
Iowa	3	1,319,193	.....	32,319	.....	32,319	2,887,238	.....	134,408	3,766	138,174
Kansas	2	337,546	4,642	1,835	.....	6,477	858,237	44,992	11,512	2,407	58,911
Kentucky	1	2,048,264	119,291	61,188	.....	180,479	3,166,482	180,118	109,138	7,130	296,386
Louisiana	1	3,084,656	188,734	67,357	.....	256,091	4,398,507	351,618	143,289	18,899	513,806
Maine	2	917,989	12,033	10,316	.....	22,349	1,414,277	34,569	34,040	2,193	70,802
Maryland	1	5,440,942	467,633	26,756	.....	494,389	9,203,839	1,045,269	68,122	23,811	1,137,202
Massachusetts	8	20,954,966	427,680	1,031,642	.....	1,459,322	31,839,121	806,128	1,205,186	58,666	2,069,980
Michigan	2	946,845	19,620	33,427	.....	53,047	1,652,211	59,140	28,685	3,624	91,449
Minnesota	1	619,172	.....	17,752	.....	17,752	1,313,564	.....	65,130	2,382	67,512
Missouri	2	13,655,481	669,584	79,848	.....	749,432	19,314,955	998,744	186,834	28,119	1,213,697
Nebraska	1	1,564,640	86,035	24,622	.....	110,657	2,966,214	180,014	46,784	6,328	233,126
New Hampshire	1	285,827	.....	5,896	.....	5,896	477,113	.....	23,925	872	24,797
New Jersey	2	636,679	21,706	6,605	.....	28,312	1,203,320	25,346	46,683	2,912	74,941
New York	10	23,915,957	772,840	381,712	.....	1,154,552	42,345,624	1,809,718	768,231	116,869	2,694,818
North Carolina	1	114,351	4,239	1,250	.....	5,489	252,242	8,685	4,723	1,067	14,475
Ohio	5	10,028,660	279,956	278,582	.....	558,538	15,391,555	429,167	861,587	35,478	1,326,232
Pennsylvania	12	28,388,841	393,155	1,168,924	.....	1,562,079	42,981,951	361,948	1,551,976	124,394	2,038,318
Rhode Island	1	2,754,655	113,044	54,093	.....	167,127	5,379,149	281,152	160,575	15,811	457,538
South Carolina	1	92,003	1,392	990	.....	2,382	200,620	2,520	3,055	655	6,210
Tennessee	2	1,194,209	33,116	26,654	.....	59,770	2,390,674	83,219	91,052	7,271	181,542
Texas	5	1,875,230	44,603	17,750	.....	62,358	5,886,901	151,664	111,587	11,806	275,057
Virginia	1	62,290	1,318	1,094	.....	2,412	131,282	3,270	2,036	548	5,851
Wisconsin	1	2,698,641	2,549	102,141	.....	104,690	4,110,718	11,677	278,313	10,457	300,447
Canada	4	1,247,271	38,277	11,757	.....	50,073	6,596,841	223,567	69,685	.....	293,253
Hawaii	1	327,461	.....	15,473	.....	15,473	615,583	.....	30,125	1,640	31,765
Total United States	83	$140,183,165	$4,378,048	$3,997,172	.....	$8,375,220	$237,968,085	$8,108,476	$7,307,440	$565,792	$15,981,708

levying of a greater amount of revenue in the taxing district than the larger amount levied on the assessed value of the same property in either of the two years immediately preceding plus 6 per cent; provided, however, that the levy may be increased by the voters of the taxing district at a general election, or a special election called for the purpose of voting on such proposition.

In Pennsylvania a new law imposes a tax on the sale of or agreement to sell capital stock, and upon the delivery or transfer, the tax being at the rate of two cents for each $100 face value of stock.

House Bill No. 113 in Virginia fixes the situs for taxation of rolling stock of electric street railway companies and provides for the assessment thereof and the taxation of such rolling stock, and the apportionment of the taxes among the several counties, cities, towns and school districts, in or through which any such electric railway is located. This bill makes no distinction in the rate of taxation between such rolling stock and other property of the companies, but simply provides for its distribution locally. It may be a little more troublesome to the companies, but otherwise is unimportant. House Bill No. 102 increased the fran-

TABLE III.—SHOWING PERCENTAGES OF TAXES TO ELECTRIC RAILWAY OPERATING REVENUE, 1904 AND 1914

State	Number of Companies	Year Ended 1904: Municipal Per Cent	State and County Per Cent	Federal Per Cent	Total Per Cent	Year Ended 1914: Municipal Per Cent	State and County Per Cent	Federal Per Cent	Total Per Cent
Alabama	2	1.392	1.128	.....	2.520	4.300	4.340	0.126	8.766
Arkansas	1	1.710	3.675	.....	5.389	3.720	5.700	0.495	9.965
California	2	2.072	4.140	.....	6.212	0.678	4.680	0.072	5.430
Colorado	1	4.820	0.144	.....	4.964	2.010	0.336	0.185	2.531
Connecticut	1	0.436	5.340	.....	5.776	0.462	6.430	0.295	7.187
District of Columbia	1	5.180	0.099	.....	5.279	5.070	0.211	0.330	5.611
Florida	2	0.715	0.866	.....	1.581	1.853	1.680	0.221	3.750
Georgia	2	1.508	1.475	.....	2.983	2.380	2.434	0.165	4.979
Illinois	3	5.740	1.308	.....	7.048	6.970	1.283	0.159	8.412
Indiana	2	1.800	4.920	.....	6.720	1.398	5.680	0.215	7.293
Iowa	3	.....	2.450	.....	2.450	.....	4.660	0.013	4.675
Kansas	2	1.374	0.545	.....	1.917	5.230	1.343	0.281	6.854
Kentucky	1	5.830	2.980	.....	8.810	5.690	3.450	0.225	9.365
Louisiana	1	6.120	2.187	.....	8.307	7.980	3.260	0.429	11.669
Maine	2	1.310	1.124	.....	2.434	2.442	2.406	0.155	5.003
Maryland	1	8.570	0.492	.....	9.062	11.380	0.741	0.259	12.380
Massachusetts	8	2.040	4.920	.....	6.960	2.530	3.780	0.184	6.494
Michigan	2	2.075	3.530	.....	5.605	3.575	1.737	0.219	5.531
Minnesota	1	2.870	.....	.....	2.870	.....	4.960	0.181	5.141
Missouri	2	4.900	0.585	.....	5.485	5.170	0.963	0.145	6.378
Nebraska	1	5.500	1.575	.....	7.075	6.070	1.578	0.213	7.860
New Hampshire	1	.....	2.062	.....	2.062	.....	5.020	0.183	5.203
New Jersey	2	3.413	1.040	.....	4.450	2.109	3.880	0.242	6.231
New York	10	3.230	1.594	.....	4.824	4.270	1.815	0.275	6.360
North Carolina	1	3.720	1.093	.....	4.813	3.442	1.872	0.423	5.737
Ohio	5	2.790	2.790	.....	5.580	2.790	5.580	0.231	8.601
Pennsylvania	12	1.387	4.120	.....	5.507	0.844	3.610	0.289	4.740
Rhode Island	1	4.100	1.992	.....	6.092	5.220	2.984	0.296	8.500
South Carolina	1	1.512	1.075	.....	2.587	1.260	1.517	0.327	3.104
Tennessee	2	3.028	2.441	.....	5.469	3.480	3.810	0.304	7.594
Texas	5	2.378	0.948	.....	3.326	2.575	1.895	0.201	4.671
Virginia	1	2.118	1.760	.....	3.878	2.490	1.550	0.415	4.455
Wisconsin	1	0.095	3.821	.....	3.916	0.284	6.780	0.254	7.319
Canada	4	3.070	0.943	.....	4.013	3.385	1.057	.....	4.442
Hawaii	1	.....	4.720	.....	4.720	.....	4.910	0.266	1.763
United States percentage of railway operating revenue	83	3.125	2.850	.....	5.975	3.410	3.070	6.717	5.702

chise tax on street railways from 1 per cent upon gross receipts to 1⅛ per cent. This was the only bill passed by the Legislature increasing the tax burdens upon street railways.

Indiana has appointed a committee to investigate the tax laws of other States and make recommendation at the next session of the Legislature, which will meet in 1917.

According to the reports received, the committee found a noticeable falling off in the amount of tax legislation aimed at street railway corporations, owing no doubt largely to the change of public sentiment toward corporations in general. A data sheet was sent out to all of the companies and replies from eighty-three were tabulated as shown in the accompanying tables. The comparison of the figures of 1904 with 1914 shows an increase of 69.7 per cent in the gross earnings and 90.8 per cent in the amount of taxes.

The committee concluded that the electric railway industries are no doubt bearing an unfair proportion of the tax burden, and some concerted efforts should be made to secure the enactment of uniformity in tax laws by which the taxing of street railways would be removed from local control, and either fixed on a fair percentage of gross earnings or else assessed on a valuation which would be determined by a central taxing commission, the basis of the valuation to be distinctly stated by the commission and such taxes to be in lieu of all other taxes. At present the tax is assesed under such a variety of names and for such varied purposes that the general public, and very often the street railway officials, are not aware of the excessive amounts borne by the railways as compared with the burden borne by other properties. By adopting such a method as a tax on gross earnings in lieu of all other taxes, the claim which is so often made, that the public service corporations are not bearing their just proportions of the tax burden, could easily be refuted.

The report was signed by F. W. Wilson, chairman, for the committee.

AMERICAN ROAD BUILDERS' ASSOCIATION

The committee appointed to attend the fifth American Good Roads Congress, held in Chicago Dec. 14 to 18, 1914, under the auspices of the American Road Builders' Association, as representatives of the American Association reported that the members had attended the congress and as a result believe that the American Road Builders' Association should receive the attention of the American Association. In the opinion of the committee, it now has and will continue to have an important effect upon the electric railway industry. The object of the American Road Builders' Association is to extend the "good roads" movement: to use its influence to see that public money appropriated for road building is wisely expended, and to bring about an improvement in the manner of construction and maintenance of highways and of materials used for those purposes. The committee believed that the engineering features of good road building, including the construction and maintenance of paving in city streets, are so closely related to electric railway work that the exhibits at the annual meeting of the Road Builders' Association and the discussion of the science of good road building will be sources of valuable information to the Engineering Association.

Another point is that the "good roads" movement, which is national in scope, will quite naturally increase the use of privately-owned vehicles and thus divert a certain amount of traffic from the interurban railroads. The general improvement of the highways will also have an important bearing upon taxes, property values, development of territory, etc. Whether the additional traffic derived from such development of territory will be sufficient to offset the loss sustained by the increased use of privately-owned vehicles is a matter which should receive the study and attention of a special committee. The committee therefore recommended attendance upon future meetings of the Road Builders' Association by a committee containing representatives of the American and Engineering Associations, and that this committee, in addition to attending the meetings, should study the "good roads" movement as it affects the electric railway industry and collect data relating thereto, making its report to the association. Incorporated with the report of the committee was a copy of the proceedings of the congress.

The report was signed by E. C. Faber, chairman; C. D. Emmons and C. N. Wilcoxon.

The report of the nomination committee, read by R. I. Todd, Indianapolis Traction & Terminal Company, was as follows: For president, Charles L. Henry, president Indianapolis & Cincinnati Traction Company; for first vice-president, L. S. Storrs, president The Connecticut Company, New Haven, Conn.; for second vice-president, Timothy S. Williams, president Brooklyn Rapid Transit System, Brooklyn, N. Y.; for third vice-president, John J. Stanley, president The Cleveland (Ohio) Railway; for fourth vice-president, J. H. Pardee, president Eastern Pennsylvania Railways, Pottsville, Pa. The report of the nominating committee was adopted in full by the convention and the ballot cast by the secretary. In assuming his new duties, President Henry said he would devote his best efforts during the coming year to aid the enterprises of the association.

In connection with the report of the nominating committee Gen. George H. Harries explained that John A. Beeler, second vice-president of the association, had requested that his name should not be considered by the committee as he had a number of plans to carry out which would make great demands upon his time. General Harries said that all the members could testify to their warm regard for Mr. Beeler and on their behalf expressed the hope that in a short time he would again be an active operating man in the field of electric railway transportation.

The report of the committee on resolutions, presented by C. S. Sergeant, Boston Elevated Railway, contained an appreciation of the courtesies extended to the convention delegates by the member companies, civic bodies and individuals in the several far western cities. The thanks of the association were extended particularly to the San Francisco committees of the Manufacturers' Association which provided for the entertainment and transportation and which made other local arrangements for the convention, and to the technical press for its effective co-operation in carrying out the work of the association generally. A final clause in the resolutions urged members to make every effort to secure adequate regulation of motor-vehicle competition.

After accepting the report of the committee on resolutions the convention formally adjourned. The exercises scheduled for Friday are described on page 767 of this issue. They formed a part of the entertainment program of the convention and consisted of the presentation of a bronze plaque to the American Electric Railway Association and the American Electric Railway Manufacturers' Association in commemoration of the holding of the 1915 meeting at San Francisco. The address delivered by James H. McGraw on this occasion on "The Development of the Electric Railway" is abstracted earlier in this issue.

Accountants' Papers and Proceedings

President Mitchell Reviews Work of Year and Submits Question of Separate Meeting Place and Time for Association—Delegates Discuss the Value of Statistics in Administration, Taxation, Passenger Accounting and Various Technical Points of General Interest

Program for Monday

Annual Address of the President.
Annual Report of Executive Committee.
Annual Report of Secretary-Treasurer.
Reports of Committees:
- Standard Classification of Accounts—H. L. Wilson, chairman.
- Accounting Definitions—Frederic Nicholas, chairman.
- Representing Association at Convention of Railway Commissioners—W. F. Ham, chairman.
- Education—George G. Whitney, chairman.
- Express and Freight Accounting—E. L. Kasemeier, chairman.
- Passenger Accounting—L. T. Hixson, chairman.
- Joint Report, Passenger and Express and Freight Acounting—Co-Chairmen: L. T. Hixson and E. L. Kasemeier.

ADDRESS—"Taxation of Electric Railways," Prof. Carl C. Plehn.
Report of Committee:
- Transportation-Accounting—Co-Chairmen: M. R. Boylan and J. K. Choate.

Program for Tuesday

PAPER—"Electric Railway Accounting—A Review," P. V. Burington.
PAPER—"The Merits of Prepayment Cars, from the Viewpoint of the Accounting Department," R. J. Clark.

C. S. MITCHELL
President

Tuesday—Continued

PAPER—"The Value of Statistics to Executive and Accounting Departments," George B. Willcutt.
Report of Committee:
- Claims-Accounting—Co-Chairmen: H. J. Davies and H. K. Bennett.

Program for Wednesday

Reports of Committees:
- Engineering-Accounting—Co-Chairmen; F. H. Sillick and C. R. Harte.
- Life of Railway Physical Property—Co-Chairmen: R. N. Wallis and Martin Schreiber.

Changes in Constitution and By-Laws.
ADDRESS—"Treatment of Charges for Rent of Tracks and Facilities and Rent of Equipment," Paul Shoup.
PAPER—"The Importance of Accrued and Accruing Accounts from the Viewpoint of the Certified Public Accountant," John F. Forbes, C.P.A.
ADDRESS—"Some Neglected Problems in Electric Railway Accounting," Henry Rand Hatfield.
Reports of Convention Committees:
- (a) Resolutions.
- (b) Nominations.

Election and Installation of Officers.

Monday Afternoon Session

PRESIDENT C. S. MITCHELL, comptroller Pittsburgh (Pa.) Railways, called the first meeting of the Accountants' Association to order on the afternoon of Monday, Oct. 4. After the printed minutes of last year's meetings had been distributed, President Mitchell read his address, which is in part as follows:

"At the convention last year, on the recommendation of M. W. Glover, secretary Mobile Light & Railroad Company, Mobile, Ala., a resolution was adopted providing for a rearrangement of the committees of the association, and the appointment of certain standing committees, a majority of whose members should hold over from one year to the next in order to give continuity to the work of the committees. This was undoubtedly a step forward in providing for the constructive work of the association, as those members who appreciate their appointment and do conscientious work have an opportunity to carry forward their ideas, while such members as do not take an interest can and should be replaced by members who will bring new thoughts into the committees.

"The resolution referred to provided for a representation of five members from this association on the joint committee on transportation-accounting. The Transportation & Traffic Association at its last convention did not act on the matter of increasing its membership from three to five. The matter was taken up with the president of that association and on Nov. 12, 1914, its executive committee passed a resolution that a joint committee of ten members would be too large for effective work, and that better results would be obtained from a committee of six, as originally provided for. It was voted, therefore, that the representation of the Transportation & Traffic Association remain as originally constituted, and that a recommendation be made to the Accountants' Association that its membership on the committee also be limited to three men. In order that the committee might proceed with its work, three members were appointed for the current year with the approval of the executive committee of this association, but some action should now be taken as to the future membership of this committee.

"One year ago all lines of business were affected by a general business depression, and as there was some possibility of a loss in revenue to the American Electric Railway Association by the withdrawal of member companies on account of the increased scale of dues, it was the unanimous opinion at the first meeting of the new executive committee that the revenues for the year should be carefully guarded and the expenditures minimized without interfering with the progressive work of the different associations. At the same time it was recommended that all committee meetings be dispensed with at the mid-year meeting held in Washington, D. C. With this in mind at the time of committee appointments, assignments were made, as far as possible, of members who could meet as often as necessary without contracting large traveling expenses. With an improvement in business conditions generally, it is hoped that more liberal appropriations will be made in the future for the work of this association.

"The reports presented this year speak for themselves and indicate how thoroughly the committee work has been done. Special attention should be called to the work undertaken by this association through its committee on education. The lectures arranged for this year include an elementary course, a feature which should appeal strongly to such clerks engaged in street railway work as have not had an opportunity to study the theory of accounts. A better understanding on the part of the average office employee, through a knowledge of accounts, of the purpose to be attained by the work upon which he is engaged, would no doubt result in increased efficiency. Each accounting officer should appoint himself a booster for the cause and make every effort to enlist not only the employees under his own immediate jurisdiction but those employees in other departments whose duties are of a clerical nature.

"Effective as of July 1, 1915, the Interstate Commerce Commission issued its accounting bulletin No. 9, containing decisions upon questions raised in 346 cases under the uniform system of accounts for electric railways. The commission acknowledges the co-operation of the committee on a standard classification of accounts in the preparation of this bulletin. These decisions are invaluable to street railway accounting officers, and the association is indebted in no small measure to the members of this committee for the part they have taken in this work. On account of the great number of questions submitted by electric railway accountants from all sections of the country, the members of this committee are required to write several thousand letters a year, and it should be borne in mind that the time of its members and the stenographer's services, postage, etc., are all contributed without expense to this association.

"For some time past the association has had a special committee on overhead charges, but in spite of diligent effort made this year to have some of the most experienced accountants accept membership on this committee, it was found impossible to complete the committee for service during the year. This is a subject which, to be handled successfully, requires the judgment of experienced accountants and engineers, and it is herewith recommended that its study be delegated to the joint committee on engineering-accounting.

"Since the meeting last year the United States Internal Revenue Department has issued a new form (No. 1031 revised) to be used by corporations in making a return of their annual net income, under Sec. 2 of the act of Oct. 3, 1913. In this is incorporated a supplementary statement requiring that certain detailed information be furnished, a greater part of which is not a matter of convenient record with those companies who keep their accounts in accordance with the uniform system of accounts for electric railways prescribed by the Interstate Commerce Commission, now used by electric railways quite generally. It is therefore suggested that a committee of this association be delegated to take up the matter of more uniformity in the accounting methods required of electric railways in making their reports to the different departments of the government.

"The association's attention is called at this time to the report of the committee on the federal income tax, presented at a conference of the National Tax Association in San Francisco last August. This committee recommends a complete restatement and clarification of the law, there being general dissatisfaction with its complexity and strong objection to several of its provisions which are contrary to the principles of just taxation, work unnecessary hardship and result in unfair discrimination between various classes of taxpayers. There is a possibility of this law being amended by Congress at its next session, and it is suggested that electric railway accountants familiarize themselves with the report of this committee and discuss its merits with their representatives in Congress.

"As to the future of the association, the question of a separate meeting time and place is submitted for thoughtful consideration. Under such conditions a larger attendance could be secured of the younger men engaged in street railway accounting work, if the association were to meet at such a place as would best suit the convenience of the majority of the members, and at a time when other department heads were not absent from their duties attending the meetings of the affiliated associations. At the same time, more actual work would be done in two or three full-day sessions and greater good accomplished if the attention of members were not diverted by exhibits and entertainments."

EDUCATION AND OTHER REPORTS

After the reading of the president's address, reports were received from the executive committee and from the secretary-treasurer. Reports were then read for various committees as scheduled.

The committee on education simply presented as its report to the association the minutes of the meetings held on March 22, 1915, and June 17 and 18, 1915. These meetings were taken up with discussion of details of administration of the educational courses, and they were duly reported in the columns of this paper from time to time during the last few months.

After this report an announcement was made to the effect that Edward C. Stothart of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., had been awarded the $50 prize for the best paper submitted on the eighth lecture of the accountants' correspondence course. This was noted in the ELECTRIC RAILWAY JOURNAL of Sept. 18, page 594, and the prize paper was abstracted in the issue of Oct. 2, page 665.

The committee on accounting definitions in its report directed attention to the important work now being undertaken by the committee on accounting terminology of the American Association of Public Accountants. At the annual meeting in September, 1915, this committee, starting with the first of the alphabet, defined thirty-four terms beginning with "a." This first installment included, for example, definitions of "additional capital," "additions to capital" and "amortization," all of which touch matters that are involved in the systems of accounts prescribed by public service commissions. As it appears that the American Association of Public Accountants will give serious attention to definitions for the next few years, the committee of the American Electric Railway Accountants' Association recommended that a committee on accounting definitions be continued and that such a committee for the next year ask the committee of the American Association of Public Accountants for an opportunity to be heard or to submit views by correspondence in connection with the definition of terms that may directly affect electric railways. The report was signed by Frederic Nicholas, chairman; R. N. Wallis and G. A. Harris.

The committee of W. F. Ham, chairman; Henry L. Davies and C. L. S. Tingley reported that it had represented the association at the twenty-sixth annual convention of the National Association of Railway Commissioners held in Washington, D. C., Nov. 17-20, 1914. The proceedings of this convention are in print and may be procured, at nominal cost, from the Law Reporting Company, 115 Broadway, New York. The subjects discussed covered a wide range of matters vital to all

public utilities, including railroad taxation, plans for ascertaining a fair valuation of railroad property, railroad capitalization, statistics and accounts. The report of the committee on statistics and accounts of electric railways was spread upon the minutes of the convention without being read and, therefore, without discussion or action.

STANDARD CLASSIFICATION OF ACCOUNTS

The committee on a standard classification of accounts reported that it met with Interstate Commerce Commission representatives in Washington last January, when two days were devoted to going over publications which the commission proposed to issue. During the year the commission issued an index to the uniform system of accounts for electric railways. This index, composed of about twenty-eight pages, superseding the six-page one found in the back of the publication on the uniform system of accounts, afforded a very quick reference to the general accounts and the primary accounts. Not only is the reference page given but the section and note references as well.

A few months ago Accounting Bulletin No. 9 was sent out by the commission to all accounting carriers. This embodies decisions upon questions raised since the uniform system, effective on July 1, 1914, was adopted, as well as revised decisions on important questions previously submitted. It includes 346 cases and has two complete indices, one by accounts and one by topics, comprising in all thirty-five pages. Since the copy was given to the public printer eighty-two cases were submitted directly or through the commission to the committee for decision, the answers for which were published in *Aera.*

While the committee does not assert that the new system is perfect, from one year's use by a large number of companies there is reason to believe that it is reasonably so, and its adoption by many of the state commissions strengthens this opinion. The only change made during the year is one under the general instructions relating to the road and equipment accounts. In the original issue permission was granted to a company to charge the cost of an addition or betterment (where the amount was less than $200) to the appropriate operating expense account if it so desired. This option was taken away by an order of the commission effective on July 1, 1915, from which date all charges for improvements and betterments must be included in the road and equipment accounts regardless of the amount involved.

The committee states that although the association has not yet published the uniform system of accounts, it is the intention to provide in the near future a single book embodying the text of all the accounts, the index and all case decisions. Member companies may then purchase direct from the association as many copies as desired.

The report was signed by H. L. Wilson, chairman; W. F. Ham, W. H. Forse, Jr., P. S. Young and Robert N. Wallis.

EXPRESS AND FREIGHT ACCOUNTING

The report of the committee on express and freight accounting last year contained a brief outline covering the method of handling freight business and making reports and records. On account of the inquiries received since that time from members doing a freight business, the committee this year deemed it advisable to supplement the preceding report by outlining the methods for handling interline business and explaining other matters in connection with freight transportation accounting. Under the heading of "Interline Waybilling Arrangements," therefore, the present committee discussed the forms used; the arrangement for interline billing with the audit office settlement; waybills; waybill corrections; abstracts and division statements; statement of difference and correction account; summary and settlement; tracing unreported waybills; astray freight, and misrouted freight.

Concerning the interchange of equipment the committee decided that, to prevent delay and cost of transferring, it was advisable to let cars go through to destination. In order that the company owning the car might be paid for its use, however, some definite method should be adopted to provide for such car rental or use. The rate for such a freight trail car should be high enough to make the using company handle the shipment promptly and return the car at the earliest possible time, but it should not be so high as to prevent the use of one company's cars by another in these through carload movements. The lines in Indiana, Michigan and Ohio, comprising the Central Electric Railway Association territory, have an agreement to charge 50 cents for every twenty-four hours or fraction thereof, with a minimum charge of 50 cents against each company using the car each time on its lines. This agreement also provides that a junction agent should, for billing purposes, make to the auditor of the company owning the car (with a copy to the auditor of his own company), a report showing car initial, number, loaded or empty, road delivered to, exact time of day and date.

Furthermore, the committee stated that a majority of the interurban roads are now using the unit waybill for local shipments, making four or more parts, two of which go with the shipment, one part being the delivery receipt and the other part the expense bill. At nearly all important stations weekly credit is extended to large patrons, and it is, therefore, necessary to make two additional copies of bills which cover freight moving prepaid—one to be used as a receipt to shipper when collection is made at end of week, the other to be used by the station cashier. At some station, these "prepay charge" bills represent 30 per cent of the total bills made. Under these circumstances the committee felt that it was exceedingly advantageous to use a machine in preparing the bills on account of the less effort required and the greater ease of deciphering. Typewriters are now being made for this purpose. They are shiftless machines, using only capital letters, and are provided with special tabulating mechanism. The committee strongly recommended that this feature be looked into as it might save much labor and trouble now experienced by reason of illegible bills.

The report was signed by E. L. Kasemeier, chairman; H. B. Cavanaugh, A. E. Dedrick, Walter Shroyer and H. H. Read.

PASSENGER ACCOUNTING

The committee on passenger accounting reported that it was surprised to note from a perusal of the forms forwarded by the various companies that auditing departments still continue to prepare reports and statistics containing information necessary and valuable to the management and transportation departments when the fare was invariably a nickel, transfers were unknown, cars were of a uniform size, and the present-day interurban, with its infinite variety of fares, was unknown. Much of the information laboriously compiled for these daily reports has lost its value to the traffic and schedule departments. Nevertheless, the auditing department in many cases continues to prepare daily comparative and cumulative statements giving the earnings of each route or division in dollars and cents, the earnings per car-hour and per car-

mile. The original object of these reports was not only to show the management the profitableness of each route, but to enable it to gage the traffic conditions and schedule requirements. To-day most of these elaborately compiled reports do not give this information. Frequently a preponderance of reduced fare tickets exists on one line or route, or one route may be essentially a transfer-passenger carrying route. In either case, the earnings per route, per car-hour or per car-mile do not show traffic conditions or schedule requirements. The introduction of front-end collectors in congested districts also tends to lessen the value of showing earnings per car-hour and per car-mile by routes. For this reason many companies are ascertaining their schedule requirements by traffic counts made by inspectors on various parts of the system. In the committee's opinion, therefore, the auditing department should co-operate with the transportation department and give the passengers per car-hour and per car-mile. This would enable the management and the transportation department to form some idea of the profitableness and the schedule requirements of each route. For those routes where no traffic count is made this information could be readily obtained by the accounting department from the data contained in the conductors' reports.

The committee stated that the most valuable statistical information on interurban lines in addition to the usual car-hours and car-miles is the revenue per passenger-mile by trains. Under present conditions, this information is impracticable on account of the cost of obtaining it. When available, however, it should be supplemented by reports showing the passengers on the car at various points, inasmuch as a small train earning per passenger-mile might mean congestion for a short ride and empty cars the balance of the trip; while larger earnings per passenger-mile might be received from a moderate load for the long haul.

While it was believed that the reduction in fares has reached its limit, there is an increasing tendency in the use of ticket fares, and the committee felt that if the companies should join in adopting a uniform size of ticket, inventors and manufacturers would be induced to widen their field for manufacturing and distributing ticket-counting machines. Reports from several companies showed that they no longer laboriously counted the tickets by hand, but obtained the earnings by weighing the tickets received from each conductor or fare box.

It appeared to the committee that the handling of cash might be improved and simplified. Instead of the collections being turned over from one employee to another and finally by the cashier at the head office to the bank, there would be a great saving in time if these remittances could be made directly to the bank by the agent or conductor. In some cases the bank is so anxious for the railway company's account that it collects the money from the local cashier.

The report was signed by L. T. Hixson, chairman, R. J. Clark, John M. C. Horn, T. B. MacRae and Irwin Fullerton.

DISCUSSION ON PASSENGER ACCOUNTING

This latter report brought out a general discussion of the relative merits of the bag system and the carhouse receiver system of taking in cash tickets and transfers. Those participating were A. H. Kayser, general auditor San Diego (Cal.) Electric Railway; T. P. Kilfoyle, auditor Cleveland (Ohio) Railway; F. W. Frost, secretary-treasurer San Francisco-Oakland Terminal Railways, Oakland, Cal.; G. B. Willcutt, secretary and comptroller United Railroads of San Francisco, San Francisco, Cal.; J. H. Neal, general auditor Boston (Mass.) Elevated Railway; W. G. Nicholson, secretary and auditor Omaha & Council Bluffs Street Railway, Omaha, Neb.; W. F. Ham, vice-president and comptroller Washington Railway & Electric Company, Washington, D. C.; President Mitchell, and Secretary M. R. Boylan, general auditor Public Service Railway, Newark, N. J.

In San Diego, according to Mr. Kayser, the cash is taken from the carhouses to the main office, where instead of being sent to the bank it may be turned over to another company under the same control. Mr. Frost told how his company's method of picking up packages and counting at the main office gives more protection, is cheaper and gives reports by lines early in the afternoon of the succeeding day. Mr. Mitchell mentioned a small line which has the money taken directly to the banks by carhouse employees, the money not being counted by company employees after it leaves the conductor's hands. Mr. Boylan told how the receiving system has eliminated shortages, disputes and arguments, for although there might be shortages in tickets or transfers and registers, there were none in cash. Mr. Willcutt described a reduction in shortage since bell-punch days. Mr. Kayser thought that the elimination of any question between the company and men as to the amount turned in justified the expense of a receiving clerk.

According to the statement made by Mr. Neal, until three years ago the Boston Elevated Railway had used the bag system, and when the union asked for the carhouse receiving system the company pointed out that it would cost from $25,000 to $50,000 more. Such a system was put in, however, and the expense was found to run about as estimated. Desiring to count tickets at the same time as cash, the company has put in a new machine, which counts 60,000 tickets an hour, to count these automatically while the receiver counts the cash. When the cash is brought into the main office, it is counted a second time by a machine that both counts and wraps. This company uses a lot of the money for the payroll, part of which comes up for payment every day.

ADDRESS ON TAXATION

By a change in the program the joint report on passenger and express and freight accounting was postponed until Tuesday, and the scheduled joint session with the Transportation & Traffic Association was omitted, as no report of the committee on transportation-accounting was in hand. The remainder of the session was then devoted to an address on "Taxation of Electric Railways," by Prof. Carl C. Plehn, University of California, Berkeley, Cal.

Professor Plehn took as the key to his discussion a consideration of the burden of taxation as it affects the investment. He said that the taxes on all classes of public utilities appear to be growing faster than the capital invested therein, faster than the net earnings and faster than the gross receipts. It was highly desirable to determine accurately how much the burden of taxation is and how fast it is growing, which, surprising as it seems, is not now known. His paper then described an attempt to work out a method of establishing a practical measure or index of the tax burden, in order to show clearly just what the incidence is on electric railways and other public utilities.

Professor Plehn's remarks were discussed by Mr. Neal and Mr. Ham, who supplied particular instances in order to show the need of giving close consideration to local conditions in attempting to work out a method that would be susceptible of being applied to companies generally.

Tuesday Afternoon Session

The first business on the program on Tuesday was the reading of the following joint report on passenger and express and freight accounting, postponed from the day before.

The committee on passenger accounting held a joint meeting with the committee on express and freight accounting in Chicago on June 15, 1915, when the subject of allocation of passenger and freight earnings and expenses was considered. As stated in the report of the joint committee with the Transportation & Traffic Association in 1911, and also in the report for 1912, it is impracticable, if not impossible, to make an exact segregation of the expenses. Many of the large items can be easily divided, but there are numerous accounts which must be prorated on the most reasonable basis in view of the labor involved. The present committee felt, therefore, that the general plan outlined by the 1911 committee is the best obtainable under the existing conditions. In view of the fact, however, that the 1911 report was based on the old Interstate Commerce Commission classification, the committee revised the former report so as to make it fit the classification which is now in use.

It was jointly recommended that the committee on passenger accounting and the committee on freight and express accounting be consolidated, as all matters can be handled by one committee. The report was signed by L. T. Hixson and E. L. Kasemeier, co-chairmen; R. J. Clark, Irwin Fullerton, J. M. C. Horn, T. B. MacRae, H. B. Cavanaugh, A. E. Dedrick, H. H. Read and Walter Shroyer.

In the discussion of this report Mr. Kayser suggested that items for losses, damages and injuries might be prorated on the basis of located passenger and freight items instead of totals. Others discussing the paper were B. W. Fernald, auditor San Francisco-Oakland Terminal Railways, Oakland, Cal.; H. A. Culloden, secretary and auditor Pacific Electric Railway, Los Angeles, Cal.; I. A. May, comptroller The Connecticut Company, New Haven, Conn., and T. W. Gregory, director East St. Louis & Suburban Railway, East St. Louis, Ill. President Mitchell mentioned that the report more particularly applied to interurban properties handling carload freight. Mr. Kilfoyle moved that the report be received and filed, and its recommendation, that the committee on passenger accounting and the committee on express and freight accounting be consolidated, be taken up under the head of new business. When the recommendation later came up it was adopted, and it was decided to have a new committee of five members.

After the foregoing discussion was ended, P. V. Burington, secretary the Columbus Railway, Power & Light Company, Columbus, Ohio, read his paper on "Electric Railway Accounting—A Review." This was followed by a paper on "The Merits of Prepayment Cars from the Point of View of the Accounting Department," by R. J. Clark, comptroller Metropolitan Street Railway, Kansas City, Mo. Abstracts of these papers are published elsewhere in this issue.

Mr. Clark's paper brought on a lively discussion, in which considerable attention was devoted to the probability of the future development of a satisfactory transfer-issuing machine and a smaller and simpler transfer. Those participating in the discussion were Mr. Neal, Mr. Kilfoyle, Mr. Ham and Secretary Boylan. Mr. Neal agreed that the development of mechanical devices had been one of the important results of the introduction of prepayment cars. In his opinion, the motor-driven coin box, while it cannot be used on short runs, where it must be shifted frequently from one end to the other, is a valuable innovation that is bound to be permanent. He believed that the ideal transfer will carry only date, time, car or conductor's number and location from which and to which issued. The elements necessary for a successful transfer-issuing machine are already in existence in different devices, notably in employees' time clocks. In using transfer-issuing machines the line should be divided into sections and only from two to twenty points should be covered by one machine.

Mr. Kilfoyle stated that in Cleveland the company used a locked fare box with no registering devices whatever. Mr. Ham said his company in Washington was using the register system entirely, but had recently ordered ninety to 100 cars with the prepayment feature. Replying to a query from Secretary Boylan, Mr. Neal said that with an improved transfer and automatic machine there would be no occasion for having the slip longer than 2 in. or 2½ in. In his response Secretary Boylan pointed out that this would help secure the essential small size in a transfer machine to go on the platform with a fare box and leave table room enough for the conductor. Mr. Neal said the ideal machine would be a transfer machine and fare box combined, with one motor and one stand.

At this point George B. Willcutt, secretary United Railroads of San Francisco, read his paper on "The Value of Statistics to Executive and Accounting Departments." This is published elsewhere in abstract form. President William Tichenor of the Claims Association then announced that as a report from the joint committee on claims-accounting had not been received, the scheduled joint meeting of the Accounting and Claims Associations would be unnecessary.

Wednesday Afternoon Session

The program for the Accountants' Association on Wednesday afternoon was opened by a joint session with the Engineering Association with President Mitchell of the former association in the chair. Two reports were presented—one on engineering-accounting and one on the life of railway physical property, as shown below. In connection with the former report, it was explained that the section dealing with the development of a continuous inventory related not to the entire property but only to stock materials. Next year, according to President Crecelius of the Engineering Association, the committee will have the subject of a continuous property ledger to work on as a result of a recent decision that was arrived at by the executive committee.

ENGINEERING-ACCOUNTING

The report of the joint committee on engineering-accounting was to cover the following: (a) Cost accounting: draft of set of standard forms for use with the system recommended by the 1914 committee. (b) Revision of subdivisions of operating maintenance accounts to meet the requirements of the new Interstate Commerce Commission classification. (c) Development

of a proper ledger looking toward the maintenance of a continuous inventory.

COST ACCOUNTING FORMS

The cost accounting system recommended by the 1914 committee contemplated a set of correlated forms on which to record various particulars for each job or undertaking. The duty laid upon the 1915 committee to draft a set of forms for use with this system was found to be a perplexing one, for each member company had its own peculiarities of organization and other local conditions which in many cases seemed to necessitate widely differing methods of compiling and forwarding reports. The present committee therefore departed somewhat from the letter of its instructions, and instead of embodying in its report a set of blanks to be considered as standard, it submitted two sets of blanks which were selected as in most particulars covering all the requirements of the system, leaving it to the member companies to choose, each for itself, such features as might seem best to suit its own individual requirements or to cull out from these blanks such features as might serve to amplify the system which it already had in operation. The forms submitted include the following: Series A —details of estimated cost of material and labor covered by application; details of estimated salvage material (including scrap) to be abandoned, removed or replaced and returned to stores or to be used on the work; application for authority to proceed with and for appropriation to cover cost of additions, betterments, replacements and ordinary repairs; notification of completion of work; final accounting statement showing distribution of amount expended; report of salvage material returned to stores; Series B—estimate sheet, including on reverse side actual or estimated original physical cost of structure to be improved or replaced; distribution sheet for expenditures; notice of completion of work, and certificate of completion of authorization.

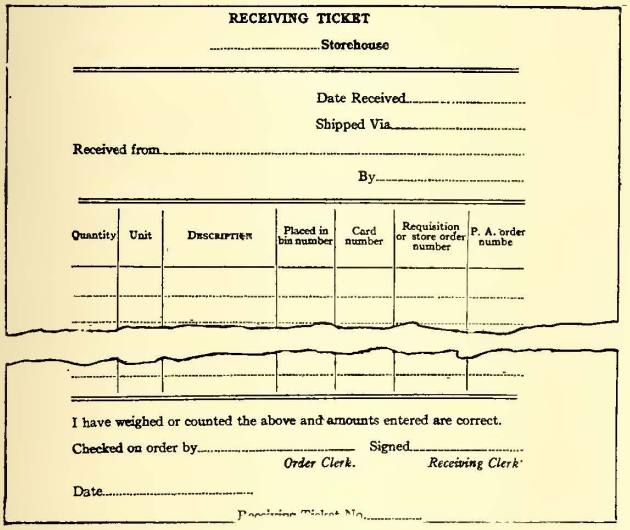
REVISION OF SUBDIVISIONS OF MAINTENANCE ACCOUNTS

The 1914 convention of the Accountants' Association having adopted the uniform system of accounts for electric railways as prescribed by the Interstate Commerce Commission, effective on July 1, 1914, the joint committee made a rearrangement of the maintenance and operating sub-accounts under the same or similar accounts of the new classification. Inasmuch as there appeared to have been made no subdivisions of the traffic and general expense accounts, it was not thought necessary to repeat the commission captions for these.

In making the modifications the committee was impressed with a doubt as to the value of such minute detail and intricate subdivisions, but it did not feel justified under its instructions in making any amendments or simplifications. It recommended, however, that the matter of operating and maintenance account subdivisions receive further study by future committees with a view of simplification.

CONTINUOUS INVENTORY

The term "continuous inventory" was understood to mean a record of stock materials on hand which at all



RECEIVING TICKET

.....Storehouse

Date Received.....

Shipped Via.....

Received from.....

By.....

Quantity	Unit	Description	Placed in bin number	Card number	Requisition or store order number	P. A. order numbe

I have weighed or counted the above and amounts entered are correct.

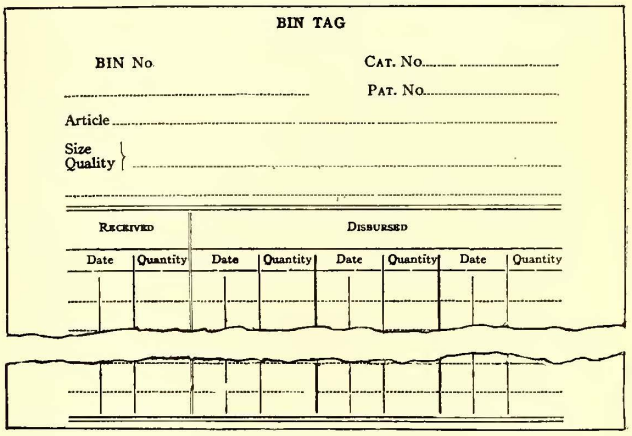
Checked on order by..... Signed.....

Order Clerk. *Receiving Clerk*

Date.....

Receiving Ticket No.....

CONTINUOUS INVENTORY—FORM I—SHOWING ORIGINAL RECEIVING TICKET (8½ IN. X 11 IN.)



BIN TAG

BIN No. CAT. No.....

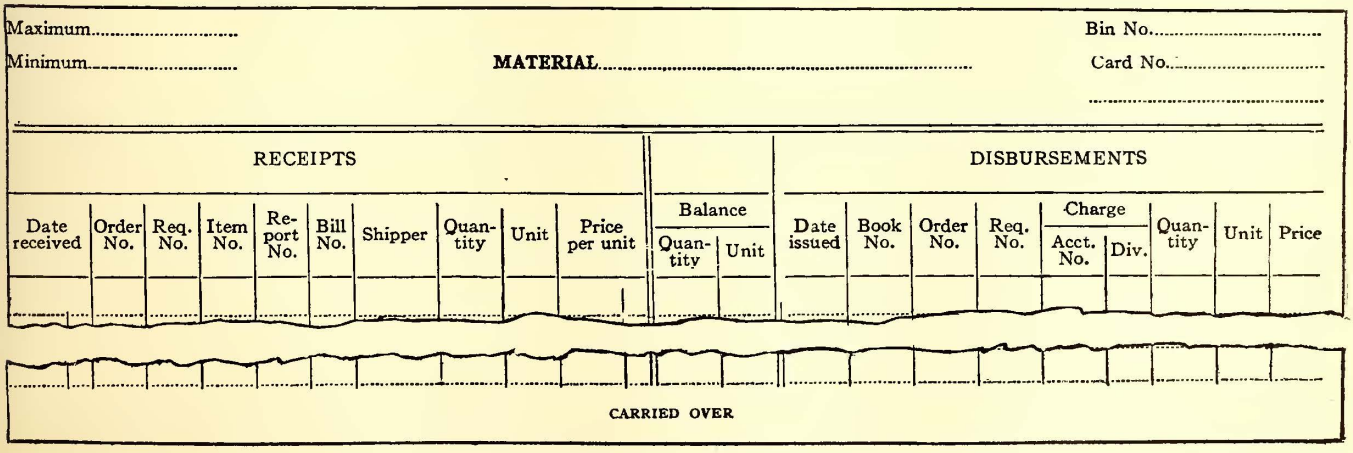
PAT. No.....

Article.....

Size
Quality } .....

Received		Disbursed					
Date	Quantity	Date	Quantity	Date	Quantity	Date	Quantity

CONTINUOUS INVENTORY—FORM II—SHOWING BIN TAG (4 IN. X 6 IN.) TO BE USED (SAME ON REVERSE SIDE)



Maximum..... Bin No.....

Minimum..... MATERIAL..... Card No.....

Receipts										Balance		Disbursements								
Date received	Order No.	Req. No.	Item No.	Report No.	Bill No.	Shipper	Quantity	Unit	Price per unit	Quantity	Unit	Date issued	Book No.	Order No.	Req. No.	Charge Acct. No.	Charge Div.	Quantity	Unit	Price

CARRIED OVER

CONTINUOUS INVENTORY—FORM III—SHOWING CARD RECORD (11 IN. X 7½ IN.) OF MATERIALS CARRIED IN STOCK (SAME COLUMNS ON REVERSE SIDE)

times would be so nearly correct as to obviate the necessity of taking periodical inventories for the purpose of adjusting the records to conform with the facts. A prime requisite for the maintenance of such an inventory is adequate, convenient and safe storekeeping facilities, safeguarding more or less expensive materials not only from theft but from hurried appropriation for legitimate purposes without proper record.

Adequate receptacles, such as boxes, bins or what not, should be designed to meet the necessities of the various kinds of materials to be stored within them, and each bin should be numbered very distinctly. As far as is possible, similar kinds of materials should be stored in adjacent bins. An agreed-upon classification of materials should be compiled, authoritative names being used so as to avoid confusion in terms. This classification should be in great detail, as it is a mistake to try to call too many things by the same name.

Firmly attached to each bin or receptacle should be a "bin card" (Form II), on which should be shown the bin number and the storekeeper's stock card number (Form III), as well as the various numbers of the purchasing agent's orders on which the particular kind of material has from time to time been ordered. On the bin cards the store-tender should, with scrupulous care and promptness, tally the quantities of materials deposited in each bin. This record should be made at first hand and with reference only to the actual physical count or measurement of the materials themselves, and without reference to some previous record of receipt. Simultaneously with the recording on the bin card of the receipt of stock materials, a record of the receipt of those materials should be compiled.

The receiving ticket (Form I) should set forth the following particulars: date of receipt, route by which shipment has been received, name of the seller, quantity and unit of quantity, and description of the material. It should also show the number of the bin into which the material has been placed, and the stock card number. Space is also provided in which to indicate, if desirable, the requisition or storehouse order number, and the purchasing agent's order number. The receiving ticket should also embody a certificate on the part of the receiving clerk that he has weighed or counted the materials covered by it, and that the amounts entered are correct. Needless to say, this record should be so scrupulously correct as to preclude any subsequent disputes with shippers as to receipt of materials.

In the storekeeper's office should be kept a card record of the materials carried in stock, a separate card being kept for each bin. As a sample of such card record Form III is shown, on which are indicated the number of the bin and the classification and name of the material. These stock cards are numbered consecutively, and in a prominent place at the top should be indicated the maximum and minimum quantities of that particular kind of material to be carried in stock. This has been found to regulate almost automatically the quantities of stock materials, preventing an overstocking and avoiding the possibility of running out of materials. It will be noted that the stock record card does not provide for the carrying of money value balances. On it are indicated with respect to receipts, the dates received, the purchasing agent's order number, the requisition number, and sundry other reference numbers, as well as the name of the shipper, quantities, units of quantities, and unit prices.

To return to the bin card (Form II), the blank space provided for tallying should be utilized for recording disbursements as well as receipts, and the tally of the quantity on hand as indicated by the bin card should at all times agree with the actual quantity of the material contained within the bin. Upon the accuracy with which this record is kept in a large measure depends the subsequent accuracy of all records, and the store-tenders should immediately report any discrepancies in order that prompt adjustment may be made.

No material should be disbursed without proper order or requisition duly signed by proper authorities. Forms IV and V are suitable. Form IV is a straight storehouse order calling for date, quantity and units of quantity, and description of materials required, and indicating expense or other account number to be charged with the materials. As this order is filled by the store-tender, he should mark in the space provided the bin number from which the materials have been disbursed. Form V is a requisition for material calling for approximately the same information, but addressed to the purchasing agent as well as to the storekeeper. This form may be accepted by the storekeeper as a straight storehouse order provided he has in stock the particular kind of material for which it calls. If he has not and does not wish to lay in a stock, this requisition may be forwarded to the purchasing agent as his authority for buying the materials to be subsequently charged directly without passing through the stores accounts.

From the storehouse order (Form IV) or the requisition for material (Form V) in the storekeeper's office, a record of the disbursements is entered on the credit side of the stock card (Form III), showing the following detail: Date of issue, book and order number of the

STOREROOM ORDER

Book No. ..... Order No. ..... Date ..... 191...

Quantity	Unit	DESCRIPTION	Bin	Card	Price	Amount	Charge account

Filled by ..... Received by ..... Total

Credit account ..... Signed .....

Foreman

Approved .....

Superintendent

CONTINUOUS INVENTORY—FORM IV—SHOWING ORIGINAL STRAIGHT STOREHOUSE ORDER (9 IN. X 4⅜ IN.) FOR MATERIALS AND ACCOUNT TO BE CHARGED

REQUISITION FOR MATERIAL

Office of ..... Date ..... Req. No. .....

Address ..... Requisition for .....

(State whether Storehouse Stock or Direct Charge.)

Number items consecutively. Mark urgent items "RUSH." Requisitions covering material for general stock to be based on thirty days' consumption and issued on or before the last day of the month preceding that for which supplies are required.

To the Purchasing Agent or General Storekeeper

The following described material is required, same to be consigned as follows (give full shipping directions):

.....

.....

Items for delivery at different points must not appear on same requisition

Item	Quantity required	Material	Account to be charged	This column to be filled in by purchasing agent — Firm and order No.

Approved ..... Signed .....

CONTINUOUS INVENTORY—FORM V—SHOWING ORIGINAL REQUISITION (8⅞ IN. X 11 IN.) FOR MATERIAL ADDRESSED TO PURCHASING AGENT

Bin No..... Card No..... Classification.....

RECEIPTS								BALANCE ON HAND			DISBURSEMENTS						
Date	References		Shipper	Quantities		Price Per Unit	Value	Quantities		Value	Date	References		Quantities		Price Per Unit	Value
	P. A. Order	Audit No.		Number	Unit			Number	Unit			Req'n No.	Audit No.	Number	Unit		

CONTINUOUS INVENTORY—FORM VI—SHOWING RULING AND CAPTIONS OF LOOSE-LEAF STOCK MATERIAL LEDGER (19 IN. X 10½ IN.)

storehouse order and the requisition number, the distribution of accounts, and the quantity, units of quantity and unit price of the material disbursed. It will also be observed that the stock card (Form III) provides a column in which to indicate the balance in quantities of the materials on hand. The balances on these cards should at all times agree with the balances indicated upon the bin cards (Form II).

The receiving tickets (Form I), after entry upon the debit side of the storekeeper's stock card (Form III), should be attached to the shipper's invoice covering the materials, and should be forwarded to the accounting department. Likewise, the storehouse orders (Form IV) and the requisition for materials (Form V), which may have been honored by the storekeeper, are also forwarded to the accounting department. These records form the bases of debits and credits in the final stock material ledger, kept in the accounting department.

Form VI shows a loose-leaf stock material ledger, which in its captions indicates bin numbers, stock card numbers and classification by names, which invariably should be identical with those in the previously described records. In the accounting department on the debit side of the ledger are entered the receipts showing dates, purchasing order numbers or other reference numbers, names of shippers, quantities and units of quantities, unit prices and total values. These entries are based upon the original receiving tickets substantiated by the shipper's invoice, and should there be any discrepancy between the two, they should then be adjusted. On the credit side of the stock material ledger should be entered the disbursements, indicating the dates, requisition or other reference numbers, quantities and units of quantities, unit prices and total values, this record being compiled from the individual storehouse orders or requisitions. At this point the money values of each storehouse order or requisition are computed and extended in the accounting department, based on the unit prices paid as indicated on the debit side of the stock material ledger. Should the unit prices vary from time to time, a careful averaging of such prices will insure accurate valuations.

In the center column of the stock material ledger are provided spaces to indicate balances of the quantities and money. The quantity balances should agree with the quantity balances indicated on the stock card (Form III) and on the bin card (Form II). A simple method of insuring this agreement is to make frequent tests in the following manner: The store-tender in honoring a storehouse order (Form IV) or a requisition (Form V) indoses on the back of it the quantities remaining in the bin after he has made the disbursement. This storehouse order or requisition, as it is entered on the stock card (Form III) in the storekeeper's office and subsequently on the stock material ledger in the accounting department, gives the stock-card clerk and the stock-ledger clerk an opportunity to compare balances.

The committee stated that it had before it the records of one member company in which the system described had obviated the necessity of taking a physical inventory for more than seven years. During the year ended Dec. 31, 1914, with transactions of receipts and disbursements aggregating $2,500,000 and involving a total stock value of approximately $300,000 of materials classified under several thousand different names, the net adjustment of stock material values amounted to only $85. In concluding the committee emphasized the fact that the value of the final result depends almost entirely upon the prompt and painstaking accuracy with which the initial records and the subsequent entries are made.

The report was signed by F. H. Sillick and Charles Rufus Harte, co-chairmen; M. W. Glover, C. H. Lahr, J. C. Collins, H. A. Gidney, Martin Schreiber, C. H. Clark, J. P. Ripley and J. P. Barnes.

LIFE OF RAILWAY PHYSICAL PROPERTY

The committee on the life of railway physical property reported that it had seemed unnecessary to take up any new phases of the subject referred to it. It is cooperating with the sub-committee on bibliography of the American Association committee on valuation, and expects later to furnish members with a bibliography which will bring its 1912 list down to date.

Past endeavors have convinced the committee that any attempt to collect from member companies any data concerning the life of railway property which can have any ultimate value is merely a waste of effort, at least until such time as data concerning actual conditions shall have been gathered and have stood the test of varied and conclusive experience. The complicated character of the factors which enter into the life of railway physical property was thoroughly discussed by the committee in its 1913 report. Therein the committee set forth the following basic elements affecting the usefulness of such property: (a) Use; (b) climatic and soil conditions; (c) maintenance; (d) inadequacy; (e) obsolescence; (f) the human element; (g) the public demand, and (h) earnings.

In the committee's opinion a study of this list and a consideration of the further complications and variations resulting from local conditions are sufficient to demonstrate the futility of attempting to gather figures of the life of railway property which shall be generally applicable or which may be "averaged," "compiled" or even "compared" except after the fashion of rule-of-thumb. It appears utterly futile to attempt to gather

the experience in regard to a great number of units after the manner of human mortality tables. It is mere guesswork to fix the time when any given unit will go out of service, and therefore idle to construct any scientific conclusions upon such a basis. It may be argued that, as with human life tables, it is possible to take a large number of experiences and by averaging them secure an "expectancy." Even if that were true, the time is yet far distant when the industry will have existed long enough to make available sufficient experience to form a basis for such expectancy. The youth of the art and its rapid development make any experience thus far obtained of little value.

The committee believes, therefore, that any estimate of future life, whether regarding an individual unit or a group, is at best a guess and an uncertain and inconclusive one. It notes with satisfaction that there seems to be on the part of regulating commissions, valuation experts and other authorities an increasing recognition of the soundness of this belief. Less and less weighty seems to be the theory that it is possible to predetermine how long a certain unit of property will continue to give service, either through an examination of its own condition or by a comparison with other similar units, which in other places and under other conditions (no matter how similar) may have completed their usefulness. Such a predetermining process is at times necessary, but even then it is coming to be generally recognized as merely an estimate that is largerly a matter of judgment rather than of scientific determination.

The report was signed by Robert N. Wallis and Martin Schreiber, co-chairmen; A. R. Patterson, W. H. Forse, Jr., R. F. Rifenberick and J. H. Hanna.

FINAL ACCOUNTANTS' ADDRESSES

After the joint engineering-accounting session the Accountants' Association in its final meeting listened to three addresses by Paul Shoup, president Pacific Electric Railway, Los Angeles, Cal.; John F. Forbes, C.P.A., of Haskins & Sells, San Francisco, Cal., and Henry Rand Hatfield, professor University of California, Berkeley, Cal.

In opening his subject of "Treatment of Charges for Rent of Tracks and Facilities and Rent of Equipment," Mr. Shoup took advantage of his presence with the accountants to mention some of the problems which executives would like to have the accountants solve for them, such as what actually, not theoretically, becomes of the fund created by depreciation charges when the need for the depreciated article or any substitute therefor has passed, and others of an equally perplexing nature. Mr. Shoup spoke highly of the depreciation fund, saying that a very respectable depreciation fund rather elbowed the sinking fund out of the way. It is true that there should be some provisions in mortgages looking to certain conditions being fulfilled before dividends are paid or property alienated, but perhaps the time will come when there will be provisions not for a sinking fund but for a depreciation, obsolescence and amortization fund that shall take precedence over any dividend payments and shall be reinvested for the company's benefit. In relation to the particular subject of rents, Mr. Shoup advanced some arguments based upon his company's experience in favor of treating rents as fixed charges rather than operating expenses, following steam railroad practice. In the following discussion Mr. Ham described the national situation in regard to this question and the disadvantages, complications and burdens that would result from treating rents otherwise than as operating expenses, in view of the great diversity of conditions between urban and interurban developments.

Mr. Forbes' topic was "The Importance of Accrued and Accruing Accounts from the Viewpoint of the Certified Public Accountant." He pointed out that financial statements should be considered in their entirety, for items which alone have one meaning will have their significance greatly altered when read in relation to other items. Mr. Forbes presented details illustrating how operating expenses may be stated in such a way as not to permit the accounts to fulfill their function of furnishing a basis for intelligent comparisons. He devoted special attention to railroad commission expenses, depreciation and taxes, and said that interest on bonds is the one accruing account almost invariably handled properly.

Professor Hatfield, who is the author of well-known works on accounting, had for his subject, "Some Neglected Problems in Electric Railway Accounting." He advanced some interesting new ideas concerning some important fundamental problems that have received special consideration by public utilities since the advent of commission regulation. In discussing the basis for valuation he rejected some of the theories which have been most prominently advanced and said that attempts to form a principle resting on equity have led to hopeless confusion. In the case of public utilities a consideration more fundamental than equity is that having to do with the attraction of capital for developments. This brings up the question of risk, as well as the important one of new competition. Professor Hatfield pointed out the inconsistency of allowing high returns as an offset for possible losses and then demanding that the high rates be reduced in the few cases where the enterprise proved successful. The neglected phase of the valuation problem, therefore, concerns the question of whether the investor is to take risks or whether the public is to go along at a dead level, foregoing the economies coming from new inventions. Professor Hatfield then discussed the real nature of the difference between capital expenditures and charges against revenue.

END OF PROCEEDINGS

After these addresses the association took up the reports of convention committees and on motion of Mr. Kilfoyle, amended by Mr. Neal, voted to dispense with the committee on overhead charges. This action, in line with the recommendation in the President's address, was deemed advisable in view of the fact that under the Interstate Commerce Commission classification future overheads are definitely covered. Mr. Kilfoyle as chairman of the resolutions committee then presented the various resolutions of thanks, and Mr. Neal read the report of the nominating committee.

In accordance with the latter report, new officers were elected as follows: President, T. P. Kilfoyle, auditor Cleveland (Ohio) Railway; first vice-president, L. T. Hixson, auditor Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.; second vice-president, H. A. Culloden, secretary and auditor Pacific Electric Railway, Los Angeles, Cal.; third vice-president, G. C. Whitney, chief clerk Washington Railway & Electric Company, Washington, D. C.; secretary, M. R. Boylan, general auditor Public Service Railway, Newark, N. J.

The following members, besides the officers, were chosen for the executive committee: H. B. Cavanaugh, auditor Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio; P. V. Burington, secretary The Columbus Railway, Power & Light Company, Columbus, Ohio; F. E. Webster, treasurer Massachusetts Northeastern Street Railway, Haverhill, Mass., and F. H. Sillick, comptroller Hudson & Manhattan Railroad, New York.

Sessions of Engineering Association

Committees Reported on Lightning Protection, Standards, Power Distribution, Equipment, Buildings and Structures, Power Generation, Way Matters, Heavy Electric Traction and Electrolysis and Other Subjects—Wood Preservation Discussed—President Crecelius Scores Neglect to Use Association's Standards

Program for Monday

Annual Address of the President.
Annual Report of Executive Committee.
Annual Report of Secretary-Treasurer.
Reports of Committees:
- Lightning Protection—D. E. Crouse, chairman.
- Standards—H. H. Adams, chairman.
- Power Distribution—A. S. Richey, chairman.

Program for Tuesday

Reports of Committees:
- Block Signals for Electric Railways—J. M. Waldron, chairman.
- Joint Sub-committee on Block Signal Rules—L. H. Palmer, chairman.
- Transportation-Engineering—Co-Chairmen: R. N. Hemming and P. N. Jones.
- Equipment—W. G. Gove, chairman.
- Buildings and structures—C. F. Bedwell, chairman.

Program for Wednesday

Reports of Committees:
- Engineering-Accounting—Co-chairmen: C. R. Harte and F. H. Sillick.

L. P. CRECELIUS
President

Wednesday—Continued

Reports of Committees (continued):
- Life of Railway Physical Property—Co-chairmen: Martin Schreiber and R. N. Wallis.
- Constitution and By-Laws.
- Power Generation—J. W. Welsh, chairman.

Program for Thursday

Reports of Committees:
- Way Matters—C. S. Kimball, chairman.

ADDRESS—"Some Factors Affecting the Application of Wood Preservation to Electric Railways," Carlile P. Winslow and Clyde H. Teesdale.

Reports of Committees (Continued):
- Heavy Electric Traction—E. R. Hill, chairman.
- Electrolysis—A. S. Richey, chairman.

General Business.
Report of Committee on Resolutions.
Report of Committee on Nominations.
Election and Installation of Officers.
Installation of Officers.

Monday Afternoon Session

PRESIDENT L. P. CRECELIUS opened the San Francisco convention of the American Electric Railway Engineering Association on Monday, Oct. 4, 1915, with a vigorous address, in which he scored the failure of electric railways to take full advantage of the standards that had been adopted by the association, and outlined the vast scope of the committee work accomplished during the past year.

"The past year," he said, "differs from former years of our association's activities, I believe, only to the extent that matters which have been pending for some time have in the majority of cases been brought to a successful conclusion by our various standing committees. This is evidenced by the report of the committee on standards. The association is now in a position to take on a considerable amount of new work, and is therefore in need of subject matter for investigation by these committees. I have pointed out before that the subjects for consideration must be important and timely and of more than purely local interest. They should comprise matters of vital interest to the electric railway industry as a whole. Minor questions should be submitted to the *Aera* Question Box, which has been found in the past year to be a very profitable source for the interchange of ideas. Our membership seems to have shown considerable interest in it, and this feature of the *Aera* is commended to your consideration. Examination of the reports of our various standing committees indicates the interest, thoroughness and good work accomplished during the year. Accordingly, all credit for the successful outcome of the recommendations contained therein belongs to our members and to the representatives of the manufacturers who have participated in the preparation of these reports.

"There are two matters of paramount interest which I desire to bring to your attention and which, in my opinion, must receive the very earnest consideration of our association. They are, first, the question of arousing more interest in the use of our standards and recommendations which are now available to all, due to the distribution of the Engineering Manual; and second, membership.

"In regard to the first matter, a sub-committee of the committee on standards was appointed to investigate the extent to which the standards and recommendations of the Engineering Association were being used by the member companies. Conditions revealed by this investigation were very unsatisfactory and indicated that our standards are not being used as much as the great value of this work justifies. Now, it seems that advantage should be taken of important work of this character. It must be that member companies fail to appreciate that this work is carefully prepared by the ablest men in our association and thus is of immense value. It follows, therefore, that a primary duty of the association will be to bring this question to an issue and to devise ways and means by which the great importance of our standards will be brought home to the member companies for the purpose of stimulating interest in their use.

"In regard to the question of membership, there has been pointed out in former addresses the great desirability of a large membership in the association, and undoubtedly this is so well understood that the point need not be made again. In line with this question, however, the officers of this association and the American Association have hit upon the plan of including company section members in the membership of the association under an arrangement which, it is felt, will induce a very large class of individuals to join. To make this possible it was necessary to add an amendment to the constitution of the Engineering Association, which will be submitted to this convention for approval. The matter, however, should not end here, and every member of the association is urged to give the question of membership his personal attention. The secretary-treas-

urer's annual report on the finances, when presented for your consideration and approval, will indicate that the expenses incurred by the Engineering Association are somewhat larger than last year. This was not due, however, to the fact that the affairs of the association have been less economically administered. It was due altogether to the very large amount of co-operative work with other societies and associations, requiring frequent and prolonged conferences by our representatives.

The scope of the Engineering Association's activities is reflected by the following statement of co-operative work carried on with other societies and associations: (1) In connection with the preparation of a National Electrical Safety Code by the National Bureau of Standards, regarding which a number of conferences have been held. (2) Representation on the national joint committee on overhead and underground line construction, the activities of this committee having been very pronounced during the past year. (3) Discussion on clearances for heavy electric traction with the American Railway Association and the American Railway Engineering Association. (4) Electrolysis, with representation upon the national joint committee upon this subject. (5) Fire protection rules and car wiring, in connection with the National Fire Protection Association. (6) Cable stranding, with the American Institute of Electrical Engineers. (7) Standards of design for block-signal apparatus, with the Railway Signal Association. (8) Consideration of the boiler code of the American Society of Mechanical Engineers.

"In addition to the large amount of work indicated above, the details of which fell to the lot of the representatives of our various committees, they have also found time to cover fully the questions submitted to them by the executive committee and included in reports which are to be considered by this convention. Consequently the year has been a very busy one for our standing and special committees. I have the further pleasure to report that the committee on standards has finally included in its report a proposed schedule of regulations covering the style of specifications to be adopted by the association, and you have already observed by examination of the advance copies of the reports that this year marks an epoch in that the committee on power generation has been successful in bringing forward valuable recommendations to be adopted by the association.

"To sum up, the year's work has been found to have been one of unusual activity in regard to co-operation with other societies upon very important questions and in the completion by our standing committees of many matters pending from previous years. It follows, therefore, that the duties devolving upon the secretary and his office force have been unusually heavy, and I have great pleasure in calling attention to the very able and satisfactory manner in which this has been taken care of by him. In closing, I desire to express again my great appreciation of the honor you have conferred upon me, and I wish to add that I will always have a deep interest in and regard for the welfare of the Engineering Association."

The report of the executive committee of the Engineering Association was then presented by Secretary-Treasurer Burritt, who read the minutes of the meeting held on Nov. 10, 1914, and recorded in the issues of the ELECTRIC RAILWAY JOURNAL for Nov. 14, 1914, page 1103, and Dec. 12, 1914, page 1301. He also gave the results of two letter ballots, one under date of March 4, 1915, directing that the joint committee on engineering accounting, Engineering Association branch, consider the continuous inventory as covering the entire physical property of electric railways rather than stock materials alone, and the other dated Aug. 18, 1915, approving the amendment of the constitution to provide for the new proposed grade of company section members.

As secretary-treasurer of the Engineering Association Mr. Burritt reported that the expenditures had exceeded the appropriation of $4000 by $459.13, largely due to the numerous meetings of the national joint committee on overhead and underground line construction. He gave the following data:

EXPENDITURES DURING PERIOD FROM OCT. 1, 1914, TO SEPT. 30, 1915	
Executive committee	$333.78
Committee on building constructions	105.65
Committee on electrolysis	60.92
Committee on equipment	512.36
Committee on heavy electric traction	.....
Committee on lightning protection	221.05
Committee on membership of purchasing agent	.....
Committee on nominations	.....
Committee on power distribution	749.28
Committee on power generation	425.76
Committee on standards	287.02
Committee on subjects	20.85
Committee on way matters	856.37
Meeting of the American Society for Testing Materials	22.65
Committee on block signals	235.75
Committee on engineering accounting	68.86
National joint committee on overhead and underground line construction	496.38
Committee on transportation engineering	43.35
Miscellaneous	19.10
Total	$4,459.13
Engineering Manual	715.42
Proceedings	2,557.83
Total	$7,732.38
Proceedings (accounts payable)	540.88
Grand total	$8,273.26

The total membership on Sept. 15 was 1871, exactly the same as on Oct. 1, 1914.

Both of these reports were approved as read, after which E. J. Blair, Electrical Engineer Chicago Elevated Railways, and Charles Rufus Harte, Construction Engineer The Connecticut Company, were appointed as a committee on resolutions.

LIGHTNING PROTECTION

The report of the committee on lightning protection was then read in abstract by Mr. Blair, who explained the recommendations in detail. In this report the committee presented data and recommendations on lightning arresters and their installation on cars and on the line. Definitions of the following five types of arresters offered for use on car equipment were given: Multipath spark-gap type; resistor-rod, spark-gap, magnetic type; resistor-rod, spark-gap, mechanical circuit-breaker type; condenser type with shunted resistance and series spark gap, and electrolytic type. For equipment purposes it was recommended that the choke coil should be made of at least ten turns of wire wound on a wooden core with a mean diameter of 5 in.; that the lightning arrester, of whatever type, and the choke coil should be located as near the trolley base as practicable; that the leads to the arresters should not be less than No. 6 wire, the connections being first mechanically strong and then soldered; that a system of inspection be adopted which will provide ample assurance that the lightning arrester is constantly in good order, and that the flashover point of the arrester be set at a voltage as close to the maximum operating voltage of the system as practicable.

Attention was directed to the fact that the lightning protection feature had not been sufficiently considered in connection with car wiring, which may be easily arranged so as to jeopardize the equipment in spite of use of the most efficient lightning arresters. It was therefore recommended that any connection which permits the lightning current to closely parallel controller cables should be avoided; that the placing of a wire carrying lightning current near and parallel for any

considerable length to a wire where damage can be done by an induced charge should be avoided; that the carrying of a lightning arrester connection which extends from the roof of a car to an arrester situated near the floor of the car directly back on itself to the top of the car to a circuit breaker or other connections to the apparatus should be avoided, and that wires connected to the opposite terminals of a lightning choke coil should never be brought within 12 in. of each other.

On the subject of lightning arrester grounding the committee believed that, with a view of preventing induction, the proper location for the car arresters is on the roof. The following recommendations on this subject were also made: That the size of wire used in lightning arrester grounds should not be smaller than No. 6 and that the wires should be of copper; that the ground wire should be separate from other car ground wires and should be as short and straight as possible; that the wires in the lightning-arrester circuit should not be run in conduits and, when possible to avoid it, they should not be run adjacent to magnetic material; that all wires in lightning-arrester circuits should have their connections well soldered, and in case steel cars are used that the lightning-arrester ground should be connected to the nearest steel structure after the fact has been established that this point of connection has intimate and continuous contact through the steel framing of car and ground connections to the motor frame.

Consideration of data secured by the preceding committee indicated that the use of line lightning arresters materially aids in protecting car equipment. Present practice consists in installing from two to seven arresters per mile, about five per mile being the most common practice and this, under ordinary conditions, should give satisfactory results. After describing the different types of line arresters in common use the committee reported its conclusions as follows: Any arrester for use in line service should be compact, rugged and mounted in a well-made weatherproof box. It should also be so designed that an inspection of all parts is easily feasible. The protection afforded by arresters on overhead lines is as important to the safety of car equipments as it is to the trolley wires and stations. An arrester which is to be placed in service for line protection should have as an inherent quality a positive ability to disrupt or prevent the dynamic arc. Any failure in this respect would result in a short-circuit which, owing to its possible remoteness, might prove difficult of detection.

On the subject of line lightning-arrester grounding, regarding which the various interests have not been able to agree, it was recommended that line lightning-arrester ground wires should be connected to a good earth ground and also to the track rail except under the following conditions: Where the current flow on the connections from track rail to earth would exceed an average of ¼ amp. during any twenty-four-hour period, this average being determined by considering the algebraic sum of the currents, and where a.c. track block signals of the double-rail type are used. Where the foregoing exceptions exist, and in order to prevent doing away with the rail connections, it was suggested that the connection be made from the line lightning arrester to both earth ground and track rail, but that there should be installed in the circuit between the point where the rail connection joins the lightning-arrester ground wire and the earth ground itself a suitably-designed air gap. The committee thought that under some conditions it would be perfectly safe to make the solid connections to both rail and earth without the air gap, but had not sufficient information from signal manufacturers to warrant qualification of the recommendation. The committee explained in detail the reasons for the recommendations and included the results of tests made by Prof. Adolph Shane, of the State University of Iowa, giving resistances of various types of grounds. The report stated that the resistances of lightning arrester grounds less than 5 ohms cannot be expected and even under good conditions they may be as great as 50 ohms. Interurban and suburban track well ballasted with rock or coarse gravel may be considered as insulated for the purposes of lightning protection, whereas interurban and suburban tracks not carefully ballasted and sometimes in intimate connection with the upper surface of soil and ordinary city track furnish an added assurance of a good ground connection. On the well-ballasted class of track the connections from rail to earth ground are more necessary for lightning protection than on the other two types, but on the other hand, the objections to the connection will exist more often on such construction.

The committee recommended that the ground connection should be of solid copper wire, not less than No. 4 in size, securely fastened to the back of the pole and, except as noted, well bonded to track rails and either extended as a ground coil or well soldered into a ground pipe. In any case at least 8 ft. of the lower exposed portions should have a non-metallic protection, and any change in direction of the ground wire should be made by easy curves.

The report was signed by D. E. Crouse, chairman; E. J. Blair, J. Leisenring and F. R. Phillips.

In the discussion F. I. Fuller, Vice-president Portland Railway, Light & Power Company, stated that no line or car lightning arresters are used in Portland, Ore. In reply to an inquiry as to how often the inspection of lightning arrester equipment should be made, Mr. Blair pointed out that, in addition to the periodical tests, there should be a general inspection after each electrical storm. Replying to an inquiry as to whether the work of this committee would be continued, Mr. Crecelius explained that, although the work of the committee on lightning protection was at an end, the equipment, power distribution and other committees would carry on the work in a general way.

STANDARDS

The report of the committee on standards was then abstracted by W. G. Gove, superintendent of equipment Brooklyn Rapid Transit System, who pointed out that this report was submitted as a first draft which would doubtless be improved in the course of adapting it to general needs. He explained the need of standards in line with those which had been approved by other engineering organizations that have already devoted considerable study to similar subjects. Mr. Crecelius warmly commended the work of the committee on standards, whose report was then adopted with a vote of thanks. An abstract of the report follows:

The Engineering Association committee on standards reported that in addition to its work of approving the standards and recommendations of the standing committees it had investigated the extent to which association standards and recommendations are being used and had drafted a style for the make-up of specifications. The results of the canvass to determine the extent to which the standards are being used was not satisfactory and another canvass was considered necessary. Regulations governing the style of specifications were proposed, and it was stated that the association's recommended specifications on splice bars for girder and high T-rails and for the manufacture of open-hearth girder and high T-ralls were in general constructed in accord-

ance with these regulations. Appended to the proposed regulations was a list of standard abbreviations, symbols, etc.

The committee recommended for adoption as a standard a design for a spectacle for left-hand, upper-quadrant, 90-deg. semaphore signals, for which a drawing was given.

In general the committee indorsed the recommendations of the several standing committees as covered in their respective reports. The following items covered the most important independent actions of the committee. The standards committee recommend that the specifications for concrete poles be incorporated in the Engineering Manual; that the standardization rules of the A. I. E. E. be given further study, as they have been revised since being considered by the committee; that the standard clearance diagram for semaphore signals be referred back to the committee on block signals for joint consideration with the committee on heavy electric traction; that the boiler code of the A. S. M. E. be referred back to the committee on power generation for further consideration; that the general specification and form of contract for railway structures be disapproved as not suitable for adoption as a standard or a recommendation; that action on type "C" track construction will be withheld until after the convention; that the proposed classification of soils be not adopted as recommended practice but that it be inserted in the manual under "Miscellaneous Methods and Practices"; that the change of the title "Recommended Symbols for Recording Surveys" to "Conventional Signs for Recording Surveys" and the adoption of the signs used by the Interstate Commerce Commission with modifications superseding the present recommendation be disapproved and that the matter be referred to the executive committee for consideration jointly with other committees in order that all symbols may be included in the revision; that the recommended design of rolled-steel wheels of 2½-in. tread and 21-in. to 37-in. diameter be referred back to the committee on equipment for consideration in conjunction with the design of contour of tread and flange, and for further study as to the thickness of rims.

The above report was signed by H. H. Adams, chairman; Martin Schreiber, vice-chairman; C. F. Bedwell, C. H. Clark, W. G. Gove, J. H. Hanna, E. R. Hill, E. B. Katté, C. S. Kimball, F. R. Phillips, A. S. Richey, W. H. Sawyer and J. W. Welsh.

POWER DISTRIBUTION

The Engineering Association committee on power distribution then reported on the following: Concrete poles, tubular steel poles, specifications for overhead line material, overhead crossings of electric light and power lines, standard stranding cable, rubber-insulated wire and cable for power distribution purposes, A. I. E. E. standardization rules, clearance diagram for semaphore signals, joint use of wood poles and suggestions for succeeding committees.

On the subject of concrete poles it was stated that poles had been made according to the committee's designs during the past year and tested at Rochester, N. Y. The results of the tests showed that in general the theory previously presented was correct, but that the constants involved in the formulas would need to be modified. The data of the tests were given in an appendix and a revised specification was presented. An article by C. L. Cadle on "The Method of Manufacturing Concrete Poles in Rochester, N. Y.," was also given in an appendix. As a result of the tests and the experience of the committee the following facts were recorded: Failure of a pole is always due to stretching of the reinforcing rods on the tension side. A failure is always preceded by the appearance of hair-line cracks in the concrete on the tension side at rather frequent and regular intervals from the ground line up. It is advantageous to use a high grade of reinforcing steel to secure the maximum tensile strength. Plain round reinforcing rods are essentially as satisfactory as twisted or other rough rods because in general the rods will elongate before they slip in the concrete. A larger number of small rods is preferable to a smaller number of large rods on account of the better distribution of reinforcement that may be secured for a given amount of steel and because a greater bonding contact surface is presented to the concrete. The reinforcement need not be uniform throughout the length of the pole, but may be cut off as the top of the pole is approached. A pole with uniform reinforcement will break at the ground line, while one with tapered reinforcement will break off at some point above the ground, depending upon the taper of the reinforcement. A concrete pole has an element of safety in it, as a failure of the pole will not in general allow it to fall to the ground. It is difficult at times to pull over a pole after failure, even though it is inclined at a large angle from the vertical. The committee reported progress only but recommended as follows: That the investigation of the subject of concrete poles be continued; that the material in the report be accepted as a statement of the best practice known to the committee at this time, and that the formulas and tables of the deflections for a square, uniform-section pole presented in previous reports be considered as tentative only and not as final values.

Under the head of tubular steel poles the committee recommended certain modifications of the specifications, the computed deflections, and the pipe tables.

The changes in the specifications recommended were for the purposes of requiring a ground sleeve unless otherwise specified, permitting cold as well as hot swaging of joints, making the detail of joint construction specification more specific, providing for the painting of poles before loading for shipment as general practice, and making more specific the directions for making the deflection tests.

The committee also recommended the substitution of new pole and pipe tables for those previously printed in the Engineering Manual. The pole table gave data for poles in common use, and the pipe table listed thicknesses and weights of pipe which have now been agreed upon by pipe manufacturers. It was stated also that the modulus of elasticity of steel for pole purposes is now well settled at 29,000,000 and this value has been used in computing the deflection given in the pole table. A derivation of cantilever formula more complete than that given on page 13, of the pamphlet *Ds* 3*a* of the Manual was offered, as the older one applied strictly only to poles of uniform diameter. A set of curves was also given to show graphically the results of calculation by means of the committee's new formula and those used by two manufacturers.

The committee presented a set of specifications for overhead line material which represented results of detailed study of current practice and requirements in this line. These included fifty-five articles and covered general requirements, iron and steel fittings and wood cross-arms, all being illustrated, where possible, with dimension drawings accompanied by tables of tolerances.

In regard to revision of existing specifications the power distribution committee recommended certain revisions of sections 81 and 82 of the recommended specifications for overhead trolley construction in order to meet objections which have been raised and to conform with the ideas of the special committee on lightning protection, the report which is abstracted elsewhere in

this issue. A number of other changes in this specification were also made with a view to providing a greater exactness.

The committee's report contained also brief references to the following matters: A statement of the formation of the national joint committee on overhead and underground line construction, with the circumstances leading up to it, was given. A statement was made to the effect that the committee had not approved certain changes in the standard stranding table recommended by the A. I. E. E., and that the president of the Engineering Association has appointed C. L. Cadle and W. W. Brown to represent the association in connection with further consideration of the subject by the subcommittee on stranding of the standards committee of the A. I. E. E., the standards committee having stated that it would recommend the amended table for tentative adoption pending ratification by several associations. It was explained that certain suggestions in regard to the standard specifications for rubber-insulated wire and cable had been received from W. A. Del Mar, chairman of the committee on wire and cable specifications of the Association of Railway Electrical Engineers, but that these had been received too late for action by the present committee.

There was only one comment made by the committee on the A. I. E. E. standardization rules, namely, that it was desirable to point out a definite dividing line between the transmission system, the substation and the distribution system as defined by rules 388, 389 and 390. A brief report was made of the results of conferences with other committees on the subject of a clearance diagram for semaphore signals, as a result of which it was agreed that the committee on block signals should submit this year a revised clearance diagram with certain agreed recommendations. The recommendation was made that the portion of the report of the committee on joint use of poles, comprising the specifications and drawings, be reprinted as a part of the Manual, together with the exact wording of the action of the American Association with regard thereto. The following subjects were suggested for reference to succeeding committees: Further consideration of the subject of concrete poles, including deflection formulas and tables for tapered sections; further specifications for overhead line material including especially a standard thread for pins and insulators and a specification for structural steel cross-arms and fittings; consideration of the use of aluminum cable with specifications; collection of data preparatory to possible standard specifications for high-voltage direct-current and alternating-current overhead construction.

The report was signed by A. S. Richey, chairman; G. W. Palmer, Jr., vice-chairman; E. J. Blair, C. L. Cadle, D. E. Crouse, Charles Rufus Harte, R. H. Rice, Gaylord Thompson, and C. F. Woods.

In discussing this report S. L. Foster, Chief Electrician United Railroads of San Francisco, pointed out a number of details in the specifications for overhead line construction in which the recommendations were not in accord with San Francisco practice. In most cases which he cited the San Francisco standards called for heavier construction. For example, anchor rods were upset at the ends so that the diameter at the base of the thread would equal the full diameter of the rod, ¾-in. bolts were used in several places where the specifications called for ⅝-in. bolts, and iron plates 18 in. square were used instead of wooden dead men. Replying to Mr. Foster's comments, Mr. Harte pointed out that, in preparing these specifications the committee had attempted to select that form of construction which seemed the most agreeable compromise of the standards approved by the various organizations that were interested.

Mr. Crecelius explained that it was not the desire that the committee compile a set of standards which represented the highest degree of perfection yet attained in this construction lest in so doing many companies would seem to be following bad practice. Although one set of standards could not be expected adequately to meet local requirements in all parts of the country, yet it was very desirable that specifications of some form be adopted as standard. There would be two advantages in this, first, it would be in a measure a helpful guide when public utility companies find themselves still more generally under the scrutiny and regulation of public service commissions, and second, it would make for better prices from manufacturers. The action of the committee on standards on each of the eight specific recommendations in the report was then approved by the convention.

Tuesday Afternoon Session

On Tuesday the Engineering Association held a joint session with the Transportation & Traffic Association, at which the subject of block signals was taken up. This is reported under the proceedings of the Transportation & Traffic Association.

EQUIPMENT

After adjournment of the joint meeting the regular sessions of the Engineering Association were continued, and W. G. Gove, Brooklyn Rapid Transit System, presented the report of the committee on equipment. He read also two letters which had been received recently by the committee objecting to certain clauses in the recommendations regarding the specifications for quenched-and-tempered steel axles and for case-hardened gears.

These were the only criticisms that were received. In regard to the former, this subject had received very careful attention by the entire committee, but if the objection was valid it could be incorporated later. The same is true also of the latter subject, and the committee wished it understood that in such a rapidly-developing science changes would necessarily have to be made from time to time. An abstract of the report follows:

The committee on equipment of the Engineering Association presented revised standard specifications for heat-treated and annealed carbon-steel axles, shafts and similar parts, the proposed changes being material in character and the titles being changed to read "Specifications for Quenched-and-Tempered Carbon-Steel Axles, Shafts and Similar Forgings" and "Annealed Carbon-Steel Axles, Shafts and Similar Forgings." In this connection it was stated that certain manufacturing interests have claimed that the minimum requirement of 22 per cent elongation and 45 per cent reduction in area are too severe, requiring drastic treatment. However, the committee has been unable to find any conclusive evidence to this effect and is content that the above minimum requirements are proper and entirely reasonable.

The committee submitted as an appendix to the report a statement on the subject of proof-testing forgings to determine their soundness after being quenched and tempered. This included drawings to show the method of applying the test and a design

for a gage to determine the set after testing. A table of the various heights of the drop to be used with different sized axles was also included. The appendix was submitted as a general guide for the members of the association.

The report included a statement from the sub-committee on flexible stranding which had acted with the stranding committee of the A. I. E. E. In this statement the abandonment of the term "extra flexible" was recommended so that, at least for the present, there would be only one degree of flexibility above the present A. I. E. E. standard—this new grade to be known as "flexible." A table of the new grades of flexible cables was appended to the report in order to ascertain whether it met with general approval.

Specifications for gears and pinions were submitted in full in the report, two classes of material, namely, case-hardened and forged carbon steel being covered, as these were the grades in most general use. The specifications, both for gears and for pinions, have been made as broad as possible in order not to impose any unnecessary hardship upon the manufacturer, as it is recognized that a rapid development in gear and pinion treatment is going on at the presnt time.

With regard to the new design of journal brass for heavy electric traction the committee stated that the numerous details involved in the consideration of this subject make it impossible for the committee entirely to complete its investigation and to make a definite recommendation for the present year. However, a great deal of work has been accomplished which will be of value in the future consideration of the subject, and it is recommended that this be continued for investigation by the ensuing committee.

With regard to the long-standing subject of wires and cables for power equipment with special reference to fire protection the committee submitted as an appendix to its report a revision of the code rules on car wiring, the committee having been informally advised by representatives of the electrical committee of the National Fire Protection Association that that organization would immediately promulgate these proposed rules if approved by the American Electric Railway Engineering Association.

A revision for the specifications for air-brake hose which was presented in the report involves changes in several minor details such as the use of three-ply instead of four-ply hose for the ¾-in size and the use of ¾-in. in place of the ⅞-in. size wherever this appears. With regard to the design of the limit of wear gage for wheels the committee stated that it has considered various types, including the limit gage recently adopted by the Central Electrical Railway Association. Up to the present time, however, the committee has not been able to design a satisfactory form of gage that will be generally acceptable and it is recommended, therefore, that this subject be continued for investigation by the ensuing committee.

In connection with the revision of steel-wheel designs the committee submitted sheets covering detailed dimensions of rolled steel wheels with diameters of 21 in. to 37 in., inclusive, for adoption as recommended design. A study of this matter has developed the fact that there is considerable dissatisfaction with the present standard design of tread and flange contour, and inquiry has brought the information that the contour of flange shown on the association's standard drawings is used only to a small extent. The wheel designs, therefore, carry the present tread and flange contour and are arranged to fit the present standard axle, but the committee recommends that the ensuing committee on equipment be instructed to investigate and report on the advisability of a change in the standard tread and flange contour, this being particularly desirable in view of the action of the Central Electric Railway Association in adopting a standard contour of its own which is different from that of the Engineering Association's standard design.

The report covered also a review of the standards contained in the Manual, in which it was recommended that the standard brakeshoe be revised because of the fact that the line of pressure of the brake head on the shoe is not properly located and produces uneven wear. The standard for height of platforms for city cars was recommended for elimination. The recent development in small-sized motors necessitates that the design of axle for such motors be standardized and it was recommended that this subject be referred to the ensuing committee. With regard to the standardization rules of the A. I. E. E. the committee recommended that they be referred to the association for approval in so far as they affect the scope of the committee on equipment.

Action was taken by the committee on standards regarding the various recommendations of the committee on equipment as follows: Revision of specifications for quenched-and-tempered carbon-steel axles, shafts and similar forgings approved as a standard; revision of specifications for annealed carbon-steel axle shafts and similar forgings approved as standard; specifications for case-hardened forged-steel gears and pinions and for quenched-and-tempered forged carbon-steel gears and pinions approved as a recommended specification; revision of specification for air-brake hose approved as a recommended specification; dimensions of rolled-steel wheels of 2½-in. tread and from 21 in. to 31 in. in diameter referred back to the committee for consideration in connection with the design of contour of tread and flange and further study as to thickness of rim, the same action being taken with regard to the standard design for 3-in. and 3½-in. treads; revision of tread and flange contours referred back to the committee for further study; the proposed rules for car wiring and the report on proof-testing of forgings approved for inclusion in the Manual; elimination of standard height of platform for city cars now shown in Manual approved; standardization rules of A. I. E. E. referred back for further consideration in view of the fact that they have been further revised by the A. I. E. E. since their consideration by the committee.

The report of the committee on equipment was signed by W. G. Gove, chairman; W. E. Johnson, W. W. Brown, R. H. Dalglish, F. W. Garrett, F. R. Phillips, R. M. Hemming and L. N. Clark.

BUILDINGS AND STRUCTURES

The committee on buildings and structures then made its report. General specifications and form of contract for railway structures, provision for expansion and contraction in restrained concrete structures, fire protection rules and the design of a standard fireproof substation building of 1000-kw. capacity were the subjects presented. The form of general specifications and contracts submitted by the 1914 committee were revised somewhat, the "Agreement" portion being greatly shortened. Certain other changes were made in the form to protect the owner in case of action for damages. This revised form was submitted for adoption as a recommended specification, but was disapproved by the standards committee, inasmuch as it was thought that the specification and form of contract were not suitable for adoption as a standard.

Provisions for expansion and contraction in restrained

concrete structures of both the plain and reinforced type were submitted for discussion and an expression of opinion from the convention as to what special features would be desirable for future study. Numerous examples of methods of providing for expansion and contraction were illustrated in the report, particular attention being given to illustrate the methods used for various portions of restrained and unrestrained structures. Rules for fire protection were again considered by this year's committee and the general fire rules as presented at the 1914 convention were recommended to the committee on standards for their approval. Fire protection rules as relating to heating apparatus were also presented by this year's committee. Both sets of rules were approved by the standards committee.

The report was signed by C. F. Bedwell, chairman; R. C. Bird, L. C. Datz, J. H. Frank, F. H. Miller, William Roberts, H. G. Salisbury, Terrence Scullin and H. G. Throop.

The recommendations of the committee on standards on this report were then read and approved. E. J. Blair, Chicago Elevated Railways, spoke of one reference in the report of the committee on buildings and structures to the proposed safety rules of the Bureau of Standards at Washington, and urged members of the association to communicate any suggestions they might have to A. S. Richey, chairman of the committee on power distribution. C. W. Stocks, statistician American Electric Railway Association, explained that the committee in charge of these rules had held a meeting in Washington on Sept. 29-30, and expected to hold another in New York on Oct. 6, at which representatives of the bureau would be present. He explained he had copies of the rules at convention hall for the inspection of anyone.

H. J. Kennedy, San Francisco, in commenting on the report on buildings and structures, criticised the proposed design of substation as being cramped, and Charles Rufus Harte, the Connecticut Company, agreed with him. In reply Mr. Stocks said he understood the design to be that of an actual substation.

A vote of thanks was then passed to the committees on equipment and on buildings and structures for the comprehensive reports they had presented.

Wednesday Afternoon Session

At the Wednesday afternoon session of the Engineering Association, following the joint session with the Accountants' Association which is reported as a part of that association's proceedings, the secretary read the report of the committee appointed to recommend the previously-mentioned changes in the constitution and by-laws, which was then adopted. The report of the committee on power generation was abstracted by the secretary, this being given in part in the following paragraphs:

POWER GENERATION

In its report to the Engineering Association the committee on power generation departed from its custom for several years past of presenting individual papers. The committee aimed instead to make specific recommendations regarding practices and standards, and in consequence, submitted an analysis of steam-power station costs, which elaborated the standard classification of accounts of the Interstate Commerce Commission in so far as this applied to the cost of manufacture of steam power. The I. C. C. classification numbers, 45-47, 50, and 52-56 were used as a basis, all definitions appearing in the I. C. C. classification applying under the subdivision classifications, but the I. C. C. numbers had added to them sub-numbers, according to the Dewey decimal system. The matters of engineering and operating data records and of the information that should be recorded on various blanks and forms were also discussed, together with the details of cost records covering the operation of any particular power plant.

The committee submitted as a proposed standard for the association specifications for lap-welded and seamless boiler tubes, and these were approved by the Association's standards committee. Specifications for the purchase of fuel were also outlined, these being in the form of a contract made out in blank for furnishing coal to an electric railway company. The purchase of power station lubricants by specifications was discussed at length, several existing specifications being cited and analyzed. It was considered, however, that a rigid specification, covering the physical and chemical characteristics of lubricants is inadmissible at the present time, and only a tentative form of specification was presented.

The standardization rules of the American Institute of Electrical Engineers were then taken up by the committee. Owing to the somewhat radical changes relating to the ratings of apparatus, a matter which affects all purchasers of electrical machinery, it was recommended that the rules should be submitted for the consideration of the members of the association, rather than by the members of the committee alone. In connection with this suggestion, however, the committee on standards recommended that the subject be given further consideration in view of the fact that the rules have been further revised by the A. I. E. E. since their consideration by the power generation committee.

As appendices to the report there were submitted a method of analysis of steam power station costs which included a standard set of charts to illustrate the variable factors entering into the final result, and also a method for determining standard values for B.t.u., ash, and sulphur in coal that is used for fuel.

The report was signed by J. W. Welsh, chairman; R. J. S. Piggot, A. B. Stitzer, E. D. Smith, W. H. Roberts, G. H. Kelsay, E. H. Scofield and Fay Woodmansee.

Following the presentation of the report there was read a written communication upon it from E. H. Scofield, engineer power and equipment, Twin City Rapid Transit Company. He suggested that since the report was prepared as a basis upon which to make further investigation of the subject, it would be highly desirable for five or six separate plants to arrange to exchange data. This could then be gone over collectively for the purpose of formulating a plan for carrying out plant analyses which would be generally acceptable as a standard. In commenting on the great detail of the report E. J. Blair, electrical engineer Metropolitan West Side Elevated Railway, Chicago, thought that care must be taken to avoid too great detail in analyses of this sort lest the system become unduly complicated. Charles R. Harte, construction engineer Connecticut Company, agreed in general with this view but pointed out that while the refinements need not be followed by the smaller companies it would, nevertheless, be desirable to specify the lines which the more minute analyses should follow in order to render comparable the records of plants where minutæ were important. In reply to an inquiry as to the basis of comparison that had been found most suitable for oil and coal fuels it was suggested that the number of

British thermal units per kilowatt-hour would be most convenient, although the method of burning the oil would be found to influence results. Formal action was taken by the Engineering Association on two specific recommendations of the power generation committee, namely, that which prescribed specifications for lap welded and seamless boiler tubes, this being adopted as a standard specification; and that which prescribed specifications for the purchase of fuel, this being accepted for publication in the Engineering Manual. In commenting upon the adoption of the report as a whole, the chairman pointed out that the secretary had received a surprising number of requests for boiler-tube specifications and stated that he believed the work of the committtee would be very generally useful to member companies.

Thursday Afternoon Session

On Thursday afternoon the report of the committee on way matters was presented before the Engineering Association. In this it was stated that failure to secure the approval of the committee on standards for the four recommended types of track foundation submitted at the 1914 convention had made further consideration of this subject necessary.

WAY MATTERS

The recommendations of the committee were based upon the consensus of opinion of track engineers as obtained through communications. Through the courtesy of the engineering department of the United Railways & Electric Company of Baltimore, Md., the committee obtained an analysis of the track construction used in forty-one cities, nearly all of which had a population of more than 100,000. An analysis of these data resulted in the following percentages on a mileage basis for the types of construction submitted in the 1914 way committee report:

Type 2	23 per cent	1,718.1 miles
Type 3	2 per cent	142.5 miles
Type 4	47 per cent	3,415.9 miles
Type 5	21 per cent	1,531.4 miles
Type 6	3 per cent	253.9 miles
Modification Types 3 and 4	4 per cent	278.8 miles

An analysis on the basis of preferences gave the following percentages:

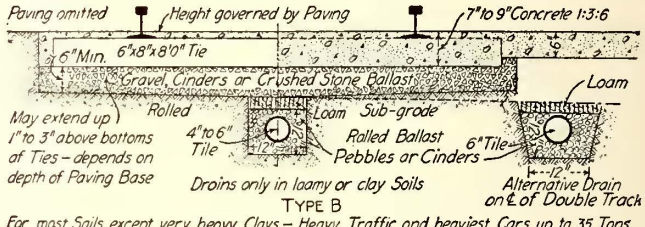
Plain ballasted construction	62 per cent
Solid concrete construction	21 per cent
Concrete slab sub-ballast construction	5 per cent

Additional information concerning bearing power and classification of soils was included in this year's report. Attention was directed to the great variety of designs in track construction for paved streets now in use. In an appendix a number of typical designs were presented for the purpose of record. Based upon an analysis of the information available, the committee recommended the elimination of Type D, or solid-concrete track construction, substituting therefor Type C, or the concrete slab sub-ballast construction. The committee also recommended the elimination of Type A because it was special. It was also the opinion of the committee that the proper classification of soils found in average city streets was desirable, and that way engineers should make an analysis of the soils before deciding what was the proper type of foundation to be used.

Two types of track foundations were submitted for adoption as recommended designs, Type B construction submitted in the 1914 report with slight modifications, and Type C as submitted in the same report. The Type C, or the concrete slab sub-ballasted construction was recommended for conditions of soil that required a form of construction that would distribute the load over the sub-soil more effectively than the ballasted construction. Of the two types of track foundation that were thus recommended the committee on standards adopted Type B or the ballasted construction, and withheld its approval of Type C until this type of construction had been discussed by the delegates at the convention.

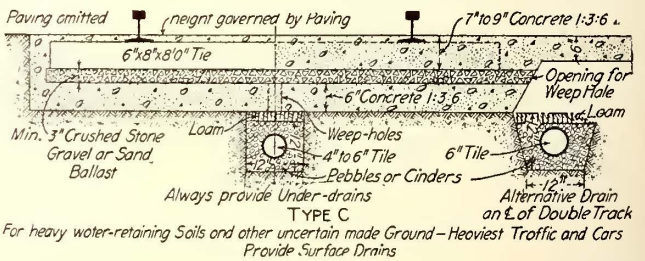
PAVEMENT

The selection of the proper pavement in the track allowance, the committee believed, was one of purely local character and in most instances as local as individual streets. It was consequently recommended that each installation be investigated carefully. The conditions to be considered should include the vehicular traffic, the car traffic, the grade and crown of street the



TRACK CONSTRUCTION FOR GENERAL USE

class of property adjacent, the ability of the company to afford the best material, the type of rail, and the proximity and cost of material. It was the consensus of opinion of the committee that the unit type of pavement was superior to the monolithic or sheet pavement and, based upon the relative usefulness of various kinds of paving in the track allowance, pavement materials



TRACK CONSTRUCTION FOR UNSTABLE SOILS AND UNDER HEAVIEST TRAFFIC

were graded as follows: Granite block, Medina sandstone block, treated wood block, brick, scoria block, asphalt block, sheet asphalt, bitulithic, bituminous macadam, sandstone block and water-bound macadam. No attempt was made to grade concrete pavement, because the committee believed that it had been in use so short a time that little was known of its utility.

The study of pavements and pavement materials led the committee to draw the following conclusions: "Too much stress cannot be laid on the methods of installation of any paving because so much of the wear and life of paving depends on its proper installation, and after installation its inspection and maintenance." For the consideration of future committees it was recommended that a specification be formulated to cover the manufacture and installation of various types of paving

which may be used in connection with the car tracks. Such a specification should include the proper foundation, type of filler and cushion.

Acting upon the recommendation of the 1914 committee, this year's committee took traffic counts in seven cities: Chicago, Cincinnati, Washington, Brooklyn, Syracuse, Montreal and Anderson, Ind. In the opinion of the committee these counts indicated that the form submitted in the 1914 report did not answer entirely the requirements of taking traffic counts from the street-railway standpoint. Accordingly a new form was recommended. The committee was also of the opinion that the principal item of interest to street railway engineers was the proportion of traffic which the track space bears to the remainder of the roadway. The traffic counts indicated that there was no definite relation between the width of roadway, kind or condition of pavement, class of vehicular traffic and kind of rail. It was noted, however, that a smaller percentage of traffic used the track allowance on the wide roadways than on the narrow ones. It appeared that habit had more bearing on the use of the track space by vehicular traffic than any other cause. The committee concluded that traffic counts, to be of any value in the selection of pavement, should be carried over a series of years during the life of the pavement, a record being made during the original construction of the sub-soil, drainage, kind of paving, foundation, foundation of the track, kind of rail, the manner in which the paving was laid, quality of the material, the vehicle and car traffic, the habit of the vehicles in keeping in the roadway or track space, the kind and quality of the paving material, the subsequent rate of wear, if possible to obtain, and the points where deterioration occurs and its causes. A general summary of the traffic counts taken in tabulated form accompanied the report.

Special Work Specifications

The way committee, co-operating with a committee representing a number of the important special-work manufacturers, presented general specifications for three types of special work, namely, solid manganese-steel construction, cast steel with hard center and rolled rail arms, iron bound with hard center. It was also recommended that this subject be continued, and that standard specifications for the types of special work not covered, as well as several important matters in connection with standard layouts, be considered by future committees. These specifications were recommended for adoption and were approved for insertion in the Manual by the standards committee.

The revision of recommended designs of 7-in. and 9-in. joint plates with special reference to sizes of bolt holes and fits was considered in detail, and the committee was unable to secure tests from which definite conclusions could be drawn. It, therefore, recommended the continuance of the subject. It also considered the question of joints for plain girder rails and submitted recommended designs for 7-in. 80-lb. and 7-in. 91-lb. plain girder rails. These were approved by the standards committee.

Recommended Changes in the Manual

This year's committee reviewed the existing standards and recommendations contained in the Manual. It was the committee's opinion that the symbols for recording surveys as shown in the Manual were too small to be of practical use and it recommended as a substitute the conventional signs for recording surveys adopted by the American Railway Engineering Association and the Interstate Commerce Commission, with such modifications and additions, however, as were necessary to make them apply to electric street and interurban railways. The standards committee disapproved the recommendations of the way committee that these symbols be adopted as recommended practice, and referred the entire subject to the executive committee for consideration jointly with other committees so that all symbols could be included in the revision. Other important revisions in the Manual included the withdrawal of the designs for standard section rails as shown in the Manual and the substitution therefor of 80-lb., 90-lb. and 100-lb. standard sections. The 7-in., 100-lb. plain girder rail was withdrawn as a recommended design because there had been no demand for it. The 7-in. 91-lb. plain girder rail, which was very widely used, was substituted for this heavier section.

The committee recommended the 80-lb., 90-lb. and 100-lb. per yard, standard-section rail for general track construction on private right-of-way and for streets where the type of pavement permitted. For track construction for light service in connection with deep-block pavement, a 7-in. plain girder rail weighing 80-lb. per yard was recommended, and in similar construction but for heavy service the 7-in., 91-lb. per yard plain girder rail was recommended. For track construction for heavy service in connection with deep-block pavement in congested sections of narrow city streets where the vehicular traffic was largely confined to the pavement in the track allowance, the committee recommended the association's standard grooved girder rails. All of the recommendations of the committee for revisions in the Manual as regards plain and grooved girder rails were approved by the standards committee.

The report was signed by C. S. Kimball, chairman; E. H. Berry, R. C. Cram, C. W. Gennet, Jr., W. F. Graves, E. M. Haas, H. F. Merker, L. A. Mitchell and E. P. Roundey.

Following presentation of the report W. D. Chamberlain, assistant engineer United Railroads of San Francisco, said that his company had had very good results from the Trilby type of rail. They were using one weighing 106 lb. per yard.

A. E. Harvey, chief engineer Metropolitan Street Railway, Kansas City, said that the type of construction used in Kansas City was almost identical with that recommended by the committee. He considered the matter of drainage very important, and spoke in favor of the use of brick as a pavement because it was very simple to repair. He doubted the advisability of including the composition for special work in specifications. The proposed specifications included not only the required composition but told what the material must do, and if the desired results are obtained the composition is unimportant. He doubted whether the design for the joint plate shown with the 7-in. rail would stand the strain where high-grade bolts were used. Finally he made a strong plea for standardization in special work, and said that his company had recently had occasion to ask for bids and found a great difference in prices quoted for special work for the first casting and for succeeding castings. With standardization a saving of from 16 per cent to 25 per cent might be obtained.

B. P. Legare, chief engineer maintenance of way and construction United Railroads of San Francisco, described the track construction used in that city. Drains are used only in certain localities. Good results have not been obtained with brick, probably because a good quality of brick was difficult to obtain in the Pacific States. He considered a 9-in. rail better than a 7-in. rail because two lines of bolts could be used.

Edward M. Boggs, consulting engineer, Oakland, Cal., strongly indorsed the use of drains, which he believed to be almost as important as the rails themselves. Sometimes when the water has a flow of marked direction a

drain is advisable outside the track on the uphill side, but usually the drains should be under the center of each track rather than one put between the tracks. In any soil except sandy soils money for drains is well spent.

E. J. McIlraith, Seattle, Wash., said in that city the railway company had adopted as standard a solid concrete construction without crushed stone. It appealed to them because, with a cushion of sand or with ballast, vibration could not be prevented and the ties would begin to pump. The company had experienced no difficulty in providing time for the setting of the concrete on the street and rerouted the cars or used temporary crossings. He recommended that greater care should be taken to line up and smooth the under surfaces of the special work. Generally the upper surface was carefully prepared, but little attention was given to the under surface.

E. B. Entwisle, chief engineer Lorain Steel Company, referred to some slight changes which he would like to suggest in specifications for special work. These were in the size of the test piece and in the time of its heat treatment as the specifications required a heat treatment with the special-work casting. He also strongly indorsed the statement of Mr. Harvey in regard to standardization and said that each section of rail required for the special work some forty different types of patterns, which the manufacturers not only had to make but had to store until they were used. Mr. Chamberlain said that San Francisco practice indicated a 7-in. rail to be generally unsatisfactory. In one instance a 7-in. 106-lb. rail with eight bolts in a single line at each joint had been laid adjacent to 9-in., 137-lb. rails with twelve 1-in. bolts. The latter required no repairs after several years, although it had been necessary to repair the joints in the 7-in. rails.

In closing the discussion on the paper, Charles H. Clark, engineer maintenance of way Cleveland Railway, said that 1⅛-in. plates on 7-in. rails would not buckle and would doubtless eliminate much joint trouble on such construction. He pointed out that a 7-in. rail is really stronger than a 9-in. rail because of the greater overturning moment of the latter. Wood pavements had been made standard in Cleveland, he said, because they had been found to outlast brick pavements three to one. Five-and-one-half-inch granite paving blocks are large enough for all depths of pavement and smaller blocks are now being recommended by some manufacturers.

He agreed with Mr. Harvey that it is not feasible to specify what the manufacturer shall put into the rails if the strength tests are also specified. Switches and mates can and should be standardized. The cost of white-oak ties in Cleveland is 83 cents against $1.62 for steel ties, but the latter have been adopted for standard construction. Construction costs have been materially reduced by the use of the steel tie because less work is required in track laying. Although he admitted that a drain under the center of the track was desirable, Mr. Clark had found that trouble was often experienced as a result of the failure to replace such drains when sewer laterals were connected with trunk lines in the street center. He therefore recommended that track drains be placed under the center of the street where they were less likely to be disturbed by conduits of various kinds.

The action of the committee on standards in approving as recommended design the several recommendations of the committee on way matters was unanimously sanctioned by convention action. In addition to the various recommendations appearing in the preliminary printed list, still another recommending the adoption of specifications for special work was approved by the association as a recommended specification and ordered included in the official report.

WOOD PRESERVATION ON ELECTRIC RAILWAYS

In a paper presented by Carlile P. Winslow and Clyde H. Teesdale before the American Electric Railway Engineering Association the authors discussed at length the present situation in regard to the preservation of wood throughout the country in general and outlined the factors that were involved in the technical aspect of wood preservation, paying special attention to the annual costs of treated and untreated timber for various uses. Examples of the method of working out the annual charges on ties for use on interurban lines and for use in tracks laid on paved and unpaved streets were cited to explain the methods commonly used in arriving at these charges, but it was shown that comparatively little data regarding the life of both treated and untreated ties were as yet available.

In general the authors considered that the life of an untreated tie in a paved street would vary somewhere between ten years and twenty years, and owing to the high cost of replacement, the life was a serious matter. With treated ties, however, a life of between twenty years and thirty years was a reasonable assumption, and that possibly even a life of forty years, or twice the life of the rail, might be attained.

The saving involved by the application of preservative treatment to poles was also briefly considered, this being stated to give the largest comparative economy. The authors considered that the brush treatment would add at least three years to the life of the pole and that the open-tank treatment would add ten years and possibly more. On this basis the latter process would involve a saving of from 20 cents to 30 cents per pole per year.

As a summary in conclusion the authors stated that track in paved streets appeared to offer the widest proportionate field for the application of a preservative treatment to ties, owing to the heavy expenses involved by renewal. With the exception of poles to be used in inaccessible localities, the use of treated poles was generally recommended, even a two-coat brush treatment generally producing economy. The lack of published authentic data covering the life of various species, both treated and untreated, in the various conditions to which the woods are subjected by the electric railway companies, permits of no accurate determination of the economic aspect in the use of treated material. In consequence the authors recommended a systematic collection, compilation and analysis of the results obtained for the various companies throughout the country, and suggested action to this effect on the part of the American Electric Railway Association.

HEAVY ELECTRIC TRACTION

The several recommendations of the committee on heavy electric traction were approved as recommended by the committee on standards after the presentation of this report and the report as a whole was adopted, the thanks of the association being extended to the committee for its diligent work. This report is abstracted below:

The committee on heavy electric traction of the Engineering Association submitted in its report a minor revision in the standard diagram for clearance lines for third-rail working conductors, and also submitted a standard definition for third-rail gage whereby this is described as the distance measured parallel to plane of top of both running rails between gage of nearest

running rail and inside gage line of third-rail. The committee recommended two designs for use in connection with third-rail protection, one of which is the over-running third-rail protection used by the Pennsylvania Railroad and the other being the under-running rail protection of the New York Central Railroad.

The committee also presented a compilation of data on general types of electric locomotives. An analysis of the tables submitted with this indicates that of the total of 301 domestic locomotives listed, 38 per cent are used in connection with 600-volt d.c. third-rail operations, the remaining 62 per cent being used in connection with some form of overhead trolley. Of the locomotives using overhead contact 72 per cent are operated in connection with a.c. systems.

The practice of using forced ventilation was stated to be becoming quite general, especially where a.c. or high-voltage d.c. equipments are used, a distinct weight and cost economy resulting which more than justifies the provision and maintenance of the blowing apparatus.

A great divergence appears in practice in the design of the mechanical parts of the locomotives, especially in the wheel and arrangement and the method of drive. For high-speed operation leading and trailing wheels are provided on the majority of the roads. In some cases, even where the speeds are low but where the line contains numerous curves, it has been thought advisable to provide trucks to prevent oscillation and excessive side pressure. The majority of foreign locomotives use two-wheel trucks. However, the latest type of New York Central locomotive has the guiding truck equipped with motors.

Four methods of drive are cited: (1) Motors mounted rigidly on the axles, a design which makes it obviously impossible to carry the motor on springs. (2) Motors geared to the axles either directly or through quills and driving springs, a scheme that provides practically no flexibility transversely although the motors may be spring mounted. (3) Motors geared to jackshafts which are in turn connected with the driving wheels by means of side rods, this scheme providing spring support for the motors with the maximum amount of flexibility and freedom of movement that exists with steam locomotives. (4) Motors connected to jackshafts by means of main rods, and drivers connected to jackshafts by means of side rods, a plan which has the same flexibility of mounting as the previous case but which has been used in this country only for the high speed service of the Pennsylvania terminal in New York.

It is the opinion of those who use motors located on or near the axles that the high center of gravity which is claimed to produce improved riding qualities is not necessary to give good riding qualities provided that the running gear is so designed as to avoid setting up of an oscillatory tendency.

An interesting feature of electric locomotive practice is the fact that the weight for driving axle ranges from 30,000 lb. to 55,000 lb.—considerably less than the axle weight used for steam locomotives, which ranges from 40,000 lb. to 68,000 lb. Another important feature of the mechanical design of electric locomotives is the short rigid wheelbase which ranges from 6 ft. 6 in. to 13 ft. for domestic locomotives. Also, as the source of the power for the operation of electric locomotives is not on the locomotive itself, but is in the power house, it is feasible to construct electric locomotives with almost unlimited power or capacity by providing a sufficient number of driving axles and motors.

In conclusion it may be said that electric locomotives have been built and operated to perform every kind of railroad service in excess of the maximum capacity for which steam locomotives have been built for similar service. It is, however, too early to attempt to standardize electric locomotives either electrically or mechanically. The report was signed by E. R. Hill, chairman; C. H. Quinn, J. M. Bosenbury, W. S. Murray, Hugh Hazleton and E. B. Katté.

ELECTROLYSIS

The report of the committee on electrolysis was then presented by E. J. Blair, electrical engineer Metropolitan West Side Elevated Railroad Company, Chicago, who explained that the committee had consulted with and assisted the national joint committee on this subject and was now awaiting the further action of that body. The report of the national joint committee would pave the way for further action on the part of the Engineering Association's electrolysis committee whose continuation be recommended. The last-named committee reported that it had been represented by E. J. Blair on a special committee on lightning protection which had agreed to certain limitations as to allowable current flow over a lightning arrester ground connection joining track and ground. Thus, as the committee on electrolysis believes that no appreciable harm can result to foreign sub-surface structures with the current specified (0.25 amp., average), it has at least tentatively approved the proposition of the special committee.

In explanation of the position taken by the electrolysis committee, it may be said that the committee was principally concerned in the matter of grounding lightning arresters, and has heretofore been opposed to the grounding of the same arrester to both earth and track rails, on account of the feeling that the use of the proposed plan might add to the current on sub-surface structures. Other committees, however, such as those on power distribution and equipment, have favored the connection of line lightning arresters to both an earth ground and the track rail on account of the more efficient protection which might be secured thereby.

The committee also called attention to a typographical error in the pipe resistance tables as printed in connection with the report appearing on page 379 of the 1913 *Proceedings*. In the lower, right-hand corner of the pages 138, 136 and 146 should read respectively 13.9, 13.9 and 14.8. The report was signed by A. S. Richey, chairman; E. J. Blair, E. B. Katté and G. W. Palmer, Jr.

After discussion in which H. P. Bell, C. R. Phenecie and S. L. Foster participated the report of the committee on electrolysis was accepted.

NEW OFFICERS

C. H. Clark then presented the report of the nominating committee, in accordance with which officers were elected as follows: President, John Lindall, superintendent rolling stock and shops Boston Elevated Railway Company, Boston, Mass.; first vice-president, F. R. Phillips, superintendent of equipment Pittsburgh Railways Company, Pittsburgh, Pa.; second vice-president, G. W. Palmer, Jr., electrical engineer Bay State Street Railway Company, Boston, Mass.; third vice-president, W. G. Gove, superintendent of equipment Brooklyn Rapid Transit System, Brooklyn, N. Y.; secretary-treasurer, E. B. Burritt, New York. Members of the executive committee in addition to the officers were elected as follows: E. R. Hill, consulting engineer Norfolk & Western Railway, New York; C. S. Kimball, engineer maintenance of way Washington Railway & Electric Company, Washington, D. C.; C. L. Cadle, electrical engineer New York State Railways, Rochester, N. Y., and C. F. Bedwell, assistant engineer Public Service Railway Company, Newark, N. J.

Transportation and Traffic Meetings

Committee Reports on Rules, Schedules, Block Signals, Accident Prevention by Motion Pictures, Freight and Passenger Traffic, Handling Fares and Training Employees Were Among the Matters Discussed During the Convention of the Transportation & Traffic Association

Program for Monday

Annual Address of the President.
Annual Report of Executive Committee.
Annual Report of Secretary-Treasurer.
Reports of Committees:
Rules—W. H. Collins, chairman.
Construction of Schedules and Time-tables—Alexander Jackson, chairman.
Definitions—H. C. Donecker, chairman.
Transportation - Accounting — Co-chairman: J. K. Choate and M. R. Boylan.

Program for Tuesday

Reports of Committees:
Block Signals for Electric Railways—J. M. Waldron, chairman.
Joint Sub-committee on Block Signal Rules—L. H. Palmer, chairman.
Transportation-Engineering—Co-chairmen: R. N. Hemming and P. N. Jones.
ADDRESS—"Relation of Electric Railways to Agriculture." Paul Shoup.
Report of Committee:
Standards—L. H. Palmer, chairman.

M. C. BRUSH
President

Program for Wednesday

Reports of Committees:
Claims-Transportation—Co-chairmen: R. P. Stevens and B. B. Davis.
Freight and Express Traffic—F. D. Norviel, chairman.
Passenger Traffic—P. P. Crafts, chairman.

Program for Thursday

Reports of Committees:
Fares and Transfers—J. E. Duffy, chairman.
Training of Transportation Employees—C. S. Ching, chairman.
General Business.
Reports of Convention Committees:
(a) Resolutions.
(b) Nominations.
Election and Installation of Officers.

Monday Afternoon Session

THE sessions of the American Electric Railway Transportation & Traffic Association convention in San Francisco began on Monday, Oct. 4, 1915, President M. C. Brush calling the meeting to order at 2 p. m., and presenting the annual presidential address. In this he said in part:

"The organization of the committee on standards is one of the most important steps which the Transportation & Traffic Association has taken since its organization. This committee has before it the work of standardizing the methods and practices now in vogue in the transportation and traffic end of the industry, and there can be no doubt but that, as time progresses, the results of this committee's work will be of increasing value. An important function of this committee is to encourage the use of correct methods and to bring these out into definite shape as standards for the guidance of the industry. Briefly stated, the purposes of this committee are: (1) The handling of standards and recommended methods and practices. (2) The consideration of reports of committees prior to their printing for presentation to the convention. (3) The compilation and editing of the transportation manual and the syllabus of proceedings.

"Another departure this year is the formation of a joint committee with the Claims Association. This committee has conducted an interesting investigation on the use of moving pictures. In view of the wonderful development of the moving-picture art, the recommendations brought out by the committee are particularly timely. The committee urges that the investigation be continued next year.

"The committee on training of transportation employees has done an important work in the compilation of State laws on various subjects which are now on file in our office for the benefit of member companies. Its recommendations as to a program for improving courtesy on the part of trainmen, on certain questions of discipline and on watch inspection methods will, doubtless, meet with the approval generally of those in charge of our companies.

"The committee on rules has done some valuable work. It is interesting to note that the number of our member companies who are not using the standard codes is but a very small percentage of the whole. The joint sub-committee on block-signal rules has made notable progress in the preparation of the block-signal code, covering all types of signals.

"The committee on passenger traffic presents some interesting data in connection with the subject of one-man car operation. In its investigation of the effect of privately-owned automobiles on interurban and suburban roads the committee was unable to obtain any specific results, as the companies generally have made no systematic study of this question. It would seem desirable that next year's committee be instructed to continue this study.

"The report of the committee on fares and transfers shows that companies generally are giving little thought to any improvement in the methods of issuing transfers. The committee presents an interesting study on fare collection on center-entrance cars and includes an instructive comparison of various prepayment methods. It also makes some timely comment on the use of fare boxes.

"The work of *Aera* deserves hearty support from all hands. I urge a more general contribution to the Question Box. This is a valuable feature of the magazine which should be made use of consistently.

"There is before the Transportation & Traffic Association for action a proposed amendment to the constitution to provide for a new class of individual members consisting of company section members. I desire to emphasize the importance of the change in the constitution and urge its adoption. The marked success of several companies in creating company sections is of decided interest, and I cannot too strongly urge other companies to follow the examples already set."

Secretary Burritt then read his annual report, showing an existing membership of 634 enrolled in the Transportation & Traffic Association.

The report of the committee on rules was read by W. H. Collins, Fonda, Johnstown & Gloversville Railroad, this being given in abstract in the following paragraphs.

RULES

The committee on rules of the Transportation & Traffic Association recommended that the following rule and note concerning the display of markers be substituted for present rule 104 covering rear-end signals: "The following signals will be displayed, one on each side of the rear of the train and as markers to indicate the rear of the train: By day, green (or yellow) flags or marker lamps not lighted; by night, green (or yellow) to the front and sides and red lights to the rear except when the train is clear of the main track, when green (or yellow) lights must be displayed to the front, side and rear: Note: It is recommended that on roads where one-car trains are operated no markers be used by day."

The committee recommended again to the convention the rules for classification signals, which were submitted by the 1914 committee, as a substitute for the present rules 105, 106 and 107. The changes consisted in the use of flags in addition to lights at night and their location at the middle of the front end of the train instead of at the height of the markers.

With regard to the investigation of the flagging rule in accordance with the instructions of the 1914 convention, the committee recommended the following addition to rule 159 after the first sentence: "If unable to get dispatcher where a train register is maintained, the train may proceed on its time-table rights, executing all train orders." The committee is of the opinion that the present rules represent best practice in connection with flagging procedure, and the block signal rule has been changed to agree with this, as shown in the report of the joint committee on block signals.

In accordance with the resolutions passed by the executive committee at its meeting on Oct. 12, 1914, the committee on rules is now in a position to pass upon any question of train-order interpretation submitted to it through the secretary of the association. One such question of interpretation has been acted upon and the matter has been referred to the executive committee for its approval.

The committee also renewed the recommendation made before the 1913 convention with reference to rule 113 of the interurban code. This covers the present slow-speed signal, which consists of a yellow flag by day and a yellow light by night placed beside the track to indicate that the track is in condition for speed not to exceed a limited number of miles per hour. The proposed rule plans for the addition of a green flag and green light on the same side of the track to indicate that normal speed may be resumed, the objection to the old rule being that the use of yellow for two indications, first as a caution signal and second as a signal to resume normal speed convey conflicting information and on double tracks might not be observed because the present signals are placed on opposite sides of the track.

An appendix to the report provides a joint index which shows by numbers the rules of the two codes, city and interurban, which are either similar or in a general way cover related subjects. This permits the combining of the two codes.

The report was signed by W. H. Collins, chairman; L. H. Palmer, vice-chairman; Edward Dana, W. R. W. Griffin, Sam W. Greenland, C. E. Morgan and W. C. Callaghan.

Referring to proposed rule 104, and after discussion by H. A. Nicholl, Union Traction Company of Indiana, and L. H. Bradley, Stone & Webster Management Association, the rule was adopted after elimination of the words "or yellow" appearing in parenthesis. The note under rule 104 was omitted. After discussion the three proposed revisions of the rules for classification signals were approved except for the elimination in each of the words "at the middle," these applying to the location of the signal on the front end of the train. The association then adopted the code of rules as standard with the amendments as made at the San Francisco convention.

Following this the report of the committee on schedules and time-tables was presented in abstract by the secretary. This report, after considerable discussion on the subject of near-side stops, skip stops, elimination of time points and traffic counts, was accepted as a progress report with instructions to the incoming executive committee to continue a committee on this subject. An abstract of the report follows:

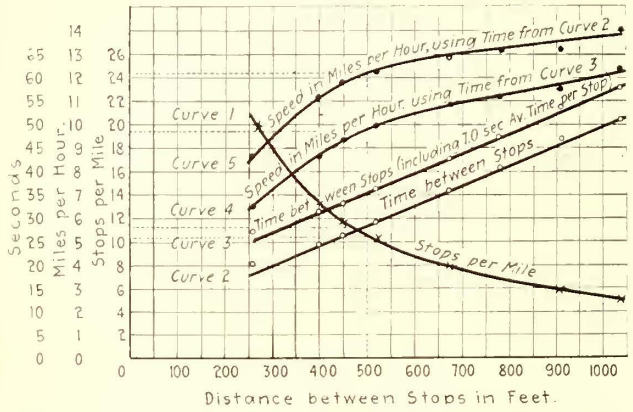
SCHEDULES AND TIME-TABLES

The report of the committee on construction of schedules and time-tables before the Transportation & Traffic Association took up in detail a number of subjects of special importance at this time. A résumé of the practice in telephone train dispatching on four different city railways was submitted in tabular form, together with an outline of the method of operation which involved no unusual features. All of the companies believed in the advisability of using private branch telephones in connection with the telephone dispatching system, claiming that the private phone is serviceable in cases of emergency when the regular dispatching phone between termini is not available. The advantages of the telephone dispatching system over schedule operation were said to be that constant supervision is obtained over all the lines at all times, that a record is available of the location of all cars operated all day, and that an uneven headway is quickly noted, making it possible to space cars better under extraordinary conditions. In addition, two of the companies claim decreases of 50 per cent and 66 per cent respectively in the force of street inspectors. However, the committee did not feel justified in making any recommendation on the telephone dispatching system at the present time and believed that the subject deserved further consideration.

The report contained also a remarkably clear and concise description of a method for taking, recording and filing traffic data obtained from traffic counts. This covered the use of observers, known as car timers, who are stationed along the line at the points of maximum load, transfer points to other lines, points of divergence and terminals, and they record the car number, time of arrival and load for each car as it passes. Every line is covered at least once in two weeks and the large trunk lines at least once a week. Charts are prepared from the data thus obtained. Another method of developing traffic data was cited in connection with the preparation of "distribution charts," similar to the diagrams that have heretofore been referred to as "characteristic curves" in the Electric Railway Journal. According to the committee, these, when properly taken and recorded, allow a much deeper study into the elements which govern traffic. In their preparation two observers may be placed on each car, one at the front platform and the other at the rear. At each stop throughout a trip each observer records the street, the time and the number of passengers boarding and leaving. One of the observers is supplied with a stop watch and with this he records the length of stop in seconds. Each trip is then charted graphically. This chart has the length of the

trip in miles, to scale, as a base, and as a vertical scale shows the passengers boarding and leaving. A continuous algebraic sum of the boarding and leaving passengers can be developed to give a load line, and the stop-watch record can be developed to show the average length of stops and the average passenger interchange. The committee considered that charts of this type are invaluable.

Possibly the most important subject discussed in the report was that of the influence of stops on schedule speed. As a result of several thousand observations taken on representative city lines of one railway system, the average stop was found to be seven seconds in length, and this value was used in connection with other data in compiling a set of curves to indicate the relation between the number of stops per mile, the speed of the car and the time required to cover the distance between stops. In preparing these curves the time required for covering different distances was noted, from which the speed between stops was computed and plotted against the distance between stops, as was the time consumed between stops. Then using the average length per stop of seven seconds, and adding to this the time



RELATION BETWEEN STOPS PER MILE SCHEDULE SPEED AND OTHER FACTORS

consumed between two consecutive stops, the speed was computed for this time and distance, and as before, plotted against the distance between stops.

In the accompanying chart, curve No. 1 represents the number of stops per mile in relation to the distances between stops. Curves Nos. 2 and 3 indicate the time required to run between stops, No. 3 including the average stop of seven seconds. Curves No. 4 and No. 5 show the speed in miles per hour as calculated from the time shown by curves No. 2 and No. 3 and the distances involved.

The committee took up also the effect of fully vestibuled platform prepayment type cars on scheduled speed, accidents, etc., and presented data obtained from observations timed from the instant that the car came to rest until the car started, regardless of incidental delays of passengers in boarding. For each type of car about 2000 passengers were timed as they were boarding. The accompanying curves show the accumulated average boarding time per passenger on cars with three different types of platform. The curve *A* represents the time for fully-inclosed cars; curve *B* for cars with inclosed platform but equipped with gates instead of doors, and curve *C* for cars with open platforms and without gates or doors. A supplementary curve is made for type *C* from which are excluded observations of all movements during which a full stop was not made. The three cars had available rear platform standing spaces of respectively 26 sq. ft., 28 sq. ft. and 27 sq. ft. In type A the height from street to step was 14½ in. and from the step to the platform 17 in., while for types B and C the respective dimensions were 12½ in. and 17 in. and 14½ in. and 17⅜ in.

The times per single passenger are as follows:

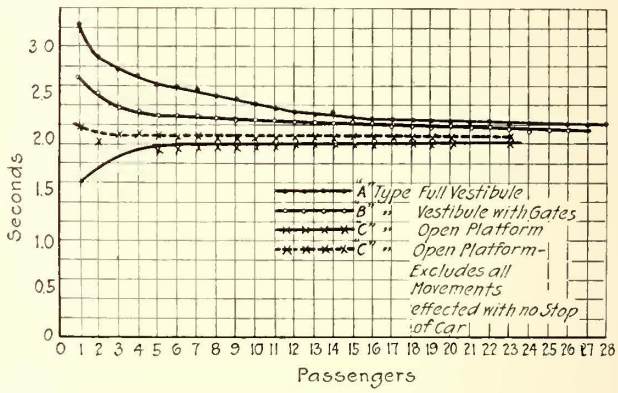
Type A	3.23 seconds per passenger
Type B	2.68 seconds per passenger
Type C	1.59 seconds per passenger

When movements that take place without a full stop of the car are excluded, these values compare as follows:

Type A	3.23 seconds per passenger
Type B	2.68 seconds per passenger
Type C	2.19 seconds per passenger

The average time per passenger when the loads of all sizes are considered is approximately the same in all cases, varying less than 10 per cent between type A and type C. Of course, as the number of passengers per movement increases, the advantage of the open platform diminishes and the loading time approaches closely the values obtained with inclosed platforms.

The committee also submitted data covering fully-vestibuled cars and prepayment cars, these being based on replies to a letter sent to 148 railways. They showed that 80 per cent of the companies used fully-vestibuled cars and that 12 per cent did not use them, 8 per cent



AVERAGE BOARDING TIME PER PASSENGER ON OPEN AND CLOSED-PLATFORM CARS

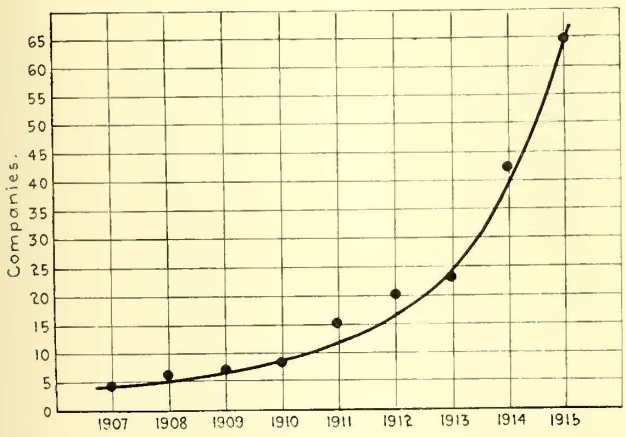
failing to reply. Fifty-seven per cent of the companies operated prepayment cars and 31 per cent did not, 12 per cent failing to reply. Sixteen per cent of the companies reported a decrease in schedule speed from the use of fully-vestibuled cars and 13 per cent reported an increase in schedule speed, 71 per cent reporting no change. These companies commented as follows on the effect of fully-vestibuled cars on accidents: Eighty-eight per cent reported a decrease; 1 per cent reported an increase; 11 per cent reported no change. Of these companies 84 per cent used doors and 16 per cent gates. In this connection 59 per cent of the companies allowed platform riding at any time and 14 per cent allowed it when the cars were full.

Another interesting part of the report was that dealing with near-side stops, in which it was said that eighty-seven companies are now using that method of operation. The reasons given for its adoption varied some being voluntary action of the company, some because of ordinance, some because of commission orders, others on account of agreements with civic organizations. A few companies have used near-side stops but have discontinued the practice. The graph on the next page shows the growth of the use of the near-side stop from 1907 to 1915.

The type of car used by the companies operating with near-side stops varies materially. Only 16 per cent of those reporting use the near-side car, which has exit and entrance on the front platform. The majority of companies are operating end-entrance cars and they are of the opinion that this type is satisfactory, since with

the entrance at the rear and the exit at the front there is the greatest facility for loading and unloading passengers. It is worthy of notice that some companies using the end-entrance cars with the near-side stop report that this tends to increase the proportion of passengers leaving by the front end. With regard to the effect of the near-side stop on operation opinion was about equally divided as to whether the number of stops was decreased or showed no change. The majority reported no change in speed but a material number reported an increase. No change in power consumption was reported by the majority. Most railways reported a decrease in accidents although some stated that there was no change.

The majority of those using the near-side stop favored it, but seven companies were opposed. Only two of the seven gave reasons against it, one being because the end-entrance cars tended to reduce the speed on account of the passengers having to walk to the rear of the car to board it. The second reason was the trouble result-



GROWTH OF THE NEAR-SIDE STOP

ing from motormen fouling crossings because of the unusually slippery rail with which this company has to contend. However, the consensus of opinion was that neither of the above-mentioned objections is borne out.

The most common reason given in favor of the near-side stop is that it tends to reduce the number of accidents. Other reasons are that it reduces the number of stops, increases the speed, saves power and reduces congestion. Two companies state that it is so general that transients naturally wait for a car on the near side of the street. Of the companies reported as not using the near-side stops only a few gave reasons for or against its use, about half of them being in favor of the near-side stop and half of the remainder opposing it on account of paving conditions.

The committee stated that valuable information on the subject of near-side stops would be found in the replies of the companies regarding the matter, and that these data, while too voluminous to be included in the report, are on file in the office of the American Electric Railway Association.

With regard to interurban time-tables the committee stated that the data that it had been able to obtain were rather unsatisfactory. However, the present standard form was not considered suitable for several reasons and the preparation of a suitable standard form was one of the most important things that could come before the time-table committee. Because of the large number of subjects referred to it, the committee had not been able to give the matter the attention it required and recommended its reference to the next year's committee.

The report was signed by Alexander Jackson, chairman; J. J. Dempsey, vice-chairman; J. C. Nelson, H. F. Fritch, G. A. Richardson and C. B. Wells.

In the discussion which followed Joseph V. Sullivan, Chicago Surface Lines, pointed out that his company had obtained data in the study of skip-stop operation that differed somewhat from that printed in the report. About twelve stops per mile was the average in Chicago and the loss in time ranged from eleven seconds to fifteen seconds at each stop. President Brush described the detailed study of schedules and service and how it had affected the Boston Elevated Railway. After a thorough study more seats were furnished economically for people when they wanted to ride. N. W. Bolen, Public Service Railway, described briefly that company's service bureau, which included twenty-two men who were engaged in making studies and plotting charts.

Mr. Bradley said that until two years ago the properties in Texas, when complaints were made, had to reply, "We will investigate." This was not right. They are now keeping accurate records of each and every car and can make quick and definite answers to criticisms of service. Complete knowledge of service conditions was most essential in determining how speed could be increased to meet the jitney competition. Messrs. Bolen and Sullivan expressed the thought that the association should take steps to have a thorough study made of the skip-stop plan.

A. B. Merrihew, Los Angeles Railway Corporation, described experiences with the omission of time points on three complete lines in Los Angeles. Cars are started on schedule time and the men are instructed to make the trip as fast as they can without exceeding the schedule speed of the midnight schedule. It is probable that time points will shortly be dispensed with on all lines. The service, as a result of this new practice, has received many compliments from the passengers, headways have been checked and found, in many cases to have been improved. The old men do not run away from the new men because of the supervision given by the instructors, five of which are riding the cars at all times.

W. E. Harrington, Metropolitan Street Railway, Kansas City, said that the jitneys had reduced that company's earnings $3,000 a day. This had been counteracted in part by increasing the schedule speed 2 m.p.h., notwithstanding which increase the accidents had been reduced. The severity of jitney competition had diminished.

W. G. Murrin, British Columbia Electric Railway, stated that the jitneys had caused a loss of 40 per cent in the receipts at Vancouver. In order to meet this loss the schedule speed had been increased approximately 12 per cent. However, he felt that unless time points were maintained car loading would be very uneven due to irregularity in headway.

Thomas Fitzgerald, Cincinnati Traction Company, spoke of the good results obtained by omitting time points on a depot line and thus meeting jitney competition to better advantage. Mr. Fitzgerald also discussed the near-side stop, which, at first, had been put in operation all over the Cincinnati property and later had been changed to the far-side stop in the suburbs because of the condition of the streets. The near-side stop had saved considerable power. Mr. Harrington said that the near-side stop in Kansas City had increased the speed and decreased the accidents. This was also the general opinion of several delegates who discussed the value of near-side stops and set forth their local conditions.

UNIFORM DEFINITIONS

The report of the committee appointed to develop new definitions was read by Joseph V. Sullivan, Chicago Surface Lines, and after discussion the association accepted the report, referring it to the incoming

executive committee with the expectation that the work hereafter would be considered as a duty of the American Association so that any definitions formulated would take into account all branches of the industry. The report appears in part below:

The committee of the Transportation & Traffic Association appointed to develop uniform definitions has endeavored this year to make definite progress toward the completion of a code of definitions which might be adopted by the association and put into practical use by its member companies. However, a detailed study has shown that this subject cannot be viewed from the transportation standpoint alone, as a word which has one meaning in one part of the company's organization is often given a different interpretation by one of its other departments. It is therefore thought that no definite recommendation as to definitions should be submitted to this convention but rather, that the association should urge the appointment of a general committee with several representatives from the American and each of the affiliated associations to take up this whole question.

The report was signed by H. C. Donecker, chairman; Frederic Nicholas and William C. Greenough.

Joseph K. Choate, chairman, then stated that the committee on transportation accounting had no report to make and no action to suggest. Hence the joint session was omitted.

Tuesday Afternoon Session

On Tuesday afternoon the joint meeting of the Engineering Association and Transportation & Traffic Association was held, and the joint report on block signals for electric railways was read in part by W. H. Collins, Fonda, Johnstown & Gloversville Railroad, this report being abstracted in the following paragraphs.

BLOCK SIGNALS

The committee submitted designs for a semaphore signal exclusive of the operating mechanism. These were approved as recommended designs for the association by the standards committee. A standard clearance diagram for semaphore signals, in which the undesirable features of the design presented before last year's convention had been eliminated, was also submitted. This diagram was, however, referred back to the committee by the standards committee for conference with the committee on heavy electric traction.

A complete code of signal rules was included in the report, this revision of the existing code being submitted as a progress report only for the guidance of the member companies. In connection with this the committee recommended that provision should be made for representation on the A. R. A. committee that is at present working on a new code for signal procedure. With regard to the point brought up at last year's convention about Rule No. 10 in the code for contactor signals, which covered procedure in case passage under the contactor failed to set the signal, the committee decided that the rule should be restricted to non-registering signals, thus leaving the procedure in the case of registering signals to be determined by special rules suitable to each particular installation.

A review of the subject of light signals followed in which was cited the use of two lenses, the inner one being colored and the outer one of larger size and of clear glass. The lenses are set about 1½ in. apart and a 25-watt concentrated filament lamp is used, giving an increase of some 33 per cent in range while maintaining the same spread of light found with previous arrangements. Another development is the use of a special compound toric lens using a reflector back of a concentrated filament lamp, the reflector being so placed that phantom indications are impossible. With this arrangement lenses 8⅜ in. and 10½ in. in diameter have been tried, the lens being designed in some cases to throw a narrow beam of light which can easily be seen in the day-time at a distance of from 3500 ft. to 4000 ft. The beam-light signals recently installed in the electrified zone of the Pennsylvania Railroad near Philadelphia were also mentioned, it being said that the absence of color to intercept the light from this type of signal makes it possible for the indication to be seen at distances ranging between 3000 ft. to 4000 ft. during the daylight hours.

The committee had been instructed to make a study of signal systems on roads that were signaled from end to end, such study covering maintenance cost, efficiency of operation and effect on traffic. There was found to be a lack of uniformity among different companies in the way in which signal operation data were reported, and this led to the development of a standard signal report form upon which all companies could keep their signal data, with the result that little or no confusion would be found when requests for information were made by succeeding committees. This standard form was submitted with the committee's report, together with a recommendation that it be given a trial. A review of existing standards and recommendations by the committee resulted in a recommendation for but one change, namely, to change the expressions "car counting" and "non-car counting," as applied to contactor signals, to the terms "car registering" and "non-car registering," respectively. The sub-committee having the matter of definition of signal failure under consideration reported progress only as it was found that there was a wide divergence of opinion among operating companies. It was recommended, therefore, that more time be given to the committee for a comprehensive study. The report included also an extensive statement on the subject of highway crossing protection, which has been published in abstract in the Electric Railway Journal for Jan. 23, 1915.

With regard to the operation of single-track lines by signal indication only, the report stated that for high-speed heavy interurban single-track operation with the track protected by automatic block signals having continuous track circuits, the preponderance of evidence obtained from a large number of representative electric and steam railways, indicates that use of dispatchers and time-card rights, augmented by standard train rules, is the most approved practice. However, development of the art may considerably change the present opinion, as in some instances short stretches of lines are now operated by signal indication only and under the partial direction of a train dispatcher. It is the feeling of the committee that experience may prove it feasible to operate trains by signal indication only, under the partial direction of a train dispatcher or other officer used in a supervisory capacity where proper protective train rules are used, provided the railway is equipped with moden automatic signals whose electrical circuits are free from outside interference.

As appendices to the report there were a bibliography on block signals and several brief descriptions of signal installations made during the past year, these in-

cluding an extension of the signaling on the Scranton & Binghamton Railroad which has been operating for more than a year by signal indication only and has found this method of operation highly satisfactory. The replies to the data sheet on signal operation, sent out in January, 1915, are also included in an appendix in tabular form, as are also the replies to the data sheet on highway crossing signal installations. Another appendix contains a blank form for a signal estimate data sheet for a.c. track-circuit signals, this being designed for submission by a railway company to a signal company when it is planning to make a signal installation.

The report was signed by J. M. Waldron, chairman; J. W. Brown, vice-chairman; A. E. Roome, H. A. Nicholl, C. D. Emmons, G. N. Brown, John Leisenring and C. H. Morrison.

After discussion the associations approved the recommendations on standard designs for a semaphore signal. The recommendation for a standard clearance diagram for semaphore signals was, however, referred back to the committee for consideration with the committee on heavy electric traction. Charles Rufus Harte, The Connecticut Company, then spoke of the need for closer co-operation between the steam and electric railways associations so that, wherever conditions permitted, uniform rules might obtain, and in connection with this H. A. Nicholl pointed out that the suggestion contained in the report with regard to co-operation with the A. R. A. had been proposed by Charles H. Morrison of the New Haven Railroad, who was primarily a steam railroad man. The sense of various members who discussed the subject was that continued effort should be made toward joint action with the steam railroad associations for the purpose of further unification of rules and practice. The complete report was then accepted as a progress report, and the wish was voiced by the convention that the recommendations contained in it be brought to the attention of the incoming executive committee.

PAUL SHOUP'S ADDRESS

Following the joint session the Transportation & Traffic Association listened to an address by Paul Shoup, president Pacific Electric Railway Company, Los Angeles, on the relation of electric railways to agriculture. Mr. Shoup said, in part, that it is idealism, as much as desire for financial profit, that has created the communities along the electric lines. Ideals which create agricultural and horticultural development can be gratified in a large degree by the modest many only where the electric railroads operate. He mentioned the great tonnage of agricultural products carried by the Pacific Electric lines, and set forth a typical farmer's day, showing the intimate connection of his life with electric railway service. Speaking of the mutual interdependence of the electric railways and agriculture Mr. Shoup suggested that if the people in general had the correct idea of it the electric railways might get under the same wing of the government with agriculture, and he contrasted the governmental policies toward the railroads and toward agriculture. When the farmer needs help the government supplies it without expense, and the government initiates constructive work to help him. Has the public looked upon transportation as equally essential to its welfare and treated it in the same fashion? The public must learn that the electric railways are business institutions traveling upon the most narrow of business margins. Without the government's active support and sympathy they may in large measure disappear. If the electric railways are impoverished, so will be the communities along their lines.

In conclusion Mr. Shoup suggested that troubles should not be too deeply considered as troubles, but as serious problems to be solved by constructive activity. Such activity should include fair and earnest education of commissions and the public so that the people will hold the same viewpoint as to the value of agriculture and of transportation.

STANDARDS

The new committee on standards of the Transportation & Traffic Association then made its report, submitting a code of procedure for the future work of the committee, this following as closely as possible the practice already in use by the Engineering Association. Progress was reported in the compilation of a syllabus of the Transportation & Traffic Association's proceedings during the current year. The committee approved the inclusion of the city and interurban codes in the Transportation & Traffic Manual as standards of the association. It was impossible at this time to submit any other matters for adoption as standards or recommended methods or practices, but the incoming committee was advised to take up as a part of its work the revision of all recommendations made to date in accordance with the standard routine. The report was signed by L. H. Palmer, chairman; J. N. Shannahan, vice-chairman; C. V. Wood, G. L. Radcliffe, N. W. Bolen, J. E. Gibson, F. D. Norviel, Alexander Jackson, P. P. Crafts, W. H. Collins and C. S. Ching.

The report was read in abstract by J. N. Shannahan, vice-president Newport News & Hampton Railway. After its adoption by the association Mr. Shannahan presented an additional report prepared by the same committee, but dealing with proposed changes in the constitution and by-laws of the Transportation & Traffic Association. In making these suggestions it was pointed out that the committee desired to define more clearly the duties and responsibilities of the officers and committees of the association. No formal recommendations were made because the constitutions and by-laws of the four affiliated associations are modeled upon the by-laws of the parent association, so that the question should be taken up by all of the associations jointly.

The committee recommended, however, that steps be taken to consider the following suggestions: First, that the president have charge of the finances; second, that there be but one vice-president for each of the four affiliated associations; third, that six other members be elected to form the executive committee, which would then consist of nine members; fourth, that the various committees be appointed by the presidents; fifth, that the duties of the vice-president be extended so as to require him to familiarize himself with the personnel of the transportation and traffic department of member companies, to prepare for the last executive committee meeting at the convention a tentative list of recommended committee appointments for the ensuing year and to keep in touch with committee work and follow the general progress made; sixth, that the first meeting of the new executive committee be held within thirty days after the convention.

Concerning the work of the committees of the Transportation & Traffic Association, it was recommended that there be included in the association by-laws provision for standing committees on standard rules, passenger traffic, express and freight traffic, training of transportation employees, and schedules and timetables. Certain other committees should be appointed from time to time to confer with similar bodies from the other associations. The recommendations also included provision for the procedure of the various committees with the purpose of facilitating their work.

In conclusion the committee on standards recommended that its work be continued.

After some discussion on these recommendations a motion was carried authorizing the incoming president to appoint a committee of three whose duties would be to arrange for the revision of the constitution in accordance with these suggestions, the revisions to go into effect at the next convention.

Wednesday Afternoon Session

At the joint meeting of the Transportation & Traffic and Claims Associations on Wednesday afternoon President Brush of the Transportation & Traffic Association presided, and the report of the joint committee on claims-transportation was read by President Tichenor of the Claims Association.

CLAIMS-TRANSPORTATION

The committee on claims-transportation, formed jointly from the Transportation & Traffic Association and the Claims Association, outlined in its report the result of an investigation of the applicability of motion pictures to safety-first work in its three phases, namely: the training of employees, the education of school children and the education of the general public. From the information thus obtained the following facts were evident: No one who had ever used moving pictures for educational purposes had ever abandoned them; every company that had ever used moving pictures to any extent was extremely enthusiastic as to the results and the desirability of their use; at least twenty-seven films are on the market and these can be readily obtained.

The committee recommends that all companies should use moving pictures in their safety work and that the American Electric Railway Association should establish a central bureau through which moving picture films can be obtained by member companies. The committee also recommends that the executive committee of the American Association should consider the advisability of the association owning a machine and reels which could be rented to members of the association if assurances can be obtained from a sufficient number of companies that the reels will be used. By providing the smaller companies, which cannot afford to make their own reels, with a method by which these can be obtained, a great deal will be accomplished.

The report was signed by R. P. Stevens, chairman; W. F. Weh, J. P. Barnes, A. D. B. Van Zandt, E. E. Slick and B. B. Davis.

In the discussion N. W. Bolen, Public Service Railway of New Jersey, said that that company had presented five reels of motion pictures to its employees with good results and that the local schools had applied for them. Previous to their use the company had used stereopticon slides. Byron Nixon, chief train-service instructor Pacific Electric Railway, Los Angeles, was thoroughly convinced that motion pictures were a most efficient means for instruction and he would like to see the association own a circuit. The great trouble now was that there were not enough reels. It was a mistake to consider the safety feature only. His company uses them in ordinary instruction work and finds them very helpful in teaching the men to be more courteous. Another use is to instruct them in the methods of signal operation, picking up broken trolley wires and the like. He cited examples of how the reels were used for instructing conductors in regard to their duties in different emergencies.

George Carson, Puget Sound Traction, Light & Power Company, spoke about the good results in public schools. B. F. Boynton, claim agent Portland Railway, Light & Power Company, Portland, Ore., also had good results to report. The safety work in Portland is conducted by a public commission appointed by the mayor and representing the different municipal departments and different classes of citizens. J. H. Handlon, claim agent United Railroads of San Francisco, expressed a need for more films. J. V. Sullivan, Chicago Surface Lines, stated his company had been using reels for some years. J. A. Gibson, Metropolitan Street Railway of Kansas City, approved the idea and said that his company has been using the stereopticon in public schools.

Upon motion the association voted to continue the committee and President Brush said that the incoming presidents of the Claims and Transportation & Traffic Associations would consider whether the subject of motion pictures should be taken up only from a safety standpoint by the committee or from other viewpoints as well.

At the close of the joint session the Transportation & Traffic Association took up the subject of the proposed changes in constitution and by-laws which were read and explained by Secretary Burritt and then passed.

F. D. Norviel, chairman of the committee on express and freight traffic, then presented the report of that committee, which is abstracted below:

FREIGHT AND EXPRESS TRAFFIC

The committee on freight and express traffic of the Transportation & Traffic Association discussed at length a number of subjects, its conclusions being based largely upon returns from data sheets. Answers were received from 178 railways—about double the number of replies which were reecived in previous years. Most of the companies that replied do not handle express, and nine do only a small amount of such business, but fifty lines operate regular express service either on their own part or through old-line express companies, and in many cases both. It was found that practically all of the interurbans in Indiana, Ohio, Michigan and a large portion of Illinois and Pennsylvania, are doing both an interurban and an old-line express business. The larger systems, representing the most mileage, have gone further into the matter of express traffic and have given it greater attention than the smaller lines.

Of the fifty companies doing express business, twenty-one do not have contracts with the old-line express companies. Of the remaining twenty-nine, eight have contracts on a tonnage basis, two on a mileage division, and nineteen on a pro-rate of the through rate. An analysis of the tonnage and revenue taken as a whole from the scattering information received showed very little change in the amount of business in 1914 as compared with 1913. Lines in the Middle West generally show increases, while in other sections they fluctuate with no apparent reason. Only seven of the lines doing an interurban express business have a pick-up and delivery service, and one provides a pick-up service only. Aside from the minimum charge, which in nearly all cases is 25 cents, interurban non-delivery rates follow closely 70 per cent of the old-line express company rates.

Apparently the motor truck has not had an appreciable effect on express traffic. The parcels past, however, has been a prominent factor either in hindering a normal increase, or in causing an actual reduction in the revenues. Estimates as to the effect of the parcel

post range all the way from a reported loss of 50 per cent down to a belief that no injury has been done. The committee, however, believes that the parcel post is a real menace to interurban express, and can suggest only good service as a counteracting influence.

In general the committee considered that contracts with old-line express companies would be beneficial to the traction lines, provided, of course, that contracts are made under favorable conditions. Such service should be augmented by traffic arrangements for an interurban express, or expedited freight, carried on passenger cars, this service being elastic and susceptible of handling with few cumbersome details. Rates for such service should be placed about midway between the highest class freight rates and the merchandise rate of the old-line express companies, with the customary minimum charge.

With regard to handling freight the report gives in detail the information contained in replies from fifty companies which operate a strictly freight traffic. A table showing gross passenger and freight revenues for the railways in a number of different States indicated a decrease from 1913 to 1914 of 0.7 per cent in passenger business, while on freight the earnings were 4.8 per cent greater in 1914. It is a reasonable inference from the figures that there are opportunities in freight traffic for a large increase in the earning capacity of interurban railways, although passenger traffic for the past three years has practically been at a standstill. The committee considered that no such efforts were made to increase freight revenue as to maintain passenger revenues, and that if the same relative expenditure had been made for freight equipment and facilities, and for freight advertising as for passenger traffic, the freight business would show a much larger increase.

The report discussed briefly the subject of interline business, stating that little progress is being made. The committee felt that the interest of the traction lines will be better preserved if affiliations are made in all cases with connecting traction lines rather than with steam railroads. The report also discussed briefly the question of weights, rates and inspection service, reiterating its belief in the advantages of a simple form of weight and class inspection by some organization independent of the railway.

The subject of class rates was then taken up, the committee recommending that no further attempt be made by the electric railroads to secure a uniform rate on a mileage scale until the steam railroads had progressed further along these lines. The matter of franchises was also briefly touched upon, and an outline organization for the freight department was submitted. The report concluded with recommendations for future work of the committee, and included as an appendix the form of data sheet which had been used in securing information by the 1915 committee.

The report was signed by F. D. Norviel, chairman; F. W. Coen, G. H. Harris, H. E. Reynolds, E. T. Chapman and C. F. Handshy.

In the discussion J. K. Choate of the J. G. White Management Association, New York, gave arguments in favor of working through the old line express companies but said that, owing to their average short haul, electric railway companies must be much more careful in looking out for a fair minimum payment than was necessary with steam railroad companies. Mr. Norviel explained that the basis used by his company was a prorate of the regular rate and he thought that this was the best plan. Mr. Choate then brought up the importance of the electric railway companies making arrangements to interchange cars if they expected to do much freight business. H. A. Nicholl, general manager Indiana Union Traction Company, explained that this was done to a large extent already in the central electric railway territory. His company, for instance, sends through trains over four lines from Indianapolis to St. Joseph, Mich. Through trains are also run from Indianapolis to Dayton, Ohio, and to Fort Wayne, Ind. The Central Electric Railway Association has rules in regard to the interchange of cars not only for freight but also for passenger business.

Mr. Norviel pointed out that, on the fifty roads doing a strictly freight business which replied to the committee, the gain in freight earnings during the past year was 4.8 per cent, while on the passenger business there was a slight decrease. E. H. Hyman, general manager Electrical Package Agency, Cleveland, said that all of his contracts were on the basis of the merchandise rate. Packages weighing less than 100 lb. are the most profitable part of the business. The rates of his company prior to 1914 were the same as the express company's, but since that date the Interstate Commerce Commission reduced the rate charged by the express companies for shipments weighing less than 100 lb. and his company promptly made its rates slightly less than the express company's. His company still has a minimum differential of 3 cents on packages weighing less than 100 lb., but charges the same rate on packages weighing more than 100 lb. He considered the essentials of success as good service, intelligent solicitation, courtesy and prompt payment of claims. Last year the company handled out of Akron $60,000,000 worth of rubber tires.

Mr. Brush then described the new freight terminal property of the Boston Elevated Railway in which there is an investment of about $750,000. His company handles the freight cars of the suburban properties on a wheelage basis, the rate being determined by the average number of cars per day per month in accordance with a sliding scale. The privilege of freight car operation over the streets of Boston and some of the suburbs was obtained by application to the Public Service Commission, which over-ruled the refusal of the city authorities to grant that privilege. About thirty cars a day are now operated in and out of the terminal and business is still confined only to the lines extending south from Boston. Mr. Brush did not believe in pickup and delivery service. F. W. Coen, general manager Lake Shore Electric Railway, described the service of the Cleveland package agency which now operates thirty-eight wagons and handles the pickup and delivery business as well as the transportation part of an extensive service over the lines of practically all of the roads centering at Cleveland.

Several members discussed the effect of motor trucks and parcel post service on interurban freight and express service. Mr. Hyman said that at first the parcel post had caused a loss of considerable business but because it had been impossible to obtain settlement of shipment losses and other claims the shippers had instructed their traffic men again to use the express company service. Also a number of motor truck lines which had been started in Cleveland to serve the city and the suburbs had been abandoned.

Charles L. Henry, Indianapolis & Cincinnati Traction Company, thought the receipts of the old line express companies had been decreased by the parcel post, but this had not affected the interurban station delivery business. Years ago, when the old line express service was put on, interurban men feared that it would rob the station delivery business but that has not been the case.

The report of the committee on passenger traffic was then read by J. J. Dempsey, Brooklyn Rapid Transit System, who pointed out that its most important sub-

ject was that of one-man car operation. An abstract is given in the following paragraphs:

PASSENGER TRAFFIC

In its report to the Transportation & Traffic Association the committee on passenger traffic gave the results obtained from replies to a letter requesting information on one-man car operation, to which 171 companies replied. Fifty-four of these companies operate one-man cars, twenty-six using them exclusively and twenty-eight having them in zones of light traffic. One hundred and eight companies are permitted by charter or franchise to operate one-man cars but are not doing so; nine are not permitted to operate one-man cars, one because of a contract with its trainmen, and eight on account of charter or franchise restrictions, extracts of which appear in an appendix to the report.

The exclusive operation of one-man cars appears to be confined to cities averaging 16,000 population, with a maximum of 25,000. Schedule speeds compare favorably with two-man cars operated in similar territory. This comparison, however, does not hold good for zones of heavy traffic. Nearly all companies use the near-side stop. The average passenger revenue per car-mile reported by thirty-five companies is 14.47 cents and the operating expenses per car-mile reported by twenty-eight companies are 12.72 cents. Trainmen's wages per car-mile average 3.22 cents, twenty-five companies reporting them.

Of the fifty-two companies reporting wages paid to trainmen, forty-two have not increased the wages over those paid on two-man cars and ten companies have increased wages as follows: seven companies from 1 cent to 5 cents per hour, one company 10 per cent and one company 20 per cent.

The prepayment method of fare collections is practically universal, most of the companies using fare boxes. About half of the companies issue transfers to passengers when they leave the cars, the other half issue them as they board. Thirty-one companies report fewer accidents and seven report no difference as compared with two-man operation. The general reduction in step accidents, however, is very marked. Twenty-one companies report that one-man car operation does not adversely affect the settlement of accident claims and twenty-eight report that they find nothing to indicate an adverse effect by such operation. No serious difficulty appears in the matter of flagging at railroad crossings, although sufficient time must be allowed in the schedules for the proper performance of that duty.

Of forty companies reporting on the prejudices of the public, twenty-five mention a favorable attitude, seven report no objections, and one reports the public as indifferent. Seven mention opposition by organized labor and other bodies.

Several companies employ additional trainmen during the hours of heavy traffic and on holidays, etc. A few employ additional trainmen in zones of heavy traffic. Of forty-one companies reporting upon structural changes in cars to adapt them to one-man operation, twenty have remodeled cars already in service, six have built new cars and fifteen have made no changes. In an appendix to the report a description was given of the one-man car developed by the Illinois Traction System, and extracts were made from a paper on one-man car operation that was read before the 1915 meeting of the Wisconsin Electrical Association, matters which have been covered in various issues of the Electric Railway Journal.

With regard to its investigation of the motor bus and the trackless trolley the committee found only one system of the latter type operating in this country, and that there was no foundation for any recommendations to the electric railways that this means of transportation has yet passed the experimental stage. The present status of such motor-bus companies as were in operation in 1914 has changed very little. With regard to the effect of privately-owned automobiles the committee found it impossible to obtain any specific results as determined by studies made by any of the companies that responded to requests for information.

The report was signed by P. P. Crafts, chairman; E. M. Walker, J. K. Punderford, J. A. Greenland, F. W. Hild and E. E. Soules.

Following the presentation of the report several members described the one-man car service operated on their properties. Mr. Nicholl pointed out that particular care must be taken for protection at railway crossings. L. E. Gould, Electric Railway Journal, described the new one-man service recently inaugurated in Spokane with re-built cars under the jurisdiction of R. A. Willson, general superintendent Washington Water Power Company.

W. C. Callaghan, general manager Helena Light & Railway Company, also described successful service with one-man cars. Each trainman was carefully examined before being put in complete charge of a car, and physical examinations were made regularly. Instead of introducing the service quickly the cars were first operated with two men at the front end, and the conductors were gradually removed. The public likes the improved service and it has been in successful operation for two years.

Mr. Coen stated that a law has recently been passed in Ohio relieving the electric railways from the necessity of flagging unused industrial track crossings. J. E. Gibson, general superintendent, Metropolitan Street Railway, Kansas City, had just inaugurated one-man car service on certain owl cars. As soon as this service has been thoroughly tried out it will probably be extended to other schedules. Mr. Callaghan did not favor one-man cars for owl-car service, while other members pointed out that this was a question of the character of traffic.

Thursday Afternoon Session

The report of the committee on fares and transfers which was presented before the association on Thursday afternoon is abstracted in the following paragraphs:

FARES AND TRANSFERS

The investigation, during the past year, of the committee on fares and transfers of the Transportation & Traffic Association indicates that transfer issuing and collecting devices have not been sufficiently tested to warrant conclusions as to their practicability. The report states that no great amount of interest has been displayed by the electric railways in demanding mechanical methods of issuing transfers, but that there is a need for such a machine. The report also gives an outline of fare-collection methods on center-entrance cars, these being generally similar to other prepayment systems.

The committee reported that the fare box has not fulfilled all that was expected from it. To insure the full return of all fares paid an improvement seems necessary in its construction in order to secure the immediate registration of each fare deposited in a way

that is beyond the control of the conductor to regulate. This feature has been accepted by some manufacturers by the installation of motors in fare boxes in order to accomplish immediate registration. There is no question but that the fare-box system of receipt and accounting for fares has come to stay, and every encouragement should be made to induce manufacturers to meet conditions that fulfill every expectation which was originally thought the fare box, as constructed, would accomplish. A motor-driven fare box (with the elimination of the penny counting mechanism) that will immediately register the fare deposited gives little or no opportunity for conductors to defraud the company, inasmuch as the deposit of a penny would not give him an opportunity to deceive the observer.

The report presented also an outline of the practice of several companies using the prepayment method on lines that had more than one fare zone. One of these makes use of an exchange ticket which is issued to each passenger boarding the cars and which is dropped into a fare box when he leaves. On another a check similar to a transfer is issued to passengers when they pay a 5-cent fare, this being collected from the passenger by the conductor when the car passes the city limits. On two lines the fares outside of the city limits are collected by the conductor as if the car was not of the prepayment type, and on one line the fares outside of the first-fare limits are collected by an inspector who boards the car. Another line makes use of colored exchange tickets that are purchased when the passenger boards the car and which are deposited in a fare box when the passenger leaves.

The report included an explanation of the method of using extra front-end collectors which has been introduced in Toronto, Kansas City and San Francisco, this system being explained in brief as follows: At one or more busy loading centers the street railway company places additional uniformed conductors with portable neck registers. As soon as a prepayment car stops they collect fares and allow passengers to enter at the front as well as at the rear end. This is supposed to facilitate loading and to help the distribution of the passengers throughout the car.

The committee found that there was some difference of opinion as to the time saved by the system and quoted from a letter received from one railway company which said in part: "Checks taken at the outlet of our congested district on days when collectors were engaged, compared with days on which they were withdrawn, revealed to us the fact that the number of cars passing through this zone were identical on the days of the two checks. They also disclosed the fact that the traffic policemen stationed at the intersecting streets had been working up to their limit in moving cars previous to the installation of the front-door loading system, and that the movement of cars was entirely dependent upon them. The object we thought to attain not having been accomplished, we are now contemplating the removal of the extra conductors and a return to the old system."

The Metropolitan Street Railway Company of Kansas City, Mo., has used this method of fare collection since 1911. There are six collectors in the morning and thirty-six in the afternoon rush hours, who are placed at busy transfer points and at some large department stores. They are also used extensively on special occasions, such as ball games during the summer and at theaters in the winter. They handle cash and transfers in the same manner as regular conductors and they also keep trip sheets. One test made by this company at a busy transfer point, with the front-end collectors working, showed that 282 passengers were loaded through both the rear and front doors in 304 seconds, or one passenger every 1.07 seconds. Of the 282 persons handled 109 were loaded through the front door and 173 by the rear. At another busy transfer point under similar conditions, with only the rear door in use and the front-end collectors eliminated, 105 passengers were loaded in 235 seconds, an average of one passenger every 2.23 seconds.

The United Railroads of San Francisco also has used a similar plan of auxiliary collections for the past two years and reports that this has been successful thus far in enabling the cars to perform a greater service and to handle more people. About twelve collectors are employed at the heavy loading points in various parts of the city.

The committee made no recommendation on the subject and gave the experiences of the companies in the belief that some managers will find the system to facilitate loading, while others would not care to try it because of a difference in traffic conditions.

With regard to the question of zone collection versus through collection on suburban and interurban lines the majority of replies to the committee's questions favored the through method. No suburban roads with fast service collected fares by zones, and the committee recommended the through collection system because it is of less annoyance to passengers and because, with the use of hat checks, there is no reason why conductors should not be able to follow the destination of their passengers. The report was signed by J. E. Duffy, chairman; J. V. Sullivan, vice-chairman; H. T. Jones, B. C. Edgar, C. E. Learned and G. K. Jeffries.

In the discussion of this report, which was read, in the absence of Chairman J. E. Duffy, by J. V. Sullivan of Chicago, H. T. Jones, San Francisco, said that front-end collection is very satisfactory in that city as it helps to get people to the front of the car and evens up the load in the rush hours. J. H. Harvey, Kansas City, also expressed satisfaction with the results of stationing collectors at the front end of cars at congested points in the evening rush.

J. N. Shannahan, Hampton, Va., asked President Brush to describe the work with motor-driven coin boxes in Boston, and calling Mr. Shannahan to the chair, Mr. Brush described in considerable detail the development of the Boston system. This eliminates the use of paper in collecting revenue and has been the subject of several articles in the ELECTRIC RAILWAY JOURNAL. The company has, with a very few exceptions, eliminated tickets and, in the collection of 1,016,000 fares from motor-driven boxes, has had a loss of only 35 cents. By Dec. 1 of this year no paper whatsoever will be sold to passengers and deposited in boxes, ticket sellers being replaced by change girls. From 85 per cent to 90 per cent of the passengers have the correct change for their fares. The change girl is given $50 when she goes to work and all her money transactions with the company are exchanging bills for small coin, so that she always has just $50. There are never any disputes. Mr. Brush mentioned a method of dumping coin into coal hods and thence into a counting machine, which wraps packages ready to turn over to the bank. The company's establishment of prepayment areas for surface cars with motor-driven coin boxes also has successfully provided for baseball rush traffic. In reply to queries Mr. Brush said the company had had no trouble from small coins and jumping registers. John F. Ohmer, Dayton, Ohio, spoke briefly on the importance of the human element, and T. Fitzgerald, Cincinnati, raised the point that the elimination of the human element in the form of men whom the railways pay and control might well give increased play to the human element in the public.

Upon motion the report was then accepted and the committee was continued.

Following this J. E. Gibson, Kansas City, in the absence of C. S. Ching, chairman, read the report of the committee on training of transportation employees which is abstracted below.

TRAINING TRANSPORTATION EMPLOYEES

The report of the Transportation & Traffic Association committee on training transportation employees stated that, because so many labor laws were in effect at the present time, a compilation of them was impossible but that the bureau of labor statistics at Washington had published a summary of labor laws of the United States with court decisions, under date of Jan. 1, 1914, this being supplemented by a statement dated Jan. 1, 1915.

With regard to the investigation of a systematic program for improving courtesy on the part of trainmen, replies to a data sheet which had been sent to all member companies showed the following conditions as applying to the 155 companies that answered: 55 per cent issue letters or bulletins when an employee is commended for courtesy; 6 per cent issue a company magazine and one railway is contemplating starting a company publication in the near future; 33 per cent issue instructions with regard to courtesy, the majority posting instructions on bulletin boards; 57 per cent hold meetings where the subject of courtesy is discussed, several of these having regular semi-monthly or monthly meetings.

Although the replies indicate that no systematic scheme for improving courtesy had been adopted the committee considered that it was a most important matter and advocated personal contact between the officials and employees with that end in view. It is always advantageous to have employees properly informed regarding issues between the company and its patrons and especially so when such matters are given publicity in the newspapers. It should not be necessary also to wait until a letter of commendation is received or some meritorious act is performed before speaking to an employee in regard to the good service he has rendered. Much good can be accomplished by informing those who have made exceptionally good records that they are performing their work in a satisfactory manner and that this service is appreciated by the company.

With regard to the discipline of new men the replies to the data sheet show that 24 per cent of the 155 companies have a probation period ranging from ten days to six months. In seven cases the instruction of new men is solely in the hands of the instruction department, and where such practice is followed it is reported to have produced good results. On large properties, especially on compact city systems having a centrally located instruction department, there is no doubt but that the instruction department can materially assist in keeping the discipline of new men uniform. Frequently, better results can be obtained by returning men to the instruction school for further instructions rather than by administering discipline, as in the case of older men in the service. There should be a period during which discipline should be of an instructive and corrective nature, and the follow-up system for new men should be systematic. There should be a man whose duty it is to ride with new employees and he should be held responsible for their proper instruction. On large systems this can be best accomplished through an instruction department, segregated from the regular departments of the division.

With regard to watch inspection methods the committee found that ten member companies required a standard watch having from seven to seventeen jewels, seven of the roads requiring seventeen jewels. Sixteen other roads have a watch inspection. The committee felt that it was necessary that some system of checking watches should be maintained, but it did not seem feasible for all roads to require a high standard of watch with a periodical inspection system. The minimum requirement should be the provision of standard clocks installed at every rating station where men report and that the trainmen be required to have reliable watches and to compare time with the rating station clock before taking out runs. The report was signed by C. S. Ching, chairman; W. J. Harvie, Bruce Cameron, E. E. Strong and F. I. Hardy.

This report was discussed by Mr. Gibson, Oscar Keesee, Manila; H. A. Nicholl, Anderson, Ind.; A. B. Merrihew, Los Angeles, and J. J. Dempsey, Brooklyn. Mr. Nicholl found that instruction through the safety committee and particularly by semi-annual banquets was very helpful. Mr. Merrihew described his company's work in replacing punitive by educational discipline, this having been referred to in a special article in the Electric Railway Journal. Mr. Dempsey thought that 90 per cent of the instruction is wasted unless followed by examination. His company examines its employees every three months, and if a man is deficient he is sent back to school.

MISCELLANEOUS BUSINESS AND ELECTION OF OFFICERS

Under the head of general business, L. C. Bradley, Houston, Tex., introduced a resolution similar to the one passed by the Claims Association which was, in effect, an expression of opinion of the Transportation & Traffic Association to the American Association that, in view of the congestion, delay and economic loss resulting from the immense increase of automobile traffic in city streets, the various States of the Union should, by uniform legislation as far as possible, define the rights and duties governing motor vehicles in the use of the streets in cities and towns, and that those vehicles travelling on the larger streets, and streets upon which street railway tracks are laid, should have a right superior to those vehicles proceeding from smaller or less-travelled streets.

J. N. Shannahan then read the report of the nominating committee by the adoption of which the association elected the following officers: President, H. A. Nicholl, general manager Union Traction Company of Indiana, Anderson, Ind.; first vice-president, L. C. Bradley, assistant district manager Stone & Webster, Houston, Tex.; second vice-president, R. E. Danforth, general manager Public Service Railway Company, Newark, N. J.; third vice-president, W. H. Collins, general manager Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.; secretary, E. B. Burritt, New York.

The new executive committee is composed of the officers and J. J. Dempsey, superintendent of transportation Brooklyn Rapid Transit Company, Brooklyn, N. Y.; L. H. Palmer, United Railways & Electric Company, Baltimore, Md.; W. G. Murrin, general superintendent British Columbia Electric Railway Company, Vancouver, B. C.; R. P. Stevens, president Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.

After installation of the newly elected officers, J. K. Choate, New York, read the report of the committee on resolutions conveying thanks to the San Francisco residents for the welcome and the entertainment extended the association on the Pacific Coast, to those who made the preliminary convention arrangements, to President Brush, the officers and committee members of the past year, and to the manufacturers association.

Other Features of the Convention

Preliminary Report of Claims Association Meetings—Outline of Convention Entertainment—Account of Exercises at Exposition Grounds—List of New Officers and Executive Committee Members of Manufacturers' Association — Addresses at Spokane and Portland.

BELOW are published a brief résumé of the American Electric Railway Claims Association meetings and accounts of events of general interest, including addresses delivered at important cities en route to the convention.

CLAIMS ASSOCIATION

The first meeting of the Claims Association was called on the afternoon of Monday, Oct. 4, by President William Tichenor, claim agent Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind. His presidential address will, in accordance with the customary practice of this paper, be published in the issue of Oct. 16, together with abstracts of the papers presented before this and the following meetings. After the annual reports of the executive committee and the secretary-treasurer, reports were presented by the committee on an accident prevention board, the committee on employment and the committee on ways and means. The scheduled paper on "The Prevention of Motor Vehicle Accidents" by S. B. Hare, claim agent Altoona & Logan Valley Electric Railway, Altoona, Pa., was read by H. D. Briggs, assistant general claim agent Public Service Railway, Newark, N. J. In the general discussion following the reading of this paper, Russell A. Sears, general attorney Boston (Mass.) Elevated Railway, spoke about a law recently passed in Massachusetts on the subject of automobiles. He promised to send a copy thereof to Secretary Burritt.

At the meeting of the association on Tuesday afternoon the paper on "Standardization of Claims Statistics" by E. E. Slick, claim adjuster Union Traction Company of Indiana, Anderson, Ind., caused a discussion in which many participated. The scheduled joint meeting with the Accountants' Association was not held, as President Tichenor announced that the joint committee on claims-accounting had been instructed to continue its work and to present a complete report at the next annual convention.

The work of the Claims Association on Wednesday afternoon began with a joint session with the Transportation & Traffic Association, at which the joint report on claims-transportation was submitted. This report is covered in the proceedings of the latter association. After this joint session the Claims Association delegates listened to a paper on "A Card Index and What It Means" by J. J. Reynolds, claims attorney Boston (Mass.) Elevated Railway.

At the final session on Thursday afternoon a paper on "Safety and Its Relation to Conservation" was presented by B. F. Boynton, claim agent Portland Railway, Light & Power Company, Portland, Ore., after which written discussion was read as follows: "Financial Benefits Resulting from the Safety First Movement" by J. S. Harrison, claim agent Jacksonville (Fla.) Traction Company; "Justification of the Safety First Movement from a Humanitarian Standpoint" by Alves Dixon, claim agent El Paso (Tex.) Electric Railway; "Uses and Benefits of Illustrated Lectures" by H. K. Bennett, claim agent Fitchburg & Leominster Street Railway, Fitchburg, Mass.; "Should a Moving Picture Film Exchange Be Established by the A. E. R. A.?" by F. J. Warnock, chief claim agent Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.

At the conclusion of the discussion the committee on resolutions submitted its resolutions of thanks to the various individuals and organizations, and the following officers were then elected: President, George Carson, claim agent Puget Sound Traction, Light & Power Company, Seattle, Wash.; first vice-president, R. E. McDougall, claim agent New York State Railways, Rochester, N. Y.; second vice-president, S. B. Hare, claim agent Altoona & Logan Valley Electric Railway, Altoona, Pa.; third vice-president, B. F. Boynton, claim agent Portland Railway, Light & Power Company, Portland, Ore.; secretary-treasurer, B. B. Davis, claim adjuster The Columbus Railway, Power & Light Company, Columbus, Ohio. Executive committee members were chosen as follows: J. J. Reynolds, claims attorney Boston (Mass.) Elevated Railway; P. C. Nickel, claim agent New York (N. Y.) Railways; J. H. Handlon, claim agent United Railroads of San Francisco, San Francisco, Cal., and Alves Dixon, claim agent El Paso (Tex.) Electric Railway.

According to precedent, an engraved and dated gold badge was presented to the retiring president, Mr. Tichenor.

COMMEMORATIVE MEDAL PRESENTATION

On Friday morning the delegates met at Native Sons' Hall and were taken to the exposition in special buses. After a photograph had been taken they marched to the Court of Abundance, where Charles N. Black, as master of ceremonies, introduced Thornwell Mulally of the exposition board of directors. In presenting commemorative medals to the American and Manufacturers' Associations Mr. Mulally stated that little is said nowadays in praise of street railway companies, but in reality transportation is the business upon which all other businesses depend. It takes civilization into the far corners of the earth, and without it the development of new territory is impossible. San Francisco, he said, was literally paralyzed after the fire during the period when the street car system was wholly out of commission, and it came to life again promptly when the service was resumed.

President C. L. Henry received the medal for the American Association. In expressing appreciation of such a token he said that San Francisco and the exposition had made such a deep and favorable impression on all that he was sure each individual who came West to the convention would carry away pleasant memories that would never be forgotten. The Manufacturers' Association medal was received and acknowledged by Charles C. Peirce. In expressing the thanks of the Manufacturers' Association Mr. Pierce pointed out that that body was making every effort to support the operating end of the industry. He outlined the natural divisions of the electric railway field, and indicated how well the executive, operating and manufacturing phases of the industry could work together for the benefit of all.

Mr. McGraw then presented his address on the original development and progress of the electric railway, abstracted elsewhere in this issue. After the commemorative exercises the entire party boarded a special boat for luncheon and an afternoon's excursion across the bay. At Oakland automobiles were in waiting to take the visitors on a sight-seeing trip, ending in time for an early evening return to San Francisco.

SOCIAL SIDE OF THE CONVENTION

The great attraction at San Francisco outside of the convention was, of course, the Panama-Pacific International Exposition and, as the illumination of the buildings at night was an important feature of the exposition, the entertainment committee arranged for only one evening function downtown. This was the annual reception and ball, which was held in the Colonial ballroom of the St. Francis Hotel on Monday evening. It was very largely attended and the dancing continued until after midnight.

The other evening entertainment was a highly enjoyable trip to the exposition grounds on Wednesday evening. This was personally conducted by W. D'A. Ryan, who had charge of the arrangement and installation of the illumination system. Many of the delegates dined first at Old Faithful Inn. The party was then taken by Fadgl auto-trains to the "Marina," where they viewed a special display of fire-works and a scintillator drill. Then after a tour of the grounds by train they were taken through the various courts by Mr. Ryan.

The golf tournament took place at the grounds of the Clarement Country Club in Oakland on Thursday. There was no special entertainment on Tuesday or Thursday evenings except the dinner mentioned below.

On Thursday evening retiring President Allen of the American Association and retiring President Baker of the Manufacturers' Association gave a dinner in honor of the new officers of all the associations. W. D'A. Ryan was also present, and about twenty-two retiring and newly-elected officers and others attended.

MANUFACTURERS' ASSOCIATION

About 100 representatives and delegates attended the annual meeting of the American Electric Railway Manufacturers' Association, held on Wednesday, Oct. 6, 1915, with President E. H. Baker in the chair. Secretary-Treasurer H. G. McConnaughy presented his reports, and the following members were elected to the executive committee to serve three years, the first three to succeed themselves: Charles C. Peirce, General Electric Company, Boston, Mass.; Henry C. Evans, Lorain Steel Company, New York, N. Y.; Daniel W. Smith, Peter Smith Heater Company, Detroit, Mich.; Miles B. Lambert, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., and A. H. Woodward, International Register Company, Chicago, Ill.

At the meeting of the executive committee of the Manufacturers' Association, held on Oct. 7, the following were elected to take office on the retirement of the present officers in December: President, Thomas Finigan, vice-president, Pierson Roeding & Company, San Francisco, Cal.; vice-president in charge of relations, Charles C. Peirce, manager railway department General Electric Company, Boston, Mass.; vice-president in charge of finance, L. E. Gould, western manager Electric Railway Journal, Chicago, Ill.; vice-president in charge of exhibits, Daniel W. Smith, president Peter Smith Heater Company, Detroit, Mich.; vice-president in charge of entertainment, E. F. Wickwire, general sales agent Ohio Brass Company, Mansfield, Ohio., and secretary-treasurer, H. G. McConnaughy, manager Dearborn Chemical Company, New York, N. Y.

ADDRESSES AT SPOKANE

As was mentioned briefly in the issue of the Electric Railway Journal for Oct. 2, page 674, the officers of the American Electric Railway Association and the American Electric Railway Manufacturers' Association, during the visit to Spokane on Tuesday, Sept. 28, received an invitation to meet the members of the Chamber of Commerce of Spokane. The occasion was the regular Tuesday noon luncheon of the Chamber, the rooms of which occupy two floors in the Chamber of Commerce Building. Several members of the "Red Special" party accompanied the officers to this luncheon. After the luncheon five of the members of the party were asked by the president of the Chamber to address the members on the current problems of the electric railway industry.

C. Loomis Allen, president of the association, made the first address. He said that the American Electric Railway Association stood for the idea of getting together with the kind of men represented by bodies of the kind he was addressing. He then said that he was going to talk from the corporation standpoint. The electric railway industry is practically at a standstill. There has been little development in it recently except that which was enforced. The reason is that there is no complete understanding of the situation between men interested in the electric railway industry and men of the type represented by chambers of commerce. The men in the electric railway industry are engaged in a business undertaking. As he looked at the matter there were four parties in interest. The first of these was the consumer, that is, the man who pays fares to ride on the cars; the second was the employee; the third was the municipality, and the fourth was the investor. These four interests must get along together. If any one or any two try to get an undue share out of the industry, the others can do nothing. He was of the firm belief that if the country was to grow and if the cities in the country were to prosper, they could do so only if the transportation interests of the country develop with them. He believed that it was the duty of the members of every chamber of commerce in the country to inform themselves in regard to the electric railway situation in the city in which they live and to see that each of the four parties mentioned is receiving proper recognition.

The next speaker was William J. Clark of the railway department of the General Electric Company at New York. Mr. Clark stated that all of those present had common interests. Electric railway men have as great a concern in the future development of America as anyone else. He then referred to the important development of the electrical interests in the Pacific states, brought about, in large part, by the invention of the Pelton wheel. He referred to a government report issued in 1880, which said that west of the Mississippi River there was no hydraulic development of more than 1000 hp. and contrasted that condition with the one at present. He also spoke of the alleged claim that the electric railways were over-capitalized and said that in Great Britain $30,000,000 had been allowed in the accounts for the acquisition by the electric tramways of the earlier horse-car systems, whereas, in this country, $963,000,000 has been expended for that purpose. In reference to the development charges since the adoption of electricity he said that the electrical manufacturing companies had been the cause of the erection of the most costly scrap piles which had ever been formed. Nevertheless, the development of public

utilities has cost less in this country than in any other, and the cost of service is less. The people did not realize the effect of the rising prices on the cost of public utility operations. Labor has gone up 20 per cent and more than 60 per cent of the operating expenses of electric railways was for labor. In spite of this fact and other increases in the cost of operation the operating ratio in 1902 in the country was 57.5 per cent and in 1912 only 59.7 per cent. In the State of Washington there had even been a decrease, in spite of the fact that in 1902 only 2.3 per cent of the passengers rode on transfers, while in 1912 the percentage was 21.

Charles L. Henry of Indianapolis, first vice-president of the association, was the next speaker. He said that the electric railway industry had as much to do with the prosperity of the country as any other industry. Railways had constantly been giving more service for the fare charged. In the horse-car days 5 cents paid for a ride of 3 miles or 4 miles. Now, it pays in some cities for a ride of 15 miles or 19 miles, although a nickel has less purchasing power to-day. The authorities should foster, not crush the industry. He remembered the day when the builder of an interurban line would have offered to him the deeds for his right-of-way if he would build the line.

William F. Ham, vice-president and comptroller Washington Railway & Electric Company, Washington, D. C., talked about the jitney. He described briefly its origin on the Pacific Coast and its spread through the country and called it the "itch" among electric railway diseases. It was not a good business proposition and he thought that it ought not to receive a cordial reception from business men. In Washington, for example, the railway companies were working hand in hand with the business men to make a beautiful city, but this could not be done if the jitneys took away the profitable short-haul business and neither the jitneys nor the roads could be prosperous. He described the motor-bus situation in Washington, D. C., where a line of motor buses under favorable circumstances had not been able to make any money. Jitneys could conduct only irresponsible service and they made good service on the local railways impossible. At first, owing to the newness of the business, it was difficult to know what to do about the jitneys. Now, however, they are being recognized as common carriers.

The final speaker was Charles C. Peirce, vice-president of the American Electric Railway Manufacturers' Association. After telling several stories Mr. Peirce said that there was no mystery about the electric railway business. It should be judged on the same basis as any other business. The railway in any city reflects the character of the culture or enterprise of that city. Its cars are the most conspicuous objects on the streets and visitors often judge the enterprise of the city by the character of its railway service and the appearance of the cars on its streets. What is needed more than anything else in the treatment of public utilities is sanity and common sense.

ADDRESSES AT PORTLAND

By way of amplification of the account of the farewell luncheon to F. W. Hild before his departure for Denver, given in last week's issue, the following paragraphs will be of interest. During the visit of the members of the "Red Special" party in Portland on Sept. 30, this farewell luncheon had been arranged by the Portland Chamber of Commerce. Several representatives of the American Electric Railway Association were invited to the luncheon, which took place in the rooms of the Chamber of Commerce. The occasion was called "Electric Railway Day." The meeting was also combined with one which had been scheduled by the Jovians at the same hour.

At the close of the luncheon, which was attended by some 200 business men of Portland, the president of the Chamber introduced Franklin T. Griffith, president Portland Railway, Light & Power Company, as the toastmaster, and he in turn introduced C. Loomis Allen as the first speaker.

Mr. Allen spoke of the great influence which transportation lines had had on the development of Portland and said that the association which he represented was composed of business men. The industry, however, was confronted by problems which were the same in all parts of the land. These problems must be dealt with in a fair spirit if the industry and the investment in it are to be carried on successfully, and this solution should be undertaken in a business way. The speaker dwelt upon the absence of new construction during the past five years and urged business men to study the causes very carefully.

W. F. Ham of Washington, D. C., spoke on the subject of "Unjust Competition in Transportation," although he said that he knew more about the jitneys which did not exist than of those which did. He explained that the Public Service Commission of the District of Columbia had early ruled that the jitney was a common carrier, and that the same action had been taken by the Public Service Commission of Maryland in regard to jitneys in the neighboring city of Baltimore. Any other action was illogical. If the public exercises regulation over the gas, electric and other public utility companies with their irremovable property and consequent responsibility, why should it not do the same with the jitneys which are here to-day and gone to-morrow. The jitneys could not exist with equal regulation, but assuming that they could, the real question is, could they replace the street railways? This would be impossible in any large city. The electric railways must remain. The question then is, does jitney competition help the transportation situation in any city as a whole? Mr. Ham recommended that equal regulation be provided and that then the problem be allowed to work itself out. He also pointed out that the best asset of the business man is his reputation for good faith and fair dealing and that the same principle applies to municipalities. Capitalists will decline to invest money in any place where invested capital is known to be treated unfairly.

Charles C. Peirce of Boston attributed a large part of the present industrial depression to the unwillingness of business men to engage in politics. What is most needed, he said, is sanity in political affairs. If a new town was being established the first requisite would be a good water supply and the second good transportation facilities, but many cities send out "boosters" and then turn around and use the axes on their local railways. Massachusetts was rapidly going to the 6-cent fare because it was recognized there as a fundamental principle in railway as in other affairs that no one could continue to do business at a loss. In attacking its utilities a town was attacking itself. He enumerated as the trinity of successful railway operation, good service, wages and dividends.

Mr. Griffith then introduced the retiring manager of the Portland Railway, Light & Power Company, F. W. Hild, who had recently resigned to go to Denver as vice-president and general manager of the Denver Tramway, and expressed the regret of his associates at Mr. Hild's departure. Mr. Hild referred to the pleasant business associations formed during his five years in Portland and to his regret at leaving.

Equipment and Its Maintenance

Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

(Contributions from the Men in the Field Are Solicited and Will be Paid for at Special Rates.)

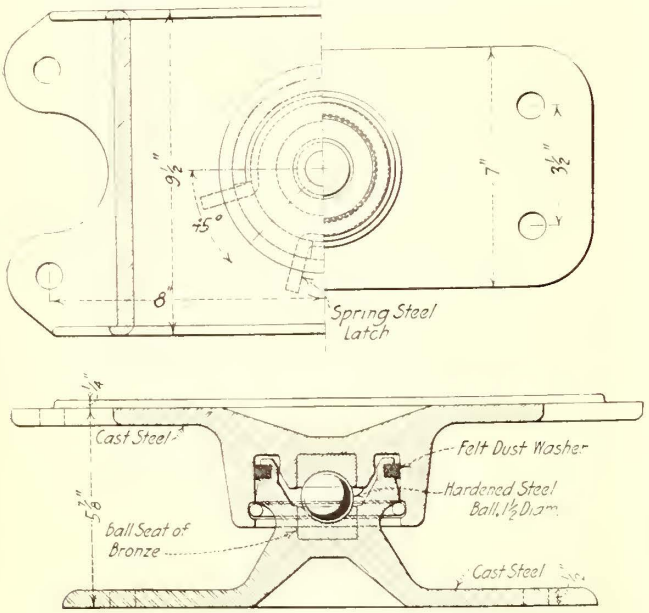
A One-Ball Center Bearing

BY S. J. WITT, DIVISION MASTER MECHANIC WEST PENN RAILWAYS, CONNELLSVILLE, PA.

The mechanical readers of the Electric Railway Journal will no doubt be interested in the results which we are obtaining from an improvement in center bearings.

We found that many of the old center bearings were so stiff that on short wheelbase trucks, mostly 4 ft. 8 in., it was impracticable to use a steel wheel on account of its tendency to mount short-radius curves, the steel wheel having a greater coefficient of friction and a more pronounced climbing tendency than the chilled-iron wheel. We also found that on the long 6-ft. wheelbase trucks the steel wheels wore out quite rapidly and also caused excessive screeching, guard wear and curve-rail wear, even though the curves were occasionally greased.

We then began to install anti-friction bearings, some of the ball raceway type and some of the rocker type.



PLAN AND SECTION OF ONE-BALL CENTER BEARING

The results, with these, were improved, but the bearings themselves gave a great deal of trouble from excessive wear, not being protected from grit and no provision being made to properly lubricate them.

The accompanying drawing shows a center bearing which we have developed and which has now been in use some five years with very satisfactory results. Those which have been longest in use show no perceptible wear and will operate exactly as well to-day as they did originally. We use a 1½-in., high-grade hardened steel ball, set in two cups of especially hard bronze metal, all submerged in oil and thoroughly protected against grit.

We have found in actual practice that the frictional resistance of these one-ball center bearings is less than the frictional resistance of the average ball raceway pattern of anti-friction center bearing in actual use, and since there is no wear it remains as good for years as when originally installed. One greasing will easily run these bearings two years.

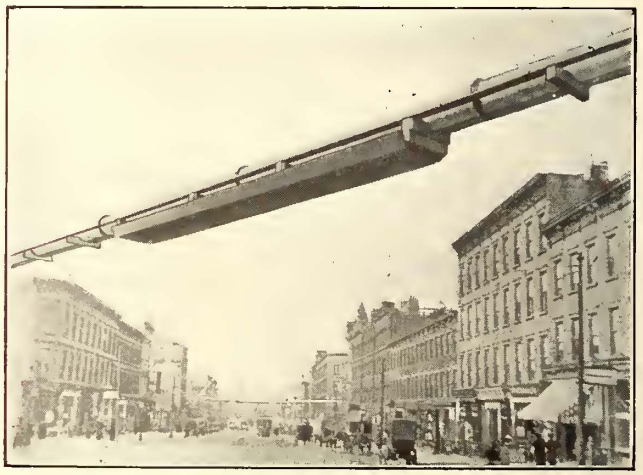
Since installing them we have found that the average mileage on steel wheels, which was about 30,000 with the former bearings, has been increased to 130,000 to 150,000. We lose no more wheels from sharp flanges, as we did formerly.

The locking device is quite secure and strong enough, in case of a wreck, to pull out the bolster from the cars or trucks. It is also quite easily detached and requires no hole through the bolster at its weakest point.

Crossing Water Pipes Over Trolley Wires

BY G. H. McKELWAY, LINE ENGINEER BROOKLYN RAPID TRANSIT SYSTEM

During the present subway construction in Brooklyn, N. Y., it has been found necessary in some places to remove the water pipes crossing the street in which the subway is to be built from under the surface of the street and to install them temporarily overhead. The accompanying illustration shows how the pipes are installed and how they are protected from wild



CROSSING WATER PIPES OVER TROLLEY WIRES

trolley poles that might leave the wire and fly up and ground upon them.

At the sides of the street wooden towers about 10 ft. square are built and filled with heavy stones to a height of approximately 4 ft. to prevent their being overturned. Then suspension wires are carried across the street between the towers and securely anchored to them. As a continuation of these wires, guys are run from the tops of the towers and embedded in heavy blocks of concrete in the street behind them. Spiral-riveted steel pipe is used to carry the water across the street and the pipe rises from the mains vertically at the towers and crosses the street on wooden cradles hung from the suspension wires by means of suspenders, each with a turnbuckle in it so that the

height of the cradle can be properly adjusted. Boards are nailed to the cradles on each side of the pipe to form walkways for the use of workmen installing or removing the pipe.

Where the pipe crosses the trolley wire, boards are nailed to the footwalks and to the cradles, completely boxing in the pipe beneath and far enough up on the sides to prevent a pole from striking the pipe or the wires supporting it, all of which are, of course, grounded. On the bottom of the boxing boards are placed lengthwise with the direction of the tracks, short pieces being used, while on the sides where the poles are most liable to strike long boards are used at right angles to the direction of the tracks.

Kansas City's New Cars

BY R. L. WEBER, CAR ENGINEER, BOARD OF CONTROL, KANSAS CITY (MO.) RAILWAYS

Fifty single-end, steel side-girder cars, 44 ft. 10 in. long, have recently been put in operation by the Metropolitan Street Railway Company, Kansas City, Mo. A description of the design details of these cars appeared on page 850 of the ELECTRIC RAILWAY JOURNAL for May 1, 1915, and while it was stated in that article that the estimated weight would be approximately 40,000 lb., it has been found that the actual weight of the finished car is only 37,700 lb., equivalent to 781 lb. per seat. This weight is distributed as follows:

Body, fully equipped	17,850 lb.
Trucks	11,400 lb.
Electrical equipment	8,450 lb.
Total weight	37,700 lb.

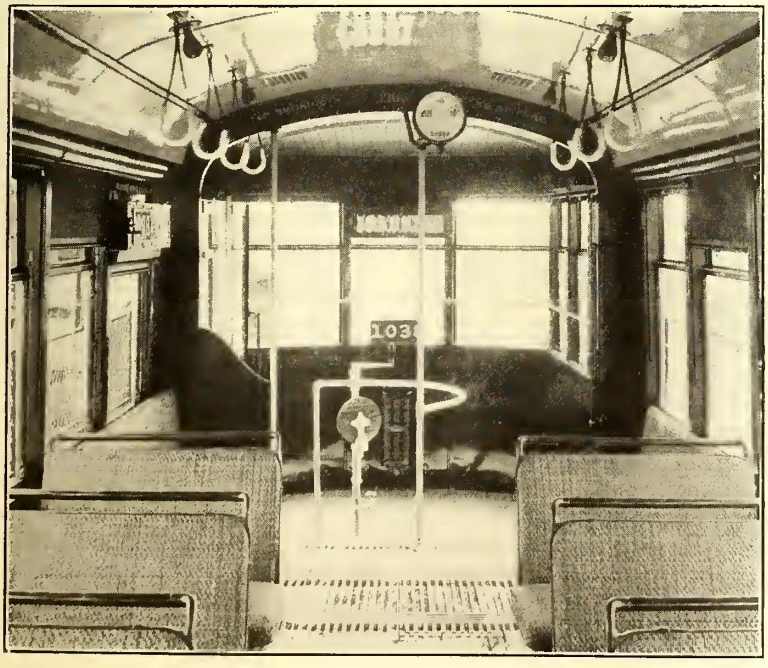
A very pleasing exterior appearance has been obtained by the continuous letterboard and the color scheme recently adopted as a substitute for the solid green with which the Kansas City cars were painted. Above the belt rail the car is painted with cream-colored enamel and the lower part of the body is a golden yellow. The roof and the trucks are painted gray, simulating the color of Kansas City dust, and the car trimmings are Tuscan red.

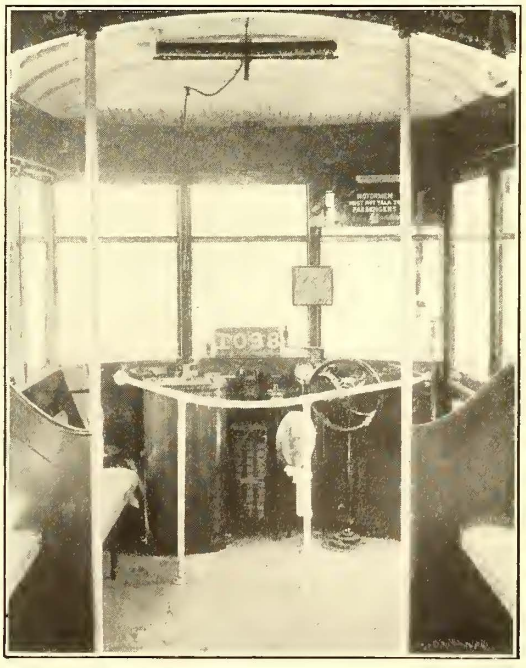
Among the features of the car are step-light reflectors which thoroughly light the step and the zone of alighting when the doors are open. Sockets on the

KANSAS CITY CAR—SHOWING STEP LIGHT OVER FRONT DOOR

bumper are provided for a pole to push stalled vehicles off the tracks in the absence of an emergency wagon, and the platform knees, which are straight from the bumper to the bolster, were attached directly to the bolsters instead of to the side plates, to minimize damage to the vestibule from collisions. This design also effectively prevents overturning or loosening of the bolsters.

A somewhat unusual method of signaling was adopted for these cars and it has been found to work out very satisfactorily. The motorman, when approaching a prospective passenger, gives the conductor one bell by means of the bell-cord handle. This indicates to the conductor that someone wishes to board the car and that he should be ready with the door without delay and also relieves him of any unnecessary operation of the doors at safety stops. In case of emergency the conductor may signal the motorman by the same bell cord. The starting signal, however, is automatic, giving the motorman a white light on closure of the rear doors. Push buttons in the body of the car operate a buzzer on the rear platform, and owing to the strong





KANSAS CITY CAR—SHOWING REAR AND FRONT PLATFORM ARRANGEMENT

dislike of motormen for the ordinary signal bell, a push button is also provided on the railing near the rear-door operating handle so that the conductor can give a buzzer signal to the motorman to stop. The tap-bell cord, it may be said, is concealed by running it through light conduit installed above the headlining, where it is out of reach of rowdies.

Other features of these cars are the safety treads set crossways in the ramps at the rear end of the car-body floor, and, as an emergency safety appliance, a plunger is provided beside the conductor's seat by which he may produce an emergency application of the air brakes. Comfortable cross-seat cushions were obtained by making them 35 in. long, which is sufficient to prevent seated passengers from overhanging into the aisle, and the cross-rail at the top of the seat back is offset 1½ in. to the rear of the seat, so that a passenger, when arising, does not disturb the seated passenger in the seat in front. The smooth lines of the one-piece pressed-steel seat pedestals improve sanitary conditions in that the collection of dust at these points is eliminated.

To keep the side plates in the proper plane at the bolsters and also to increase the section modulus at that point, the side sheathing is bent around the corner post and supported by a gusset plate riveted to the end sill, a pocket into which the corner post fits being left between the gusset plate and the bent-around portion of side plates. Steel panels between the belt rail and the letterboard at the corner posts are provided to resist racking of the roof. Pressed steel carlines are used, and they are supported by wooden sideposts. Holes have been punched through the horizontal legs of the angles which are installed along the middle of the side plates, and spaces have been left between the side posts and the side plates, these openings constituting provision for ventilation of the dead air space between the side plates and the inside finish. This space is also ventilated at the top and bottom so that the circulation of air will remove any sweat or moisture that many accumulate.

These cars were designed under the direction of William P. Woods and P. J. Kealy, representing respectively the city and the railway company, and they were built by the American Car Company, St. Louis, Mo.

Cement-Sack-Cleaning Machine Pays Big Dividends

A $900 machine for cleaning cement sacks displaced three men and effected an annual saving of $2,172 for the maintenance of way department of the Cleveland (Ohio) Railway. This machine is another of the ingenious inventions of Charles H. Clark, engineer maintenance of way, and comprises four essential parts —a motor, a drum, an exhaust fan and a dust collector. The motor drives both the cleaning drum through a set of reduction gears and the exhaust fan. The octagonal drum is 12 ft. in diameter by 5 ft. wide, and is constructed with wooden sides and a ½-in. mesh screen on the periphery. This drum is mounted on a shaft in a room which is made as nearly air-tight as possible, and the motor revolves the drum at the rate of about 10 r.p.m. At one of the upper corners of the room an air intake is installed and at the diagonally opposite corner an outlet leads through the exhaust fan to the dust collector. As the drum revolves the exhaust fan draws the air through, removing the cement dust which is deposited on the floor of the room. A small amount of cement is finally taken out by the dust collector. One thousand sacks are placed in the drum at one time and after revolving it for thirty minutes and allowing five minutes for the dust to settle, the clean sacks are removed.

Heretofore the way department of the Cleveland Railway found it necessary to detail three men to clean cement sacks. These men beat the sacks against a post, no attempt being made to save any considerable quantity of the cement by this method, however. These three men received 20 cents per hour, and they cleaned approximately 1000 sacks a day. As the way department uses an average of 250,000 sacks of cement a year, the time consumed by the men in cleaning the sacks was considerable. It was found that 1000 empty cement sacks weighed 1313 lb., but after being machine cleaned they weighed 606 lb., thus a reduction in weight of 707 lb. was effected. The freight rate on sacks returned from Cleveland to the cement mill was 8 cents per hundred, hence a saving of 56 cents per thousand sacks in the freight charges was obtained. This represented a total annual saving of $120 in freight alone. In addition to the freight saving, the 707 lb. reduction in weight represented cement salvaged from the empty bags. In other words, 1¾ barrels of cement were salvaged per thousand sacks, and 442 barrels of cement represented the annual saving from 250,000 sacks. The value of this cement at $1.25 per barrel was $552.50. Besides these two items the labor of the three men employed in cleaning the sacks was rendered unnecessary, hence an additional saving of $6 per thousand sacks, or $1,500 a year, was made.

In a room adjoining the building occupied by the cement-sack-cleaning outfit storage space for empty sacks was provided. This storage room was equipped with a stove and a special sewing machine for mending torn bags. During the winter months one of the men in the concrete gang who had become an expert at mending was detailed to the work of patching bags. As a rule this man will mend between 200 and 250 bags a day, for which he receives $2. Hence the expense of mending the sacks is very small, and when in good condition they may be returned to the cement company and a rebate of 10 cents per bag obtained. A cement-sack-bundling machine also forms part of the equipment of this storage room.

Automatic Railway Substations

In the current issue of the *General Electric Review* appears an article on this subject by Cassius M. Davis. In this he refers to the Elgin & Belvidere Electric Railway substations which were described in an abstract published in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 18, 1915, page 583. He states that the automatic type of substation was chosen by this railway to reduce operating expense by eliminating light-load and no-load losses and by rendering the presence of attendants unnecessary. He credits Alex Dow, president Edison Illuminating Company of Detroit, Mich., with important pioneer work in this field.

Mr. Davis gives the results of calculations based upon conservative estimates of the requirements of a road operating cars on an infrequent schedule. The results are shown in the accompanying table. He claims that even when cars run under such short headway as to require the continuous operation of some of the substation equipment an appreciable saving can be secured by automatic operation of other machinery in the substation. As a definite example of this condition he takes the case of a substation containing two 300-kw. converters, one of which is in continuous operation from 6 a. m. until 2.30 the next morning, and the other machine from 6 to 7.45 a. m. and again from 3.45 to 9.30 p. m. The service assumed on the road calls for trains

COMPARISON OF HAND-OPERATED AND AUTOMATICALLY OPERATED SUBSTATIONS

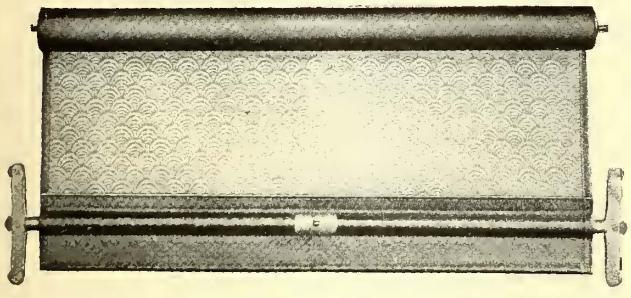
	Hand Operation	Automatic Operation
Headway between trains	120 minutes	120 minutes
Number of substations	Four	Four
Capacity of each substation	300 kw.	300 kw.
Actual time machines operate operate per day	18 hours	7 hours
No-load losses per substation	12 kw.	—
No-load energy losses per day per substation	132 kw-hr.	—
Cost of energy at substation	1 cent per kw-hr.	1 cent per kw-hr.
Value of energy saved per day per substation	—	$1.32
Value of energy saved per year per substation	—	$482.00
Number of operators or inspectors	Eight	Two
Wages of each operator or inspector per month	$65.00	$65.00
Total wages per year	$6,240.00	$1,560.00
Value of wages saved per year	—	$4,680.00
Value of energy saved per year	—	$1,928.00
Total saving per year	—	$6,608.00

each way every half hour with extra cars during the morning and evening rush hours.

Under this condition it is estimated that the first machine when running alone operates at no load for a period of 3.4 hours. The no-load loss of the converter and transformers is approximately 12 kw. Therefore, the energy loss per day is approximately 41 kw.-hr. or a total of 14,965 kw.-hr. per year, which at 1 cent per kilowatt-hour means approximately $150 per year. During the time the two machines are operating it is estimated that there is no load on either machine for a period of eighteen minutes per day, which represents a no-load loss of approximately $15 per year. Furthermore, during the time the two machines are operating, it is estimated from a typical load curve that the second machine could be shut down a total of at least two hours when it is not required to carry load peaks. The no-load losses during this time would amount to 24 kw.-hr. per day, which represents approximately $88 a year at 1 cent per kilowatt-hour. This station could, therefore, save at least $253 per year in power alone. There would also be a slight additional saving during the time when the two machines are running, due to the fact that under automatic operation when two machines were necessary, both would be operating at a high efficiency.

A Handless Curtain Fixture

The Railway Supply & Curtain Company, Chicago, Ill., has just brought out a new type of curtain fixture, named the "Handless" because it has no pinch handles. The curtain may be operated from any point along the bottom. It is made for a wide range of adjustment to



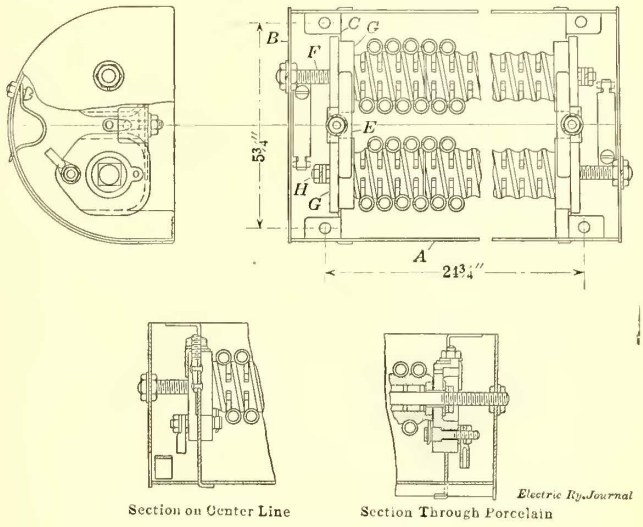
CURTAIN WITH FRICTION DEVICE ON ROLLER TIPS

suit the variations in the width of window frames. The double-acting friction device, which holds the curtain at any desired height, may be pushed up or pulled down without friction or resistance of any kind.

This fixture is of standard dimensions so that it will fit the usual window grooves, and it cannot be removed from these grooves in the ordinary manipulation of the curtain. Another feature is that the tip has a special connection whereby it is permitted a certain amount of lateral action. At the same time a locking device prevents it from being displaced beyond the limits of play except when adjustments are desired, or when the fixture is to be taken apart. This fixture is made up with any of the customary curtain fabrics.

Light-Weight All-Steel Panel Heater

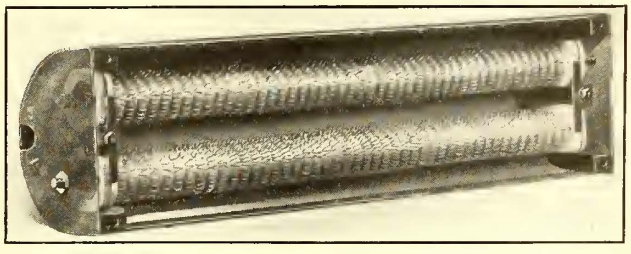
A new type of heater is being installed by the Interborough Rapid Transit Company on the 478 new cars that are being placed in service on the New York subway. This is a new design that has been brought out by the Gold Car Heating & Lighting Company, New



TWO-COIL PANEL HEATER

York, for general service on electric railway cars. In it all of the metal parts have been made of pressed steel, and the weight has thus been reduced to a material degree. A feature is the use of resistance-coil supports made of Gold's ventilated porcelain cores, which are perforated so that air is allowed to pass through the coils as well as around them, providing an efficiency which is not found when solid porcelain supports are used. This feature, in fact, increases the effectiveness of the heater to such an extent that it is found in practice that cars equipped with them can run longer with the heater switch in the first position than cars equipped with the ordinary types of heater.

Among the other features are resistance coils made

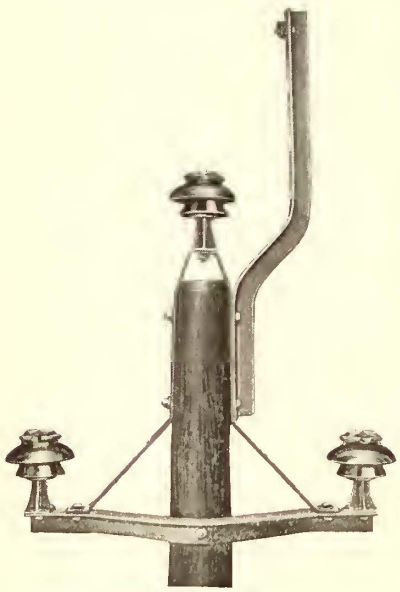


ALL-STEEL PANEL HEATER

of special non-corrosive wire which will not rust or otherwise corrode, thus reducing maintenance to a minimum. The heater is quickly detachable for repairs or renewals, as the removal of two nuts releases both heating elements through the front of the heater case. The heater also is fitted with special binding posts or spring-clip terminals as desired, the former, which are shown in the accompanying cut, providing an especially simple and rugged construction.

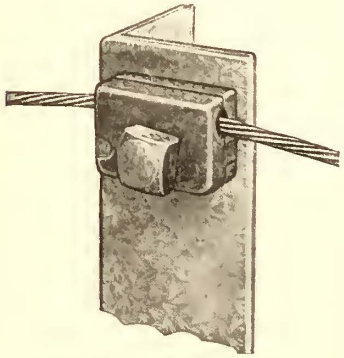
Single-Circuit Metal-Arm Construction

Among the various features of equipment for single-circuit metal-arm transmission line construction that are manufactured by the Electric Service Supplies Company, Philadelphia, Pa., is the self-contained cross-arm construction known as the Keystone triangle. This consists of one horizontal lower member made of steel angle sections and one upper member of flat steel formed to go over the pole top, thus serving as a support for the top insulator of a three-phase line and as a brace for the horizontal arm. The device is as strong as an ordinary arm of the same weight when the pull is applied at any transverse angle and is decidedly stronger on pulls that are applied at angles below the horizontal. Its ease of installation is obvious.



TRIANGLE CROSS-ARM WITH BAYONET FOR GROUND WIRE ATTACHED

One of its advantages is the fact that the bottom bolts, or those in the cross-arm, are at right angles with the two upper bolts which attach the flat steel member to the pole. This serves to increase the strength and rigidity of the installation, particularly against strains applied horizontally with the wire. Naturally, the construction allows the wires to be spaced in a true triangle, each one being located in a different vertical plane. Therefore, if one wire breaks it is not likely to short-circuit one of the other phases, an advantage of inestimable value. As the construction actually comprises an extension of the pole top its use means an economy in pole length, and for a given clearance between line wires and the ground a shorter pole may be used than would otherwise be the case.



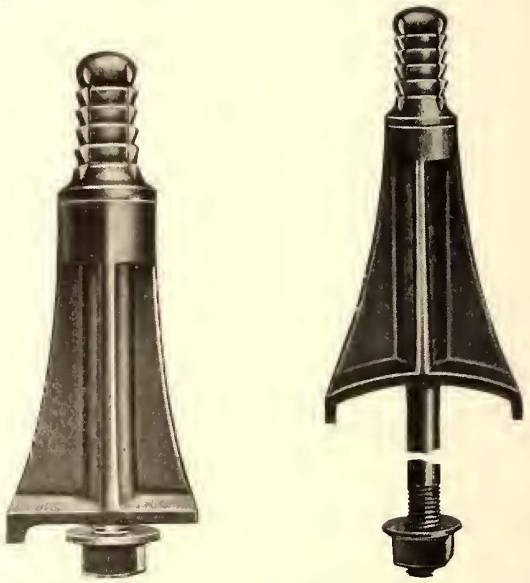
GROUND WIRE CLAMP

These triangles may be used either with or without a bayonet, or ground-wire support, the latter, when used, being attached to the pole through the medium of the same bolts that are used for attaching the triangle. The bayonets are made from angle steel formed to the shape shown in the illustration.

For holding the ground wire to the top of the bayonet either a Keystone ground-wire clamp or a U-bolt clamp may be used. The action of the latter is obvious, but with the former there are several unique features, one of these being the fact that the clamp is made of two malleable-iron castings held in position by a single bolt with lock nut and washer. The castings are identical in form and they are furnished either galvanized or sherardized. Their design is such that they hold the cable away from the sharp edges of the angle-iron support and thus prevent cutting or chafing. The groove is designed with flared ends with a similar purpose in view, the grooves being furnished either corrugated or plain.

While the Keystone clamps are designed especially for use with bayonet construction, such as applies with Keystone triangles, they are also eminently suited for attaching ground wires direct to a wood pole through the use of one through bolt and they have been very largely adopted for this purpose. In any case they afford a simple, cheap and very efficient device.

In addition to the foregoing items of transmission line equipment there should be mentioned the Keystone truss pin, of which more than 500,000 are in service. These are of the separable thimble type and their use is not limited to the Keystone triangle arm, as they may be installed wherever insulators with cemented thimbles are to be applied. They are made in many styles to meet all modern service conditions, the accompanying illustrations showing types for angle-iron cross-arms such as used on Keystone triangles and also for curved-base wooden cross-arms. Great flexibility among standardized insulators or standardized pins is secured by their use, because all Keystone thimbles cemented in any insulator are perfectly interchangeable with any type of Keystone truss pin.



TRUSS PINS FOR ANGLE-IRON ARMS AND ROUNDED WOOD ARMS

Special rigidity and strength are secured by the design of the trussed base and by the use of solid drop-forged steel and bolts. These bolts are non-rotatable, making the installation of the insulator an easy matter, and as they are made so as to be subject to tensile strains only, the combination will behave perfectly under heavy pulls in any direction. The pins or insulators can never come loose in service. They are very easy and cheap to install in the first place, and damaged insulators are very easy to replace. The groove of the insulator may be perfectly aligned with the wire, and at the same time the insulator and pin are kept perfectly tight.

To complete this line of transmission system material the company furnishes the well-known Locke insulator, a name that has been synonymous with good insulation for years. Superior facilities for manufacturing insulators, the most up-to-date facilities for testing, and a record of millions in service in all parts of the world amply demonstrate the ability of the Locke insulator to meet successfully the most adverse conditions.

News of Electric Railways

COMMISSION FIXES SERVICE STANDARDS

Salient Features of Comprehensive Chicago Service Order, the First in that City Ever Fixing a Standard for Rush Hours

Seats for all passengers outside the rush hours and a minimum of eighty-five seats for each 100 passengers during the peak of the rush hours, trailers and switchbacks outside of the loop district, are the salient features of a comprehensive service order issued by the State Public Utilities Commission of Illinois to the Chicago Surface Lines. This order grew out of complaints filed by the Cook County Real Estate Board and was based upon evidence collected from the officials of the railways, the city and the public. The rush-hour service standard is considered to be very severe. This is the first time any regulating body has attempted to fix a standard for Chicago's rush hours. Trail car operation is prohibited by city ordinance. This question of conflict, together with that of the jurisdiction of the commission and the City Council, has already been raised.

Rush-hour and non-rush-hour service standards fixed by the commission provide that between the hours of 6 a. m. and 12 o'clock midnight, except during the morning and evening rush hours of all week days, all cars passing any given point during any fifteen-minute period shall have an aggregate seating capacity equal to the total number of passengers carried. On lines where less than three cars pass a given point during the fifteen-minute period, the time of the check is extended to include three consecutive cars going in one direction. On all lines and routes the maximum headway is not to exceed twenty minutes for the entire day, excepting the six hours between 12 o'clock midnight and 6 a. m.

During the morning and evening rush hours, which were tentatively fixed as the period between 6.30 a. m. and 9 a. m., and 4.15 p. m. and 6.45 p. m. on all days except Sundays and holidays, two standards of service are provided, one for the transition periods and the other for the peak of the rush. During the maximum rush period of one and one-half hours, an average of eighty-five seats for every 100 passengers carried is fixed as the standard. During the transition periods, immediately preceding and following the maximum rush hour, ninety seats for each 100 passengers is fixed as the standard. The exact time of the rush-hour periods was not fixed for all parts of the city, other than that it was considered to extend over a two and one-half-hour period. For different locations throughout the city, particularly outside the loop district, the railway company will be authorized to fix the rush period upon filing a written notice with the commission. During the period from midnight to 6 a. m., the commission ordered that the service should be such as to meet the demands of the public and the conditions of travel, but that the schedules covering this period should be filed with the commission for approval.

The standard of loading for each of the rush-hour periods was specified as applying to any half-hour period consisting of any two consecutive fifteen-minute periods. The standard for non-rush-hour periods was fixed for fifteen-minute periods. The demand for service was separated into Sundays and week days, and the average count of passengers for three consecutive normal week days was considered sufficient to give a fair average. The average count of passengers for two consecutive Sundays was considered a fair average of Sunday service demands. Traffic surveys must be made from time to time, subject to the order of the commission, both as regards time and place of checking points.

Tracks were deemed by the commission to be operated to their full capacity when the combined headway of cars passing any checking point in the same direction was twenty seconds or less. Exception was made, however, for lines operated through tunnels, where an average headway of thirty seconds or less was deemed to be the full capacity of the tracks. To comply with the order of the commission as regards a service standard, the surface lines were ordered to proceed at once to make service checks, and within sixty days or by Dec. 1, to file a statement showing the location of the maximum traffic points outside the loop district for all lines and routes and for both the morning and evening rush periods. With this information the railway company was ordered to state what it deemed the morning and evening rush-hour periods for the various lines and routes checked.

Turn-back service in the territory immediately outside of the Chicago loop district sufficient to comply with the service standards was also ordered by the commission. Plans showing this service installed, as well as the scheme for re-routing cars in the downtown district to secure maximum track capacity, were ordered to be filed with the commission by Dec. 1. In case the railway found its present equipment insufficient to comply with the provisions of the order, it was ordered to proceed immediately to acquire the necessary equipment. The commission believed trailers would materially increase the track capacity and ordered the company to install within sixty days such trailer service during the rush hours as was necessary to comply with the service standards.

To clear up the question of jurisdiction, the commission ordered the railway to apply within thirty days of the date of the order to the proper municipal authorities for all necessary permits and authority. Other questions of service included in the commission's order provide that separate route and destination signs must be displayed on the front ends and route signs on the sides of all cars. All plans for new passenger cars as well as those for remodeling old passenger cars must be submitted to the commission for its approval of the width of passageways, height and location of seats, platform arrangements and such other details as might affect the adequacy of the service.

In a digest of the order given out to the local newspapers, the commission directed the attention of the municipal authorities to the serious delay to cars caused by vehicles in the congested districts during the rush hours. It was recommended that the city prohibit the use of the tracks by vehicles during the rush hours. The commission also suggested that the companies employ additional traffic supervisors with authority over trainmen, these supervisors to be stationed at important transfer and loading points to hasten the loading and movement of cars, and thereby increase the number of seats. The commission also called attention to the extraordinary congestion on Jackson Boulevard, the only east and west artery through the loop district devoted exclusively to vehicular traffic. It was suggested that Washington Street also be given over entirely to vehicular traffic.

Unification of the surface and elevated railroad lines in the near future was also considered important to provide adequate transportation facilities. The commission expressed the opinion that considering all the traffic difficulties existing in Chicago and the increased traffic demands which would come with the natural growth of the city, steps should be taken immediately to make use of all transportation facilities by the construction of subways.

FORT WAYNE CARS IN FULL OPERATION

No further violence or serious disorder has occurred in Fort Wayne, Ind., since Sept. 29. All regular cars have been in full operation, although up to Oct. 4 service was suspended about 6 p. m. On Oct. 4 cars were operated until 10 p. m. without interference. Assistance for the striking street car men has been voted by the various labor organizations in Fort Wayne, and members of unions are forbidden to ride on the street cars under penalty of fine. The hearing for an injunction, which was to have been held in the Federal Court at Indianapolis on Oct. 5, was postponed until Oct. 27, in accordance with agreement between the opposing counsel. The case of the United States Mortgage & Trust Company, trustee under the mortgage of the Fort Wayne & Northern Indiana Traction Company, against Joseph C. Colgan, executive officer of the Amalgamated Association, for contempt of court, filed after the trainmen at Fort Wayne went on strike after a temporary restraining order had been granted by the United States Court against Colgan and others, will also be heard. In connection with the postponement the attorneys for the defendant allege that the United States Dis-

trict Court for the District of Indiana has no jurisdiction in the case, as Colgan says he is a resident of Chicago, while the plaintiff trust company is a New York company.

Cars in Fort Wayne continue operating until about 10 p. m., but several cases of the stoning of cars have been reported. President J. M. Barrett of the company addressed an appeal to the citizens of Fort Wayne to assist the company in the exercise of its lawful rights and to patronize the cars. On Oct. 8 all cars were reported as being operated on schedule and with increased traffic.

Superintendent of Transportation J. J. Brennan of the company stated that on Oct. 9 the company would assign regular runs to the men working on the cars and that the assignments would be permanent, with the seniority rule in force. Several old men have reported to the officers of the company and asked to be assigned to work.

J. C. Colgan, the organizer for the Amalgamated Association, has stated that the men would be willing to meet the officials of the company for a conference leading to arbitration, but that they would not accept the members of the Public Service Commission as a board of arbitration.

Mayor Hosey on Oct. 7 proposed to the company that Governor Ralston should decide whether a local arbitration board or the Public Service Commission should arbitrate the strike. This proposal was refused by the company.

SAN FRANCISCO CONSIDERS AN ELEVATED LINE

At a session of the International Engineering Congress, held recently in San Francisco, there was some discussion of the possibility of an elevated railway in San Francisco. in which M. M. O'Shaughnessy, engineer of that city, took part. In response to a request for comment on the means now being considered for improving transportation facilities in San Francisco, Mr. O'Shaughnessy has supplied the following statement to the Electric Railway Journal:

In the near future something will have to be done to reduce the time required to travel from the business section to the western residence districts of the city and to relieve the congestion on lower Market Street, the main traffic artery of San Francisco. The time required to travel from Third and Market Streets to the western residence districts could be reduced by twenty minutes if an express train service were provided. The economic advantage of the saving of forty minutes of time lost in two daily trips of each of 50,000 passengers daily would justify an expenditure of $50,000,000 by the community. In addition a rapid transit system would at once infuse stability and confidence into the outlying and Peninsula sections and help to increase the population of the city.

The possibilities of subway and of elevated lines have both been considered. Objections to subways were found to be greater than the objections to elevated lines because of the greater first cost, ventilation difficulties and time required for the construction of the subways. The cost of a subway system was estimated to be $3,500,000 per mile of double track as against $800,000 per mile for an elevated system. The cost of surface lines with 106-lb. rails in San Francisco has been found to be about $218,000 per mile. The greatest problem in undertaking to provide a rapid transit system in San Francisco is that of educating the public to a point where the prejudices to the elevated system will be overcome.

NATIONAL ELECTRICAL CODE CONFERENCE ON OCT. 27 AND 28

The deferred conference in Washington on the proposed national electrical safety code will be held at the bureau of standards on Oct. 27 and 28, in accordance with the announcement made several months ago. Official delegates have already been appointed from the American Institute of Electrical Engineers, National Electric Light Association, American Electric Railway Association, American Railway Association and many other organizations. The bureau of standards will report to the conference concerning the work which has been done in the preparation of the proposed code and present the latest revised copy of the text of the code. It will also present some recommendations with regard to the method of revising the code in future and of its administration by the various States and municipalities. The bureau will recommend, however, that the code shall not be made mandatory until after its tentative use for one year, in order to give the commissions and municipal authorities, as well as the utility companies, an opportunity to become thoroughly familiar with it and to permit the experience of one year to be utilized in its further revision before being made mandatory. About 100 delegates are expected to attend the conference.

ULTIMATUM IN SEATTLE PAVING CASE

Mayor H. C. Gill of Seattle, Wash., in a recent communication to the Puget Sound Traction, Light & Power Company, issued an edict stating that unless the company paved between its tracks in accordance with franchise requirements on the streets where the city of Seattle is laying paving, he would immediately recommend to the Council the revocation of the corporation's street railway franchises. A. L. Valentine, superintendent of public utilities of the city, has notified the company that improvements must be made at once on five separate street paving jobs.

In reply, the company stated that it had an application before the Public Service Commission for relief from this paving exaction, as well as from other franchise obligations, and that until this was disposed of, the company could not see its way clear to comply with the request which the city has made.

In discussing the matter Mayor Gill was quoted recently in part as follows:

"I will not submit to the company setting aside its franchise at this time and failing to pay 2 per cent of its gross revenues to the city when they come due simply because it has a matter pending before the Public Service Commission. Fifty-five thousand dollars has been included among revenues in the city budget for this amount, and I propose that the company shall pay it, unless the city is restrained by court order. Charles A. Reynolds, chairman of the Public Service Commission, has been quoted as saying that he will not consider the application of the company until a valuation of the company's properties has been completed. This valuation will not be completed, according to present estimates, until the last of next year. Should the company agree to pave its right-of-way under agreement to accept a refund in case the city should lose in litigation with the company, then I will not send my recommendations to the Council. The city cannot wait on its paving until the commission has valued the company's properties, and held a hearing on the company's application."

OPINION IN OHIO REGARDING LOCATION OF INTERURBAN TRACKS

Attorney-General Turner of Ohio rendered an opinion on Sept. 22 to the effect that interurban railways with tracks along the side of the public highways may be compelled to move those tracks to the center of the highway when it is necessary for the proper paving and improving of the space and that the owning corporations must pay the entire expense of relocating the tracks. Not only this, but they must pave the space between the tracks and to the distance of 1 ft. on either side. This opinion was rendered to State Highway Commissioner Clinton Cowan, who is preparing to build a 40-ft. pavement for a distance of 3810 ft. on the extension of North High Street north of the corporation limits of Columbus. The tracks of the Columbus, Delaware & Marion Railway extend along the east side of this highway. The franchise granted the company by the County Commissioners gives it the right to occupy that particular location, but Attorney-General Turner asserts that it is not within the power of the commissioners to make a grant that will impinge on the higher power—the police power—of the State. This is the power that insures the people their rights, and no authority or power is above the rights of the people to the best service and the highest degree of safety commensurate with the conditions. One of the rules of traffic, he says, is that all travelers shall use and keep to the right-hand side of the road or street. It is necessary to change the tracks to the center of the street in order to do this. Any other method of travel

would result in great confusion and danger. The commissioners had a right to grant a franchise, but not to limit the location so that these rules cannot be carried out by the public. He says that as there is no provision in the laws whereby the cost of relocating electric railway tracks shall be paid from the public highway funds, the company must stand this expense.

ROCK SLIDES GREATEST MENACE TO NEW YORK SUBWAY WORK

That New York City's subway work is being carried on in general in accordance with the best practice, that rock slides such as occurred Sept. 25 on Broadway, at Thirty-eighth Street, constitute the "greatest and only serious menace" to be guarded against, that cross-bracing should be used wherever there is any doubt as to the strength of the rock foundation, that the permanent construction should be kept as near as possible to the headings, and that constant inspection of the temporary street supports is necessary, are the conclusions set forth in the report to the Public Service Commission by Edmund S. Davis, chief engineer of the Boston Transit Commission, and Henry H. Quimby, chief engineer of the Philadelphia Department of City Transit, made public on Oct. 6. These men were retained by the Public Service Commission to make a report on the construction methods in use, and to recommend, in view of the recent failures of subway decking, changes to insure against a repetition of either accident. In the light of experience gained as a result of these accidents the engineers made the following recommendations:

(1) That throughout the present construction, at every point where the trench is in a rock with inclined strata, showing open seams or other evidence of actual or threatened disintegration, the sides be shored across the trench so as to form a continuous strut from side to side of the trench, with additional supports in the shape of raker braces if projecting portions of rock afford the necessary hold.

(2) That an effort be made to systematize the work so that the sequence of operations will carry the work of excavation and the erection and concreting of the permanent subway structure close together, so as to require as little falsework and temporary decking of the street as possible.

(3) That in future work preference be given to a type of timbering that will provide continuous needlebeams or struts from side to side of the trench, with the joints of the uprights firmly spliced to prevent buckling.

(4) That a periodic inspection be made of every point of contact of shoring with the banks, as well as of all connections of members to insure continuous tightness and prevent deterioration of the timber work from vibration.

Among other things the engineers said:

"In our tour of inspection we have found that, with the few exceptions noted, the work of subway construction is being prosecuted throughout in the most thorough and systematic manner. Considering the magnitude of the work and the great extent and variety of the operations, the instances of failure of any sort resulting from carelessness, or otherwise, in the conduct of it are remarkably few."

ADDITIONAL INDORSEMENT OF TOLEDO GRANT

The Toledo Retail Merchants' Board, at its annual meeting on Oct. 5 approved the street railway franchise ordinance which has been initiated at Toledo, Ohio.

On Oct. 1 a temporary restraining order was issued in the Court of Common Pleas to prevent the enforcement of the order of the city that the railway tracks on Huron Street between Orange Street and Stickney Avenue and on Stickney Avenue between Huron and Erie Streets be removed at once. This action was taken at the instance of City Solicitor Thurstin and former City Solicitor Cornell Schreiber, and was intended to give Council and opportunity to push the matter through or rescind the order for the present. It was found that the approval of the Dotson franchise by the people at the fall election would give the company the right to tear up the new pavement that is to be built on the streets mentioned in order to relay its tracks, and the property owners objected to this. Council decided on Oct. 4 to notify the company that the removal order will not be enforced until after the election on Nov. 2, whether or not the restraining order is made permanent.

HYDRO-ELECTRIC PLANS MATURING

T. J. Hannigan, Guelph, Ont., secretary of the Hydro-Radial Association of Ontario, has notified Mayor Church of Toronto that preliminary surveys have been made and plans and estimates of the cost prepared for the proposed hydro-radial lines in the Toronto district. He asked that the city appoint three delegates to join representatives of other municipalities interested to inspect the plans. It is rumored that the Hydro-Electric Power Commission of Ontario has arranged to acquire the Toronto Suburban Railway from Toronto to Guelph. While confirmation of the story could not be obtained, it is regarded as likely that some tentative arrangement will be made whereby the commission may incorporate the suburban line in the proposed network of radials. Chief Engineer Gaby of the commission said that nothing in regard to the matter and the route of the proposed radial lines could be divulged until after the representatives of the municipalities had been consulted.

Alabama Utilities Bill Passes House.—The Denson public utility bill, transferring control of public utility corporations from municipalities to the State, has been passed by a vote of forty-nine to thirty-two. Only a few minor amendments were considered.

Planning for the Minneapolis Appraisal.—The sale or $15,000 of bonds to provide funds for conducting the franchise negotiations with the Minneapolis (Minn.) Street Railway was expected to be taken up by the City Council on Oct. 8. F. W. Cappelen, city engineer, who will have charge of the work, has stated that the appraisal will be started within two weeks after the bonds have been sold.

Albany Arbitration Adjourned.—The first meeting of the arbitrators named to inquire into and settle the differences between the United Traction Company, Albany, N. Y., and its employees which led to the strike of Sept. 6, was held on Oct. 1 The arbitrators organized by choosing Judge Lynn J. Arnold chairman and adjourned to Nov. 4. The principal difference between the company and its employees is over the methods of discipline.

Yonge Street Order Issued.—The Ontario Railway & Municipal Board on Sept. 21 issued an order directing that the Yonge Street tracks of the Toronto (Ont.) Railway must be extended from the present terminus to Farnham Avenue, and that the cars must be in operation over this section of line by Dec. 1 of this year. The order backs up the opinion of the board, rendered some days ago, that the company had a right to extend its Yonge Street tracks to occupy the space lately vacated by the Toronto & York Radial Railway. The city of Toronto will have to lay the necessary roadbed for the company's rails, as is the case with all lines in the city.

Springfield Trolley Pole Removals.—Agreements have been prepared by the Springfield, Mass., City Planning Commission for submission before Oct. 16 to property owners in the downtown district relative to the removal of trolley poles on Main Street between State Street and the Union Station. The agreements have been prepared in blank and approved by City Solicitor C. H. Beckwith. When signed by the property owners and the Springfield Street Railway the agreements authorize the removal of the poles and the attachment of span wires to the buildings at the expense of the company, which has agreed to meet the cost of the change, made desirable by increasing traffic congestion.

New Orleans Street Railway Resumes Service After Hurricane.—Practially all street car service was resumed on Oct. 7 on the lines of the New Orleans Railway & Light Company, New Orleans, La., following the terrific hurricane which swept the Gulf Coast last week. The delay to service has been entirely due to the cutting off of power because of fallen wires. Relief work was badly handicapped by continuous heavy rains following the storm. The roofs of the Poland, Prytania and Claiborne carhouses were badly injured, resulting in slight damage also to about thirty cars which were in these carhouses at the time. The main power house suffered damage to its roof and through broken windows, amounting to about $1,000.

Rhode Island Arbitration Testimony Concluded.—Presentation of testimony in the Rhode Island Company's arbitration case was concluded on Sept. 29 at Providence, when an adjournment was taken to Oct. 25, when final arguments are to be submitted by counsel on each side. It is expected that two days will be required for arguments, and a finding is anticipated by the board by Nov. 26. The hearings have covered forty-three days and have resulted in the presentation of 192 exhibits, 105 witnesses and 3431 pages of typewritten testimony aggregating about 837,750 words. The final hearing was devoted to clearing up various loose ends of testimony which had been carried over from previous sessions. An analysis of the company's financial status tending to show ground for confidence in the future of the road was submitted by Arthur Sturgis, Boston, on behalf of the employees.

Electrolysis Report at Providence, R. I.—R. B. Brunet, public service engineer of the city of Providence, R. I., has submitted a report on electrolysis within the municipality to Commissioner of Public Works Slade. The report sets forth a number of cases of corrosion of water pipes and cables, gas pipes and other structures, and states that 2191 open and defective rail joints have been found in the local street railway system. This is about 15 per cent of all the joints in service. The report recommends that temporary bonding be required of the Rhode Island Company at points where new tracks are being installed, repairs being made or special work under construction; that the company be requested to hasten the rebonding of track at points known to be defective; that broken or imperfect rails be repaired or removed as soon as discovered, and that the company be formally requested to bond all joints and track networks electrically.

Completing Connecting Railroad Bridge.—Samuel Rea, president of the New York Connecting Railroad, on Oct. 1 sent a message to Gustav Lindenthal, chief engineer of the East River Bridge Division of the New York Connecting Railroad, congratulating him as designer and chief engineer of the East River arch bridge upon the closing of that great arch that day. Mr. Rea said in part: "Within eighteen months I hope we will see the completion of the New York Connecting Railroad and of the Seventh Avenue subway in Manhattan, which will conclude the Pennsylvania Railroad's comprehensive program for terminal development in and through New York City, adopted thirteen years ago under the presidency of A. J. Cassatt. With these projects completed full opportunity will be afforded to measure the benefit of the New York terminal improvements to the public, the country at large and to the company." The new bridge will afford a connecting link between the New England railroads and the trunk lines serving the West and South and make unnecessary the ferriage of cars around New York.

Chicago Mayor Urges Subway Construction.—Immediate construction of four-track subways in the downtown district and the unification of the surface and elevated lines formed an important part of the annual message of Mayor William Hale Thompson to the Chicago City Council. The Mayor supported the initial subway scheme, but suggested that it contain four tracks and be used by the cars of both the surface and elevated lines. He proposed that the subways be constructed by the city in and through the downtown district, extending out as far as the present needs of the traffic situation warranted, and that they be operated as a unified system of transportation on a rental basis. The message stated that to accomplish this a tri-party agreement between the city, the elevated railways and the surface lines would be necessary. In order to formulate a concrete scheme as promptly as possible, the Mayor suggested that experts familiar with the engineering and financial problems involved be appointed by the city and companies. The plan worked out by these experts should later be submitted to the City Council and finally in referendum to the people of Chicago. If the elevated and surface lines agreed to become parties to such an arrangement, the Mayor believed it would be necessary to give Chicago the right to purchase the elevated properties at any time, and that the price be fixed either before the negotiations are consummated, or at some future time when it has been decided to consider the purchase.

Financial and Corporate

STATUS OF MICHIGAN COMPANIES EXPLAINED

Organization and Extent of Michigan United Traction Company and Michigan Railway Described to Avoid Confusion

On account of a possible confusion of the Michigan United Traction Company, the Michigan United Railways and the Michigan Railway, it is deemed wise to print the following facts:

The Michigan United Traction Company leases from the Michigan United Railways (simply a consolidated non-operating company) and operates the city lines in Kalamazoo, Battle Creek, Jackson, Lansing and Owosso, Mich. It also leases and operates two 600-volt third-rail interurban divisions. The northern division includes the trackage from Jackson to Owosso and Corunna and from Lansing to St. Johns. The southern division includes the trackage between Jackson and Kalamazoo, passing through Battle Creek, and from Jackson and Grass Lake to Wolf Lake. This is also a short spur from Gull Lake Junction to Gull Lake. The Michigan United Traction Company also operates between Kalamazoo and South Haven a steam road called the "Fruit Belt Line" connecting with Chicago boats at South Haven.

The Michigan Railway owns and operates as its northeastern division an interurban line running between Bay City and Flint and a spur line from Saginaw to Frankenmuth. This is a 1200-volt line, and the portion between Bay City and Saginaw is operated with a third-rail. Arrangements have recently been made with the Detroit United Railway for the operation of through limited-passenger trains between Bay City and Detroit, the Michigan Railway furnishing new all-steel cars for this service.

The western division of the Michigan Railway includes the 2400-volt third-rail lines between Kalamazoo and Grand Rapids, Battle Creek and Grand Rapids, and Monteith Junction and Allegan. Aside from these this company is building a 2½-mile detour between Yorkville and Gull Lake Junction on the line between Battle Creek and Monteith Junction, which will put Gull Lake on the main line. The existing spur track from Gull Lake Junction, as well as that section of the main line cut off by the new route, will be abandoned. This company is surveying for a 35-mile extension between Owosso and Saginaw. When this is completed limited service will be given between Jackson and Bay City.

Tickets are being sold from all points on the Michigan United Traction Company and the Michigan Railway, as well as from points on the Detroit United Railway, to Chicago by way of Detroit, through Jackson, Battle Creek, Monteith Junction and Grand Rapids. At Grand Rapids connection is made with the Grand Rapids, Holland & Chicago Railway, which in turn connects with the Chicago boats at Holland and with the Grand Rapids, Grand Haven & Muskegon Railway at Muskegon. The western division of the Michigan Railway carries mail and express and handles steam-road mixed-freight cars, having a steam railroad connection with the Père Marquette Railroad at Allegan, the Grand Rapids & Indiana Railroad at Monteith, the Chicago, Kalamazoo & Saginaw Railway at Richland Junction and the Michigan Central Railroad at Battle Creek.

The lines of both the Michigan United Traction Company and the Michigan Railway are operated by the same management. The organization of the Michigan United Traction Company is as follows: President, B. C. Cobb; vice-president, Frank Silliman, Jr.; vice-president and general manager, J. F. Collins; secretary, G. B. Dobbin; treasurer, J. W. Glendenning; general superintendent, C. E. Morgan; superintendent of equipment, R. C. Taylor, and general superintendent of the steam road, H. D. Swayze. The organization of the Michigan Railway is as follows: President, H. H. Crowell; vice-president, B. C. Cobb; vice-president and general manager, J. F. Collins; vice-president, Frank Silliman, Jr.; vice-president, George W. Mechem; secretary, G. B. Dobbin; treasurer, J. W. Glendenning; manager of the northeastern division, A. D. Furlong; superintendent northeastern division, Charles Arnold; traffic manager of the western division, F. W. Brown, and superintendent of equipment, R. C. Taylor.

ANNUAL REPORT

American Light & Traction Company

The comparative statement of income, profit and loss of the American Light & Traction Company, New York, N. Y., for the years ended June 30, 1914 and 1915, follows:

	1915	1914
Earnings on stocks of subsidiary companies owned	$3,980,302	$3,697,743
Miscellaneous earnings	754,962	717,867
Gross earnings	$4,735,264	$4,415,610
Expenses	157,599	139,465
Net earnings	$4,577,665	$4,276,145
Surplus and reserve June 30, previous year	9,577,664	8,973,146
Total surplus earnings	$14,155,329	$13,249,291
Cash dividends on preferred stock	$854,172	$854,172
Cash dividends on common stock	1,553,332	1,408,727
Stock dividends on common stock	1,553,333	1,408,728
Total dividends	$3,960,837	$3,671,627
Surplus balance June 30	$10,194,492	$9,577,664

During the last fiscal year the gross earnings of the company increased $282,559 or 7.6 per cent, most of which was made up of increased earnings on the stocks of subsidiary companies owned. The expenses increased $18,134 or 13 per cent. The net earnings showed an increase of $301,521 or 7 per cent. Dividends increased $289,210 or 7.9 per cent, and the surplus balance (previous surplus included) $616,828 or 6.4 per cent.

FARES COLLECTED IN CLEVELAND

The traffic returns of the Cleveland (Ohio) Railway thus far this year indicate in general very favorable results of operation. The following table shows the number of fares collected in each of the first eight months of 1914 and 1915, with the totals:

	1915	1914
January	18,431,753	18,816,541
February	17,052,978	17,046,893
March	19,527,042	19,100,804
April	19,391,440	19,296,216
May	20,359,602	20,434,647
June	20,455,054	19,647,477
July	20,829,989	20,216,303
August	20,669,652	19,796,084
Total	156,717,510	154,354,965

It will be noticed from the foregoing table that the total of fares collected for the first eight months of 1915 was 156,717,510, ac compared to 154,354,965 for the corresponding period of 1914, an increase of 2,362,545. Six of the months showed increases (the lightest being in February and the heaviest in August) as follows: February, 6085; March, 426,238; April, 95,224; June, 807,577; July, 613,686, and August, 873,568. In January and May decreases of 384,788 and 75,045 respectively were shown.

BROOKLYN COMPANY WINS $829,578 SUIT

Brooklyn, Queens County & Suburban Railroad Is Not Compelled to Pay City Percentage of Revenue Under Railroad Law

In a decision handed down in the Supreme Court on Oct. 2 Justice Erlanger held that New York City is not entitled to collect $829,578 from the Brooklyn, Queens County & Suburban Railroad, Brooklyn, N. Y. This company is now one of the operating controlled companies of the Brooklyn Rapid Transit Company.

The suit, which has been going on since 1907, was brought under the railroad law to collect a percentage of the revenue received by the company from Oct. 1, 1901, to Sept. 30, 1907. The city's share of the earnings of $7,029,105 for that period, according to the corporation counsel, was $361,753. In addition, the city maintained that the company should have been penalized $467,825 for failure to pay the amount due.

The present decision shows that by various consolidations the defendant company in 1893 came into possession of important lines in Brooklyn. These consolidations completed, the company effected an entrance into Manhattan by way of the Williamsburg and Brooklyn bridges. The city contended that this brought the company within the statutory requirement for lines operating within a city of 1,200,000 or more inhabitants, although the population of Brooklyn at that time was less than the required figure.

Justice Erlanger holds, however, that the city is entitled only to franchise revenues and bridge tolls. If the railway were to be charged with the percentages on revenues under the railroad law the facts must indicate that it brought itself within the definition of the statute. To become chargeable because of an operation of cars within the Borough of Manhattan the defendant must be found to have operated a branch or extension of its line under the provisions of this statute. The company's cars, however, were run across the bridges by virtue of permits granted by the city, but there was no franchise given to the company by the city, because the State Legislature alone had that power. When thus operating its cars, under contracts with the city for payment of tolls, the railroad sought and obtained nothing under the provisions of the railroad law. It had a "privilege" or "license upon consideration," and it paid for what it received.

WINONA INTERURBAN PLANS READJUSTMENT

In Explanation of Recent Non-Payment of Interest on Bonds, Details Are Published of Financial Proposition Now Being Considered by Creditors

The report recently circulated in daily newspapers regarding the failure of the Winona Interurban Railway, Warsaw, Ind., to pay interest due on its first mortgage bonds was misleading. The company has under consideration a plan for reorganization, and pending the negotiations caused thereby it will not pay the coupons which matured Oct. 1, since a large amount of the bonds have already been deposited with the trustee.

According to an official statement recently issued, the Goshen division of the company, extending from Warsaw to Goshen and covering 25 miles of track, was opened for business in 1906. The Peru division, from Warsaw to Peru, 45 miles long, was put into operation in May, 1910. The company also leased from the Winona & Warsaw Railway in 1910 the line from Winona Lake to Warsaw, about 2½ miles.

Since the company began operations the gross receipts increased each year, except the last, about 10 per cent per year, but the increased cost of materials, supplies, maintenance and operation was so great that the net earnings did not increase accordingly. Consequently the company has not been able to earn its operating expenses and fixed charges. There is now an accumulated deficit of $323,295, which has been covered by loans or the deferring of the collection of interest due.

In a desire to work out a plan whereby all creditors would ultimately receive full payment, the executive committee has been considering readjustment. The first plan, proposed more than two years ago, involved the organization of a holding company to which the claims of creditors would be sold for stock in the holding company to the amount of the claim. Such a company was organized under the name of the Securities Investment Company, and claims against the railway have been assigned to it and certificates of stock issued to the amount of $851,455. While other creditors to the amount of more than $100,000 have signified their willingness to transfer their holdings to the Securities Investment Company, it is not likely that the holders of claims to the amount of more than $1,000,000 will consent to assign their claims on the plan proposed.

The executive committee has therefore prepared another plan, which, if adopted, will probably be accepted by the Securities Investment Company on the same terms as other creditors. The plan now submitted is that the company issue $1,087,480 of consolidated first mortgage bonds and $1,256,220 of second mortgage bonds, both being 5 per cent twenty-year issues. The first mortgage bonds would be secured by one mortgage on all the property of the company, instead of two mortgages, one on each division, as at present. The second bonds would be a junior issue, with the right of foreclosure for non-payment of interest restricted until a default occurs in first mortgage bond interest.

The issued $750,000 of bonds on the Goshen division would be taken up on a basis of 60 per cent of par with the new first mortgage bonds and 40 per cent with the new second mortgage bonds at par, while the $1,593,700 of bonds on the Peru division would be taken up by 40 per cent of first mortgage bonds and 60 per cent of second mortgage bonds. This discrimination is based on the better earning capacity and better bond worth of the former division. The present net revenues are said now to assure the payment of first mortgage bond interest.

The company has submitted this plan to its creditors with the statement that unless the holders of the bonds now outstanding consent to some plan which will insure the payment of bond interest on the present income, the company will be compelled to default on its interest payment, which will undoubtedly mean the ultimate disposal of the property at judicial sale.

Alton, Granite & St. Louis Traction Company, East St. Louis, Ill.—It is reported that the Illinois Public Utilities Commission has authorized the Alton, Granite & St. Louis Traction Company and the Alton Gas & Electric Company each to extend the date of $250,000 bonds of the Alton Railway & Illuminating Company from Oct. 1, 1915, to Oct. 1, 1939. These bonds are underlying issues of the Alton, Granite & St. Louis Traction Company, the section for the Alton Gas & Electric Company representing bonds assumed by this latter company, which was once owned by the former.

Brooklyn (N. Y.) Rapid Transit Company.—The Central Trust Company, Kuhn, Loeb & Company and Kidder, Peabody & Company, New York, who financed the Brooklyn Rapid Transit Company subway requirements three years ago by the purchase of $40,000,000 of six-year 5 per cent secured gold notes, have exercised the option then given to them by the company and have purchased the remaining $20,000,000 of the notes under the $60,000,000 issue. The proceeds are to be used in completing the construction and equipment required by the contracts between the city and the New York Municipal Railway Corporation, a subsidiary of the Brooklyn Rapid Transit Company. The notes are secured by the deposit with the Central Trust Company as trustee of the New York Municipal Railway Corporation first mortgage 5 per cent guaranteed bonds, equal in face value to the notes issued and outstanding from time to time, and $10,000,000 of Brooklyn Rapid Transit Company refunding gold mortgage 4 per cent bonds. All the notes under this $60,000,000 issue are convertible prior to Jan. 1 next into the New York Municipal Railway Corporation first mortgage 5 per cent bonds. Notes not converted will mature on July 1, 1918.

Choctaw Railway & Lighting Company, McAlester, Okla.—The Guaranty Trust Company, New York, N. Y., as trustee, has filed suit in the Federal Court at Muskogee to foreclose the mortgage of $925,000 on the property of the Choctaw Railway & Lighting Company. A receiver is asked to take charge of the property.

Cleveland (Ohio) Railway.—Horace E. Andrews has resigned as a director of the Cleveland Railway.

Kansas City Railway & Light Company, Kansas City, Mo.—Chairman Dunham of the reorganization committee of the Kansas City Railway & Light Company has been advised by Federal Judge Hook that the time for deposit of the company's stock under the reorganization plan has been extended to Nov. 1; and of the various underlying bond issues, except Kansas City Elevated Railway and Kansas City & Westport Belt Railway issues, to Oct. 9. More than 90 per cent of the principal issues, and about 85 per cent of all interest-bearing securities, have been deposited.

Louisville (Ky.) Railway.—According to the report of the Louisville Railway for the first eight months of the year, the decrease in business was represented by a falling off in receipts of $180,258. This loss, however, was nearly offset by careful management and curtailment of expenses, so that a reduction of only $2,088 in surplus resulted. The decreased revenue for August was $22,801, but operating expenses were cut down so that there was a small increase in net earnings. Figures for the first eight months of the year show the following: Gross revenue, $1,940,703 (decrease, $180,938); operating expenses, $1,024,437 (decrease, $198,903); operating revenue, $916,266 (increase, $12,965); charges and taxes, $596,396 (increase, $16,729); net revenue, $325,870 (decrease, $3,764); other revenue, $121,670 (increase, $1,676), and net income, $447,540 (decrease, $2,088).

Memphis (Tenn.) Street Railway.—Out of the proceeds of the sale of $1,500,000 of two-year 6 per cent collateral gold notes and $600,000 of one-year 6 per cent guaranteed gold notes on a when-issued basis to bankers, as noted in the Electric Railway Journal of Oct. 2, 1915, there will be met maturities of $1,000,000 of debenture notes on Nov. 1, 1915, and of $906,000 of Citizens' Street Railway first mortgage bonds on Jan. 1, 1916, the balance going to working capital. The retirement of the Citizens' Street Railway first mortgage bonds will make the consolidated bonds of the Memphis Street Railway a first mortgage. The aforementioned two-year collateral notes are now being offered by Bertron, Griscom & Company, New York and Philadelphia; Reilly, Brock & Company, Philadelphia, and Counselman & Company, Chicago, at 99½ and interest to yield 6¼ per cent, while the one-year guaranteed notes have all been sold. These issues are to be dated Nov. 1, 1915.

New York (N. Y.) Railways.—A call for proxies to be voted at the annual meeting of the New York Railways on Dec. 6 has been sent out by a proxy committee representing holders of the company's adjustment income 5 per cent bonds. This is believed to indicate dissension among the five minority directors, the proxy campaign being leveled against the insurance company representatives because these companies had assented to adjusting the interest on the bonds by arbitration. The last arbitration award for the bond interest was noted in the Electric Railway Journal of Oct. 2.

Pekin (Ill.) Municipal Railway—The Mayor of Pekin and the city clerk have been authorized by the City Commission to execute the $4,000 of bonds previously unissued of the total of $48,000 originally authorized by the city to provide funds to complete the reconstruction and electrification of the short local railway as a municipal enterprise. The Pekin Street Railway, which was organized in 1914 to rebuild the short existing line in Pekin but which on May 4, 1915, formally transferred the line to the city for municipal operation, has filed a dissolution notice with the Illinois Secretary of State.

San Diego (Cal.) Electric Railway.—The San Diego Electric Railway has filed with the California Railroad Commission an application for extending until Oct. 1, 1916, the time within which the company may issue $577,000 of 5 per cent forty-year general first lien sinking fund gold bonds at not less than 85 per cent net. The commission authorized the company on Oct. 6, 1914, as noted in the Electric Railway Journal of Oct. 24, 1914, to execute a mortgage to the Union Trust Company, San Francisco, securing a possible maximum issue of $10,000,000 of these bonds, and to put out thereunder $4,497,000 of the issue. Up to now the company has issued $3,920,000. The company's earnings decreased so materially during the last year, and the prospect of improvement is so doubtful, that it is deemed inexpedient to proceed with further extensions and improvements. As the time for the issue of the bonds was limited to Oct. 1, 1915, the company therefore asks another year's time for disposing of the bonds.

San Joaquin Light & Power Corporation, Bakersfield, Cal.—The California Railroad Commission has authorized the San Joaquin Light & Power Corporation to renew promissory notes for a total of $91,481 for not more than one year from Dec. 31, 1915, with interest from 6 per cent to 7 per cent.

Wilmington Southern Traction Company, New Castle, Del.—Announcement has been made that the Wilmington & Philadelphia Traction Company, Wilmington, Del., has secured control of the Wilmington Southern Traction Company through the purchase of all the stock from the banking house of E. Clarence Jones & Company, New York. The transfer of control to these bankers was described in the Electric Railway Journal of Sept. 18. The company has a line about 6 miles long, running from Wilmington to New Castle. The purchasing company recently acquired the People's Railway in Wilmington, as noted in the issues of June

5 and June 12, and now has control of all the railway lines in the State with the exception of one running from New Castle to Delaware City. Negotiations are now on for this line. It is announced that a number of improvements will be made on the purchased line running to New Castle which will be one of the most important parts of the local system.

DIVIDENDS DECLARED

Boston (Mass.) Suburban Electric Companies, quarterly, 50 cents, preferred.

Cincinnati, Newport & Covington Light & Traction Company, Newport, Ky., quarterly, 1⅛ per cent, preferred; quarterly, 1½ per cent, common.

Citizens' Traction Company, Oil City, Pa., quarterly, 1½ per cent, preferred.

City Railway, Dayton, Ohio, quarterly 1½ per cent, preferred; quarterly, 1½ per cent, common.

Columbia Railway, Gas & Electric Company, Columbia, S. C., quarterly, 1½ per cent, preferred.

Dallas (Tex.) Electric Company, 3 per cent, first preferred; 2½ per cent, second preferred.

Lincoln (Neb.) Traction Company, quarterly, 1 per cent, common.

Manchester Traction, Light & Power Company, Manchester, N. H., quarterly, 2 per cent.

Ottumwa Railway & Light Company, Ottumwa, Iowa, quarterly, 1¾ per cent, preferred.

Rome Railway & Electric Company, Rome, Ga., quarterly, 1 per cent.

Scioto Valley Traction Company, Columbus, Ohio, quarterly, 1¼ per cent, first preferred; quarterly, 1¼ per cent, preferred.

Springfield & Xenia Railway, Springfield, Ohio, quarterly, 2 per cent, preferred.

Stark Electric Railroad, Alliance, Ohio, quarterly, three-quarters of 1 per cent.

United Railways & Electric Company, Baltimore, Md., quarterly, 50 cents, common.

Virginia Railway & Power Company, Richmond, Va., quarterly, 1½ per cent, common.

ELECTRIC RAILWAY MONTHLY EARNINGS

AMERICAN RAILWAYS, PHILADELPHIA, PA.

Period		Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug.,	'15	$472,614	.....	.....	.....	.....
1 " "	'14	504,253	.....	.....	.....	.....
8 " "	'15	3,536,524	.....	.....	.....	.....
8 " "	'14	3,700,227	.....	.....	.....	.....
BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.						
1m., Aug.,	'15	$73,221	*$36,822	$36,399	$17,610	$18,789
1 " "	'14	72,661	*34,761	37,900	17,402	20,498
12 " "	'15	781,405	*380,869	400,536	211,839	188,697
12 " "	'14	777,080	*371,629	405,451	208,897	196,554
CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.						
1m., Aug.,	'15	$91,213	*$63,039	$28,174	$30,289	†$2,115
1 " "	'14	91,032	*58,960	32,072	28,544	3,528
12 " "	'15	1,039,701	*713,423	326,278	353,565	†27,287
12 " "	'14	1,150,490	*712,375	438,115	327,206	110,909
EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.						
1m., July,	'15	$65,068	*$34,015	$31,053	$8,715	$22,338
1 " "	'14	61,066	*35,832	25,234	8,580	16,654
12 " "	'15	676,520	*383,473	293,047	104,702	188,345
12 " "	'14	619,771	*390,016	229,775	99,428	‡148,529
EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.						
1m., Aug.,	'15	$205,259	*$121,539	$83,720	$62,421	$21,299
1 " "	'14	219,250	*124,388	94,862	59,519	35,343
12 " "	'15	2,434,872	*1,449,601	985,271	761,017	224,254
12 " "	'14	2,740,793	*1,710,759	1,030,034	641,522	388,512
EL PASO (TEX.) ELECTRIC COMPANY						
1m., July,	'15	$77,426	*$44,006	$33,420	$4,203	$29,217
1 " "	'14	83,640	*48,672	34,968	4,196	30,772
12 " "	'15	991,199	*536,154	455,045	50,336	404,709
12 " "	'14	981,560	*545,470	436,090	51,325	‡386,444
GRAND RAPIDS (MICH.) RAILWAY.						
1m., Aug.,	'15	$101,207	*$73,136	$28,071	$13,966	$14,105
1 " "	'14	114,380	*75,374	39,006	13,520	25,486
12 " "	'15	1,202,935	*831,178	371,757	163,970	207,787
12 " "	'14	1,292,726	*832,618	460,108	154,718	305,390
TAMPA (FLA.) ELECTRIC COMPANY						
1m., July,	'15	$78,979	*$41,455	$37,524	$3,617	$33,907
1 " "	'14	83,683	*44,639	39,044	3,702	35,342
12 " "	'15	982,096	*504,183	477,913	43,779	434,134
12 " "	'14	945,836	*519,540	426,296	46,572	379,724

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

Traffic and Transportation

JITNEY JOTTINGS

Letter from New York Commission to Mayors and District Attorneys on Jitney Status

In view of the many complaints which have been lodged with the Public Service Commission for the Second District of New York against alleged illegal jitney bus lines the commission on Oct. 3 transmitted to the Mayors and District Attorneys of the State a notice calling their attention to the fact that the decisions of Justices Brown and Hasbrouck, sustaining and defining the jitney law passed by the last Legislature, bring practically all bus lines, wholly or partly in any city, within the scope of this statute. The commission says:

"In the light of these decisions and the drastic nature of the statute, it is the hope of this commission that, with the aid of the local authorities and the district attorneys, all persons operating in contravention of the statute shall upon this notice at once cease such operations and not resume the same until properly authorized by the local authorities and by this commission."

Information has reached the commission that bus lines are operating in practically all the cities of the State without the proper authorizations under the court interpretation of the law. Complaints, formal and informal, reach the commission almost daily, necessitating in each case an individual show cause proceeding, and a possible resort to the courts for an injunction. It was pointed out at the office of the commission on Oct. 3 that an application for a certificate of convenience and necessity can be handled far more readily than the proceedings for violations of the law, and it was said that the notice was to induce jitney operators to take this course or to cease operation rather than lay themselves open to proceedings for violation.

The letter of the commission to the Mayors and District Attorneys was as follows:

"By direction of the commission, your attention is herewith respectfully directed to these circumstances with regard to the enforcement of Chapter 667 of the laws of 1915, the so-called jitney bus statute:

"Mr. Justice Brown, of the Supreme Court in Niagara County, has decided in the case of Public Service Commission, Second District, vs. Burt G. Hurtgam, that all of the following classes of vehicles come within the scope of this statute and must secure consents from the local authorities and certificates of public convenience and necessity from this commission for operation wholly or partly within any city of the State: (a) a bus line; (b) a stage route; (c) a motor vehicle line or route; (d) a vehicle in connection with a bus line, a stage route, a motor vehicle line or route; (e) a vehicle carrying passengers at a rate of fare of 15 cents or less for each passenger within the limits of a city; (f) a vehicle carrying passengers in competition with another common carrier which is required by law to obtain the consent of the local authorities of said city to operate over the streets thereof.

"Mr. Justice Hasbrouck of the Supreme Court in Albany County in the case of Public Service Commission, Second District, vs. Elmer G. Booth, has held that the possession of a city license, granted previous to the taking effect of Chapter 667 of the laws of 1915, does not exempt the holder of such license from compliance with the chapter to which reference is made. You will thus observe that practically all of the so-called jitney lines which have not secured local consents and the certificate of this commission under the provisions of Chapter 667 are operating in violation of law. In view of these decisions and of the drastic nature of the statute, it is the hope of this commission that, with the aid of the local authorities and the District Attorneys, all persons operating in contravention of the statute will, upon this notice, at once cease such operation and not resume the same until properly authorized by the local authorities and by this commission."

The most lengthy hearing thus far allowed in any of the jitney suits for an injunction to restrain the Philadelphia police from enforcing the ordinance of Councils passed

in July was presided over by Judge Patterson in Common Pleas Court a few days ago. Statistics, distances and averages were entered upon the record to prove the jitney operators' contention that it is impossible to engage in the business at a profit while complying with the provisions of the recent ordinance. One operator now running a car under the ordinance testified that after paying for gasoline, tires, oil, garage charges, repairs to his car, etc., he was losing about $5 a day. Before the ordinance went into effect, he said, his profits were always more than $5 a day. Two other men who ran higher priced cars before the enforcement of the ordinance also submitted some figures showing that by traversing the routes designated in the ordinance for a 5-cent fare, they would run their cars at a loss. Assistant City Solicitor Wolff frequently interposed objections to the testimony of the complainants' witnesses on the ground that the only allegations to fact which the bill in equity raised were whether or not the ordinance was confiscatory. Mr. Wolff declared that all the other allegations were based on questions of law and were matters for argument and cannot be decided by means of testimony. Judge Patterson, however, allowed the complainants' attorney every latitude in the presentation of his case. The case will likely be decided in a written opinion.

The Philadelphia police will begin an active crusade against the automobiles run on Broad Street under the direction of the Peoples' Motor Club. Director of Public Safety Dripps issued an order calling upon the police department to enforce the jitney ordinance as passed by Councils and arrest all drivers save those who have complied with that ordinance by depositing a license fee of $5 and a liability bond of $2,500. According to the president, Paul Randolph, the People's Motor Club was acting under advice of counsel, who told the company it could operate as a private club and not be amenable to the ordinance which Councils passed last July. By issuing a membership card and selling with it for 25 cents a strip ticket good for five rides, the club contended it was operating within the law as a private agency, and, therefore, not liable to prosecution under the provisions of the ordinance. City Solicitor Ryan advised the Director of Public Safety that the People's Motor Club plan is an evasion of the law, and he pointed out that the police should proceed against the drivers of the "club." The officers of the People's Motor Club said that their 115 or more cars would operate to test the law and that a plan of action to meet such an emergency had been decided upon some time ago.

On Oct. 15 the Ferry Line Auto Bus Company will begin the operation of auto buses throughout West Seattle, the buses to connect with the ferry owned by the Seattle Port Commission. Passengers will receive transfers to and from the buses and the ferry, and the transportation company and Port Commission will share the proceeds on a 60 per cent and 40 per cent basis. The Ferry Line Auto Bus Company has provided five motor buses, capable of carrying a total of 250 to 300 people. Some of the buses will operate west on Alki Avenue, while the remainder will traverse California Avenue. The present service is to be maintained over the most practical route. As other streets are improved, the auto bus company will provide connecting service within a reasonable distance from the ferry landing. The Port Commission has agreed to charge a straight 5-cent fare on the ferry, and to give the passenger an option of transfer to the auto bus if he calls for it. In case such transfer is called for and used the auto bus company will receive 3 cents of the 5-cent fare, and the Port Commission the remaining 2 cents. The auto bus company has provided itself with a $50,000 indemnity bond, $10,000 on each bus, and will forfeit $5,000 to the Port Commission if the service is not maintained as agreed.

The jitney regulation by-law as returned by the City Council of New Westminster, B. C., to the city solicitor for re-drafting, provides for a bond of $2,000, to be put up by jitney drivers, to cover their liability in case of accident. This will apply also to drivers of autos for hire in the city other than jitneys. It does not apply to cars on the interurban run between Vancouver and New Westminster, which are covered by a $5,000 bond in Vancouver. The license fee was fixed at $10 a year for each vehicle.

RESTRAINT OF JITNEYS IN TERRE HAUTE—HEARING IN U. S. DISTRICT COURT

The hearing in the case of the Fidelity Trust Company, Philadelphia, Pa., trustee under the mortgage of the Terre Haute, Indianapolis & Eastern Traction Company, against jitney-bus drivers of Terre Haute, Ind., was held before Judge Arthur B. Anderson in the United States District Court at Indianapolis, Oct. 4. The complaint was made in the bill that the jitney-bus drivers were operating without any license, permit or other form of regulation, unlawfully competing with the street railway lines in Terre Haute and depriving them of revenues to which they were entitled under franchise rights.

Attorneys for the jitney drivers sought to have the bill dismissed on the grounds of insufficiency and because it was multifarious, but this was refused by the court. In their opening argument they contended that while the jitney bus was a common carrier, and, as a common carrier, subject to regulation, they denied that a franchise was necessary to operate over the highways. They contended that the State had the necessary police powers of regulation over all common carriers, and that the operation of any common carrier, whether under franchise or not, was subject to such regulative authority.

Judge Anderson stated that he believed the question to be decided by the court was whether the jitneys had the right to operate over the streets of Terre Haute, and if they had this right, whether in the present case they were operating unlawfully. If they were operating in an unlawful manner as charged in the bill, even if they were operating under a franchise ordinance granted by the city, he could restrain them.

Counsel for the plaintiff read affidavits to the effect that the jitneys stood in an unbroken line along Wabash Avenue, Terre Haute, preventing ingress or egress from the sidewalk to the cars in the center of the street; that the jitneys ran in front of the cars which had stopped for passengers waiting for the cars; that the lives of citizens were endangered by the reckless running of jitneys. James M. Gossom, Mayor of Terre Haute, also made affidavit that the merchants along Wabash Avenue had complained that the jitneys were interfering with their business by blocking the street along the curb. The Mayor's affidavit stated that orders had been given that a space of 20 ft. should be left between jitney buses, and that he thought some regulation was necessary. Newspaper editorials and articles were introduced by the plaintiff to show that the central labor union and other bodies had agreed to combine and by concerted action divert travel from the street cars to the jitneys.

Ferdinand Winter, attorney for the plaintiff, sought to show that the right to take tolls and use the public highways for private gain was a franchise, and that the State could not grant a franchise unless some consideration was given, either in the way of an obligation to perform service under specified conditions or in some other form. He stated that the appeal of the company to the Public Service Commission of Indiana some months ago had been denied because the commission did not consider that under the utility act it had jurisdiction over the jitneys, but suggested the company might seek remedy in the courts.

Attorneys for the defence argued that the fare charged by the jitney was an agreed fare for a service rendered by the owner of the automobile and was not a toll for the use of the highway, and was no more subject to franchise conditions than the transfer of a person's household goods over a highway.

Judge Anderson, in summing up the case, stated that the plaintiff had not conclusively shown that there was a physical interference with the operation of its cars. He did not believe that the evidence introduced showed what would be termed a boycott of the street railway lines. The court could not shut its eyes to the fact that there were differences between the company and organizers of labor. There was a combination to "not help the company," but as the court understood the case, that combination had not been shown to be unlawful. The judge stated that the matter devolved upon whether the court had the right to enjoin the defendants because they were operating without a franchise, while the company has built tracks, operates cars, etc., under a

franchise and the payment of interest on its mortgage to the plaintiff was dependent upon its ability to collect fares on its cars. The court thought that the jitney-bus drivers should operate under a franchise or grant, but that was a matter which concerned the State, and if the State did not choose to impose such regulation it was not within the province of the court to do so. The judge stated, however, that he would take the matter under advisement, and asked the attorneys to leave their briefs pending the decision of the court.

LOCKPORT SWITCHING CASE DECIDED

New York Central and International Railway Ordered to Provide Switching Facilities at Lockport—Case Before Commission Since 1908

In an opinion by Commissioner Devoe P. Hodson, the Public Service Commission of the Second District of New York has decided the long-pending Lockport interchange case, and has ordered the New York Central Railroad and the International Railway to provide facilities for the switching of freight between the two roads in Lockport. This service must be put into effect on or before Oct. 15. The two railroads are permitted to prepare their own plans and enter into their own agreements, which must be submitted to the commission for approval, including a reasonable switching tariff for such service involved. If these agreements are not made and the service not put into effect before the date set, the commission will enter a final order compelling the performance of the work in detail.

This is the oldest case before the commission, having been filed in December, 1908, and it is the first time that the commission has ordered an interchange of freight between two railroads in the State. Commissioner Hodson ascribes the long delay in disposing of the case to the fact that a number of similar cases were pending in the courts and commissions of other States, and that a case parallel to this has only recently been decided by the United States Supreme Court.

Commissioner Hodson bases his opinion on three points: that the present service is unreasonably inadequate, inconvenient and expensive, as well as possibly discriminatory; that carriers are compelled under Sec. 35 of the public service commissions law to interchange freight and passengers, and that the commission has power, through Sec. 19 of the law, to enforce this requirement; and that neither the law nor an order to enforce it will be confiscatory following the just rendered decision of the United States Supreme Court in a similar case which came to it from the Michigan Railroad Commission.

The New York Central Railroad objected to the installation of interchange facilities at Lockport because it maintained that the interchange facilities between its lines and those of the Erie Railroad and the International Railway at Suspension Bridge, North Tonawanda, East Buffalo, Batavia, Attica and other points afforded proper facilities. The Erie Railroad and the International Railway, which leases the line of the Erie into Lockport, alleged that it was a condition of the lease between the two that no road other than the Erie should participate in freight originating on its line leased to the International Railway. Of this Commissioner Hodson says:

"A remarkable feature of this case appears to be that the city of Lockport, which is a municipality of considerable size and commercial importance, and contains more extensive manufacturing plants than are usually found in cities of its class, should be discriminated against by the railroad companies by denying to the industries of that city the same privileges for promptly shipping and receiving freight which other communities are afforded. * * * So far as the decision of the New York Central Railroad is concerned, Lockport cannot have any interchange of freight between that company and the Erie Railroad unless it avails itself of the privilege of going to North Tonawanda, Suspension Bridge, East Buffalo or Batavia for that purpose. While the International Railway, operating the Erie Railroad, denies the right of Lockport for interchange of freight from its line because, forsooth, it has an agreement with the Erie Railroad that no other road shall participate in business originating upon such leased line."

The opinion shows that when a car of freight arrives in Lockport on one road, consigned to a plant on the other road, the consignee must either unload and haul the contents privately across the city, or must allow the car to be hauled 14 miles back to North Tonawanda, there switched to the other road and hauled 14 miles again to his plant, subjecting him not only to this delay, but to a switching charge of upward of $30. The opinion says:

"The argument of the carriers that this practice is even reasonably good service is entirely without merit, especially in view of the fact that every opportunity for such interchange—just the same as is afforded at North Tonawanda at large expense of time and money—is at hand in Lockport. It has been shown in this case by an abundance of proof, and it stands uncontradicted, that there are several places in both the upper and lower parts of the city of Lockport where these two railroads could be joined by a switch, and where there are ample and sufficient opportunities to have sufficient storage tracks to hold all the cars which might be placed there at any one time for delivery from one road to the other, either of outgoing or incoming freight, and at an expense for construction and maintenance which would be insignificant in comparison to the advantages which would be gained by everybody concerned; and in procuring any one of these sites the city officials of Lockport and the commercial bodies of the city stand pledged to assist the railroads in the acquirement of necessary private property as well as the right to cross or use the streets.

Commissioner Hodson points out that there are at the present time plants in Lockport which enjoy practical interchange because they are located contiguous to both roads. Not only this, but in some cases the tracks of the two roads are physically connected at these plants and the steam locomotives of the New York Central Railroad and the electric locomotives of the International Railway haul cars over the same tracks to and from these plants. In this connection Commissioner Hodson said:

"It is difficult to find justification for a practice which guarantees every desirable facility of a public utility to a few shippers in a community and denies the same privileges to all others; besides, such course is in contravention of Sec. 32 of the public service commissions law, which prohibits unreasonable preference on the part of carriers."

Speaking of the unwillingness of the railroads to grant this interchange through fear that one or the other may gain an advantage not now existent in the handling of the Lockport business, Commissioner Hodson says:

"The underlying theory of the respondents as to their freight service in Lockport seems to be the maintenance of competition, while the complainants seek to invoke the more modern theory of regulation. * * * However this may be, it now becomes the duty of the commission, regardless of what has gone before, to make a declaration of the rights and obligations of both shippers and railroads with reference to these matters, and in such declaration to show, if possible, that the interests of the parties are mutual and not antagonistic; and if we can do that we have gone a long way toward proving the efficacy of regulation in the interest of the public and the carriers themselves.

"Both carriers seem to forget that they have no prescriptive right to the freight business at Lockport, but are only common carriers who may or may not be employed to transport such freight and that the shippers have something to say as to which railroad the business belongs."

Commenting on the fact that the clause in the International-Erie lease confining the International Railway switching to Erie business qualified by the phrase "unless required by law to do so," Mr. Hodson says:

"Apparently these contracting parties recognized the probability that necessity would some day arise for the switching freight cars from other lines than the Erie Railroad, and that the International Railway would be required to perform such additional service, when the clause above quoted was made a part of the contract. * * * The time has arrived when the law should require such special switching service to be extended and made general in accordance with the demands of the complainants. There cannot be any element of justice in a rule which permits the carriers to continue their present plan of freight interchange for the industries of Lockport."

NEW RULE ON GROUP FARES IN LOUISVILLE

Ever since the pay-as-you-enter system of collecting fares has been in vogue, the management of the Louisville (Ky.) Railway has been considering means by which it might be possible to eliminate chances of losses easily resulting through the practice of one person paying the fares for all members of a group that boards a car at the same time. In an effort to reduce the chances of loss the company has posted the following notice in its cars and elsewhere:

"IMPORTANT—To save time and prevent mistakes, persons paying fare for others will board car first and deposit fare, indicating to conductor those following for whom fares have been paid."

The newspapers took the matter up, and Samuel Riddle, superintendent of transportation, was quoted as follows:

"We have sixteen lines in Louisville, and we make 18,000 half trips daily. Now suppose we lose an average of one fare on each trip. That is 18,000 nickels, or a total of $400. Three hundred and sixty-five times $400 equals $146,000 a year. Now the corporation which protects its revenue makes the investments of its stockholders safe. Hence the rule."

In response to queries as to whether the man should climb aboard first, leaving his wife to get on as best she could Mr. Riddle suggested that this was not necessary; that she might wait on the platform for him or he could follow close behind and so not cause any delay or crowding. In this connection he was reported to have said:

"We are not aiming at the time-honored custom of men helping women aboard, but we are simply requesting the co-operation of our patrons in eliminating disputes between conductors and passengers and delays resulting therefrom and in keeping the company on a sound business basis in order to give everybody his money's worth."

"Near Side" Stop in Albany.—The United Traction Company, Albany, N. Y., has announced that it will put the "near side" stop in effect on its lines in Albany on Nov. 1.

Accidents Reduced in Dallas.—Accidents on the Dallas (Tex.) Consolidated Electric Street Railway for the last twelve months have decreased 41.2 per cent over the preceding year. This gratifying result is attributed directly to the carefully planned safety-first campaign. Among the more radical changes incident to this campaign is the adoption of platform doors and folding steps.

Louisville Public Thanked.—Cards are being displayed in all of the cars of the Louisville (Ky.) Railway expressing the appreciation of the company for the co-operation given by the public during the year just passed in the way of preventing accidents. During the first year the safety-first movement was in effect not a death resulted from injuries in which the company's cars were involved, while accidents were reduced by one-half or better..

One-Man Car Service Upheld by Court.—Justice L. E. Wagelin at Belleville, Ill., has decided that the City Council of that city had no right to compel the company to place two men on all city cars operated by the East St. Louis & Suburban Railroad. The justice held that all such matters of the operation should be settled by the Public Utility Commission rather than be passed upon by the Councils of the various cities of the State. The city has announced an appeal.

"Near Side" Stop and One-Man Cars in Spokane.—C. S. MacCalla, general manager of the Washington Water Power Company, Spokane, Wash., states that when the new cars of the company designed for front entrance are placed in general use the "near side" stop will be adopted exclusively. Where traffic conditions permit, the new cars will be operated as one-man cars. On the Cannon and the North Division Street routes, two stub lines, which connect with through lines, the company has already installed the one-man system.

Schedule of Increased Fares Filed.—Schedules providing for the establishment of a 6-cent fare unit on the entire system have been filed by David A. Belden, president of the Massachusetts Northeastern Street Railway, Haverhill, Mass., at the offices of the Massachusetts and New Hampshire Public Service Commissions and the Interstate Commerce Commission. Minor changes in fare zones are also contemplated. The company operates in the Merrimac Valley cities and towns of Massachusetts, in southern New Hampshire and along the coast of Massachusetts and New Hampshire, and is closely affiliated with the central station interests of Portsmouth, N. H., where the main generating plant of the system is located.

Trenton Fare Case Before Court.—The United States District Court heard argument on Oct. 4, on the application made to it for an injunction to restrain the Board of Public Utility Commissioners of New Jersey and the city of Trenton from interfering with the elimination by the Trenton & Mercer County Traction Corporation of its six-for-a-quarter tickets. The decision of the court has not been announced. The hearing under the order adopted by the Board of Public Utility Commissioners suspending the increased rates, which had been continued until Oct. 5, was continued on Oct. 5 until Oct. 19, without the submission of testimony. This continuance was ordered because of the proceedings pending before the United States Court.

At-Your-Service Car in Seattle.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., at the suggestion of A. L. Valentine, superintendent of public utilities of the city, has installed a short car line, which will be continued in operation until the completion of the Fremont Avenue Bridge. Patrons who require the service of the car press a button at either terminus of the line, and the car hurries to the waiting passenger. Signs "Push the Button if You Want a Street Car" are posted at the Stone Way Bridge and the Fremont Avenue Bridge. The car that furnishes this personal service operates on Westlake Avenue North, between Stone Way and Fremont Avenue, a distance of about ten blocks. The car seats about thirty-two passengers. The motorman collects the fares, issues transfers and dispenses information regarding the schedules of the connecting cars.

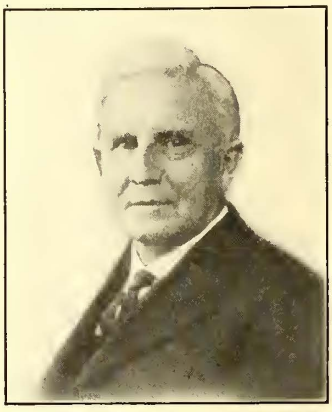
Toronto Car Order Entered.—The Toronto (Ont.) Railway must proceed with the construction of twenty-five cars upon the plan recently tried out on College Street of cross-seats on one side and a longitudinal seat on the other. The company got its orders on Oct. 1 from the Ontario Railway & Municipal Board following a conference between the board and the city and company representatives. The decision of the board was opposed by R. J. Fleming, manager of the company, who declared that the company was being asked to spend a large sum of money for converting its cars at a time when traffic was falling off and many cars were idle in the carhouses. Commissioner of Works Harris thought that the present was the most suitable time for putting on the new type cars, since traffic would be heavier during the winter time. The order requires the company to have the twenty-five cars in service by Dec. 1.

What the Public Leaves Behind It.—The Glasgow (Scotland) Corporation Tramway has tabulated in its recent pamphlet report the articles left behind in the cars for the years ended May 31, 1914, and May 31, 1915, by thoughtless passengers. The articles are classified under twenty heads, namely, umbrellas, parcels, bags, purses, baskets, gloves, books, parcels of clothing, sums of money, keys, walking sticks, boxes, tools, jewelry, spectacles, furs, coats and waterproofs, music, watches and miscellaneous. The total number of articles found in the cars for the year ended May 31, 1915, was 31,287 as compared with 32,766 for the previous year. Of these totals 16,813 articles were claimed in 1915 against 16,599 claimed in 1914, while 14,474 remained unclaimed in 1915 as compared with 16,167 unclaimed in 1914. Naturally the umbrella leads. In 1915 4776 umbrellas were left behind as compared with 4665 in 1914. It seems almost incredible but 605 sums of money were left behind in 1915 as compared with 743 in 1914. In 1915 thirty-eight people were so careless as to leave watches behind while in 1914 forty-eight people left their watches on the cars. The figures are faily consistent for the several months of the year except for the seasonable articles such as furs and coats and waterproofs, which naturally predominate in the winter months.

NEW PRESIDENTS OF THE ASSOCIATIONS

Brief biographical sketches and portraits are appended of Mr. Charles L. Henry, the newly elected president of the American Electric Railway Association; Mr. H. A. Nicholl of the Traffic & Transportation Association; Mr. George Carson, of the Claims Association; Mr. John Lindall, of the Engineering Association; Mr. Thomas Finigan, of the Manufacturers' Association, and a biography of Mr. T. P. Kilfoyle, of the Accountants' Association.

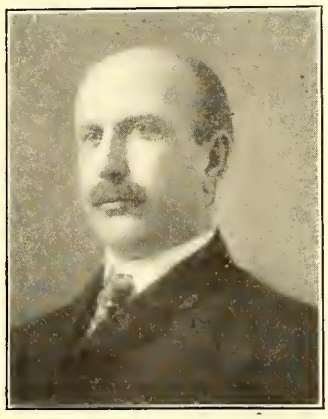
Mr. Charles L. Henry, the newly elected president of the American Electric Railway Association, has been for twenty-five years a leading figure in the development of the extensive system of interurban lines radiating in all directions from Indianapolis, the success of which exercised a tremendous influence in encouraging the construction of long electric interurban lines elsewhere. Mr. Henry is credited with having originated the term "interurban railway," which was coined and applied to the new lines at Indianapolis soon after their operation began. This venture, it may be said, was the beginning of the now famous Union Traction Company of Indiana, which was formed in 1899 to combine the several electric railways that had sprung into being following the success of Mr. Henry's pioneer line from Anderson to Alexandria Subsequently, as general manager of this company, Mr. Henry constructed the lines from Muncie to Indianapolis, forming the backbone of the system as it exists to-day. Several years ago, however, he disposed of his interest in the company to form the Indianapolis & Cincinnati Traction Company, notable as one of the earliest successful single-phase systems in the country, as well as for a number of innovations along technical lines that have been brought to perfection through their adoption by the railway of which Mr. Henry is president and general manager. In spite of receiving an education for the legal profession Mr. Henry has shown keen judgment in engineering matters. He was graduated from the law school of Indiana University in 1872, when he was twenty-three years of age, and he practised law in Pendleton, Ind., and Anderson, Ind., until he began his connection with the street railway industry nineteen years later. During this period he served for four years in the Indiana State Senate, subsequently being elected for two terms as a Representative in Congress. It was not until 1891 that he became actively interested in railway matters, his first venture being the purchase of the horse car line in Anderson which he electrified soon afterward. Ever since his entry into the industry Mr. Henry has taken a prominent part in electric railway association work, being president of the Central Electric Railway Association at the present time and having served as vice-president of the American Association since 1911. All of Mr. Henry's activities during his long and successful career have centered in or about Indiana, his native State, but his every instinct is that of the pioneer who avoids the beaten trails. Of his personality perhaps its best characterization, in the opinion of his many friends, is that contained in a testimonial presented to him at the last convention by his fellow members of the National Joint Committee on the Joint Use of Poles. It said: "Charles Lewis Henry, loved by us all for his unfailing delightful personality, consummate tact, nice discernment and ready power of appreciating and doing that which is required, is hereby elected to the degree of engineer of good will."



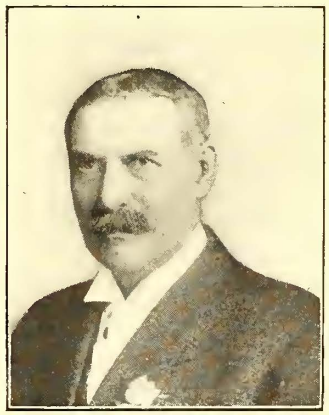
C. L. HENRY

Mr. H. A. Nicholl, who was elected president of the American Electric Railway Transportation & Traffic Association, is general manager of the Union Traction Company of Indiana, Anderson, Ind., which embraces more than 400 miles of line. Mr. Nicholl has been engaged in electric railway work for a number of years, but derived his earlier railroad experience with steam roads. After completing schooling he became connected with the construction engineering corps of the Chicago & Northwestern Railway and later served with the operating department as baggageman. Subsequently he became successively assistant secretary and treasurer of the Natchez, Jackson & Columbus Railway and station agent of the Louisville, New Orleans & Texas Railway, both of which now form part of the Illinois Central Railroad; and finally, served in the Illinois Central Railroad's general freight department at Chicago. Mr. Nicholl began electric railway work as superintendent of the North Chattanooga Street Railway and Chattanooga & North Side Railway, Chattanooga, Tenn., and was later made vice-president and general manager. He subsequently became associated with the Rochester (N. Y.) Railway as superintendent of power and purchasing agent, and at the same time was superintendent of construction of the Rochester & Sodus Bay Railway. After this time he served successively in the following positions: general manager of the Taunton (Mass.) Street Railway; general manager and treasurer of the Ithaca Street Railway and Brush-Swan Electric Light Company, Ithaca, N. Y.; general manager Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio. Since April 15, 1905, Mr. Nicholl has been general manager of the Union Traction Company of Indiana.

Mr. George Carson, the new president of the American Electric Railway Claims Association, is claim agent of the Puget Sound Traction, Light & Power Company, Seattle, Wash. Mr. Carson was born in Ireland. He arrived in New York City when seventeen years old and secured employment as a horse-car conductor. In 1883 he became a conductor with the old Chicago West Division Railway and was advanced rapidly, filling in succession the positions of conductor, receiving clerk, carhouse foreman, division superintendent and claims adjuster of the company. While attached to the claims department of the Chicago West Division Railway he studied law and was graduated in 1891 from the Chicago College of Law, the Law Department of Lake Forest University. He was admitted to the Bar and practised law in Chicago from 1891 to 1893. Mr. Carson went to the Pacific Coast in the latter year and from that date until 1900 was employed almost continuously in the law and claims department of the Southern Pacific Company and the old Market Street Railway, San Francisco. The latter company controlled nearly all the street railway lines in San Francisco at that time. For a year and a half prior to 1900 he had supervision of all the damage suit litigation for both companies. In 1900 Mr. Carson went to Nome, Alaska, and took an active part in the mining litigation going on there at that time. In October, 1901, he entered the service of the Seattle (Wash.) Electric Company as a conductor. He was promoted the following March to the position of inspector of the old Pine Street carhouse in charge of operation of all of what was known as the downtown lines, comprising about three-fourths of the system at that time. He continued in



H. A. NICHOLL



GEORGE CARSON

charge of operation of different divisions of the company until May, 1908. He was then promoted to his present position as claim agent of the company. In 1908 Mr. Carson was admitted to practice as an attorney in Washington. He was one of the organizers of the Pacific Claim Agents' Association, formed in Portland, Ore., in 1909, and served as president of that association 1912-1913. Mr. Carson is the originator of safety committee organizations as applied to electric roads, organizing the first safety committees in 1911. He has been chairman of the central safety committee of the Puget Sound Traction, Light & Power Company since the organization of the safety committees. In 1912 he was one of the organizers of the Pacific Claim Agents' Index Bureau, in Los Angeles, and has been president of the bureau since 1913.

Mr. John Lindall, the newly elected president of the American Electric Railway Engineering Association, is superintendent of rolling stock and shops of the Boston (Mass.) Elevated Railway. Mr. Lindall entered the railway field as a conductor in June, 1889, with the West End Street Railway, Boston. He served one year as conductor and two years as starter, during which time the horse cars were replaced by electric cars. In 1892 he was transferred to the mechanical department of the same company as a car repair man, serving on the different classes of such work until 1895, when he was appointed as carhouse foreman, which position he held in various carhouses of the company until

JOHN LINDALL

THOMAS FINIGAN

January, 1901, when, upon completion of the elevated lines by the Boston Elevated Railway, successor to the West End Street Railway, he was appointed general foreman of elevated shops, and given charge of the work of equipping cars for the elevated service and their mantenance after they had been put into service. In May, 1905, he was promoted to the position of assistant superintendent of motive power and machinery and given charge of both surface and elevated car equipment. In October of the same year he was again promoted to the position of superintendent of motive power and machinery, in which position he was in charge of the company's power stations as well as rolling stock. Owing to the increase and extension of the work in this department, the power station work was separated from that of the rolling stock, and in December, 1907, Mr. Lindall received the title and position of superintendent of rolling stock and shops. During the installation and early development of the equipment for elevated and tunnel lines in Boston, many new and untried conditions were met in the then new branch of railway industry. In working out these problems, Mr. Lindall developed a genius for invention that has resulted in many improvements in car equipment. Mr. Lindall is a member of the American Electric Railway Association, New England Railroad Club, New England Street Railway Club, and American Institute of Electrical Engineers.

Mr. Thomas Finigan, who has been elected president of the American Electric Railway Manufacturers' Association, is vice-president of Pierson, Roeding & Company, San Francisco, representatives for manufacturers of street railway supplies, with branches in Los Angeles, Cal., Portland, Ore., and Seattle, Wash. Mr. Finigan entered the employ of the Consolidated Traction Company, Newark, N. J., now the Public Service Corporation, in 1898, and was advanced rapidly to the position of assistant master mechanic. He resigned from the company to become associated with the mechanical department of the United Railroads, San Francisco, in 1903. He took entire charge of the commissary department created by the United Railroads to meet the unusual conditions arising from the earthquake and fire of 1906 and the strike in 1907 when the company fed and cared for more than 2000 employees. In the latter part of 1907 he was appointed purchasing agent of the company and continued in that capacity until June, 1913, when he was elected an officer of Pierson, Roeding & Company. Mr. Finigan has served on various committees of the American Electric Railway Association and acted for a time as secretary for the Pacific Coast Electric Railway Association following its organization.

Mr. T. P. Kilfoyle, auditor of the Cleveland (Ohio) Railway, was elected president of the American Electric Railway Accountants' Association on Oct. 6. Mr. Kilfoyle has been first vice-president of the accountants' association for two terms, and has served in other years on the executive committee of the association. He has been auditor of the Cleveland Railway since March 1, 1910, and previous to that time was connected with the auditing department of the company for a number of years except during the short interval while the Cleveland Electric Railway was being operated by the Municipal Traction Company during the administration of former Mayor Tom L. Johnson. Prior to the time when he became connected with the Cleveland Railway, Mr. Kilfoyle was general auditor for the Warren Bicknell Company, Cleveland, Ohio, which operated the Cleveland, Lake Shore & South Bend Railway, the Youngstown & Ohio River Railway and the Springfield & Xenia Railway. Mr. Kilfoyle has been connected with the street and electric railway business for the last eighteen years. He was born in Cleveland on June 28, 1868.

Personal Mention

Mr. R. C. De Frees, formerly assistant engineer on the forces of the Interurban Railway, Des Moines, Iowa, has been appointed computer for the Interstate Commerce Commission, Division of Valuation, Karpen Building, in the city of Chicago.

Mr. Byron T. Burt, vice-president of the Rutland Railway, Light & Power Company, Rutland, Vt., has assumed the duties of general manager of that company in addition to the office of vice-president. Mr. Burt was formerly general manager of the Chattanooga River & Power Company, with headquarters at Chattanooga, Tenn.

Mr. Horace E. Andrews has withdrawn as a director of the Cleveland (Ohio) Railway. His resignation was accepted at the monthly meeting of the directors on Sept. 25. It is said that the resignation has been in the hands of Mr. J. J. Stanley, president of the company, for several weeks. He retired because he is now a permanent resident of New York and therefore is unable to take an active part in the company's affairs. Mr. Andrews first became interested in street railway affairs in Cleveland when he was made a director of the Broadway & Newburg Railway in 1886. He served in this capacity until the organization of the Cleveland Electric Railway in 1893. For many years he was president of that company. His part in the franchise negotiations with the city of Cleveland during the Johnson administrations forms an interetsing chapter in street railway history.

OBITUARY

Gustave C. Kuhlman, founder of the G. C. Kuhlman Car Company, Cleveland, Ohio, died at his home in that city on Sept. 4, after an illness of several months. The car manufacturing business of the Kuhlman Company was started in a small shop on St. Clair Avenue, Cleveland, in 1881. When electric power was introduced the business was expanded and the factory was moved to the old carhouse at Broadway and Aetna Road. Later on the shops at Collinwood were built. In 1503 Mr. Kuhlman sold his interests to The J. G. Brill Company. Since his retirement from the company Mr. Kuhlman has been the northern representative of the Martindale Mercantile Agency.

Construction News

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

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

RECENT INCORPORATIONS

***North Arkansas Utilities Company, Corning, Ark.**—Incorporated in Arkansas to construct and operate a power plant, railways, etc. Capital stock, $75,000. It is not contemplated to build a railway for possibly eighteen months. Incorporators: George A. Booser, C. L. Daniel, Elizabeth Morrison, H. B. Hays and Thomas Neely.

Torrington (Conn.) Traction Company.—Incorporated in Connecticut to construct a line between Torrington and Thomaston. Capital stock, $300,000. Officers: Hosea Mann, Torrington, president; Howard M. Guernsey, Thomaston, vice-president; E. M. Canfield, Hartford, secretary, and George B. Goodwin, Torrington, treasurer. [Jan. 2, '15.]

***Kinston (N. C.) Belt Line.**—Incorporated in North Carolina to construct a belt line of steam railroad around Kinston and an electric line through the city streets to carry both passengers and freight. Capital stock, $25,000. Incorporators: J. T. Deal, M. L. German, W. S. Spottswood and G. V. Cowper.

FRANCHISES

Los Angeles, Cal.—The Pacific Electric Railway has received a franchise from the Council to construct and operate a single-track line on certain portions of Figueroa Street, Denver Avenue, Hoover Street, Menlo Avenue and Vermont Avenue.

Belvidere, Ill.—A new franchise for the Elgin & Belvidere Electric Company has been passed by the Council of Belvidere. The city service in Belvidere is to be abandoned, and the tracks on West Lincoln Avenue and South State Street to Logan Avenue are to be taken up within thirteen months. The tracks on North State Street from the interurban line to Harrison Street and along the latter street are to remain if so desired by the company. Within two years the company must decide whether it will obtain property consents and a franchise from the city to extend the operation of the interurban line over North State Street and Harrison Avenue with the view of a possible interurban extension to Rockford.

Transcona, Man.—The Council has granted a twenty-five-year exclusive franchise to H. W. Adcock, Winnipeg, renewable for five years and at the end of every five years thereafter, reserving to itself the right to take over the line on terms to be fixed by the Public Utilities Commission. The franchise requires that work be started immediately, the line to the Winnipeg city boundary to be completed first and the lines set out in the schedule to be completed within two years.

Malden, Mass.—The Bay State Street Railway and the Boston Elevated Railway have asked the Council for a franchise to relocate their tracks on Salem Street from City Hall Square to Bryant Street. As each company owns one rail. two petitions were necessary.

Columbus, Ohio.—The East Linden Electric Railway has asked the Council for a franchise to construct two lines in Columbus. One line begins at Champion Avenue and Long Street and extends on Champion Avenue to the corporation line of Columbus. The other begins at Water Street and Spring Street and extends on Randolph Street, Front Street, Naghten Street and Grant Avenue to Grove Street.

Walkerville, Ont.—It is reported that a franchise proposed to be granted to the Sandwich, Windsor & Amherstburg Railway or its subsidiary, the Windsor & Tecumseh Electric Railway, for the construction of a belt line in Walkerville will be voted on at an early date.

Medford, Ore.—The Southern Oregon Traction Company has received permission from the Council to abandon its Siskiyou Heights extension and use the rails and wires on a line to be built down the Hillcrest Road, tapping the Highcroft, Laurelhurst and Queen Anne Additions. A franchise was also granted for the construction of a line down West Main Street. Work upon both projects will begin at once.

TRACK AND ROADWAY

Fort Smith Light & Traction Company, Fort Smith, Ark.—To end the differences which resulted in the Fort Smith Light & Traction Company abandoning the use of the Fort Smith-Van Buren bridge more than a year ago, the Fort Smith-Van Buren Bridge Commission has made the company three propositions. One calls for an intercity fare of 5 cents a passenger with ½ cent of each fare for the bridge district as bridge rental. Another purposes that the maximum fare be 10 cents, with one-half of each fare to go to the bridge district. The third proposition is for the company to pay $250,000 in cash for the use of the bridge.

***Melbourne, Ark.**—Surveys will soon be made for a proposed electric railway from Guion to Melbourne. A. C. Veach, Gravette, is interested.

Pacific Electric Railway, Los Angeles, Cal.—The Pacific Electric Railway, as a result of a conference which was held in the city hall, has agreed to discontinue its use of the Southern Pacific Company's tracks on Broadway at Alamitos Avenue. The company also agreed to install a new track before May 30, 1916.

Pacific Gas & Electric Company, Sacramento, Cal.—The Washington Improvement Club has appointed a committee to urge the Pacific Gas & Electric Company to construct a line between Washington and Sacramento. The proposed route extends over the M Street bridge through Washington to Riverbank.

Arkansas Valley Railway, Light & Power Company, Pueblo, Col.—Plans are being made by this company to construct a line from Pueblo to the State line through the Arkansas Valley in the near future.

Washington Railway & Electric Company, Washington, D. C.—Extension of the lines of the Washington Railway & Electric Company on New Hampshire Avenue to a point near the Eastern Star Home and thence by loop to the city through Takoma Park or Brookland, is urged by the Chillum Castle Heights Citizens' Association in a list of recommendations for public improvements filed with the Public Utilities Commission for consideration in connection with the preparation of the annual estimates.

Lewiston-Clarkson Transit Company, Lewiston, Idaho.—Plans are being made by this company to extend its line from Sixth and Sycamore Streets to Thirteenth Street and Hyland Avenue, Clarkston. $10,000 has been raised to pay for this extension.

Aurora, Mendota & Western Traction Company, Aurora, Ill.—Officials of this company have asked the Public Utilities Commission of Illinois for permission to increase its capital stock from $10,000 to $100,000 and also have applied for a certificate of convenience and necessity. At a hearing held before the commission in Chicago opposition to the issuance of the certificate was made by officials of the Aurora, Elgin & Chicago Railway, who told the commission that it would cost $1,000,000 to build to Mendota and that it would take all of the increased capital stock of $100,000 of the new line to build between Montgomery and Aurora. The company offered to grant the Aurora, Mendota & Western Traction Company all of its transportation facilities between Montgomery and Aurora upon terms to be made by the commission. [Aug. 21, '15.]

Jacksonville Railway & Light Company, Jacksonville, Ill.—In connection with paving being done, this company will relay its tracks on South Main Street from Morton Avenue to Michigan Avenue.

Lincoln Railway & Heating Company, Lincoln, Ill.—This company has just purchased ties and other material to repair its tracks on Eighth, Union and Seventeenth Streets, Lincoln.

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.—This company has just completed the construction of new track on State Boulevard from the St. Joe River to Anthony Boulevard.

***Goshen, Fort Wayne & Northern Interurban Railroad, Goshen, Ind.**—Plans are being made by this company to build a line through Albion if the proper franchises, rights-of-way and depot sites can be secured. The proposed main line of the road will extend from Goshen via Benton, Ligonier, Albion and Churubusco to Fort Wayne, with a

branch from Warsaw via Winona Lake, North Webster, Wolf Lake, Albion and Kendallville to Ashley-Hudson, another branch from Ligonier via Topeka to Lagrange and a branch from Columbia City via Collis, Churubusco, Huntertown and Leo to Grabill. Clarence E. Tasher, Goshen, is interested.

Tipton-Frankfort Traction Company, Tipton, Ind.—The interurban project from Tipton through Kempton to Frankfort has been revived and the holdings of franchises and right-of-way of Eugene Purtelle, who projected the line, have been acquired by a Chicago company. This company now wishes to dispose of them to parties actively interested in the building of the road. [March 22, '13.]

Tri-City Railway, Davenport, Iowa.—Operation was begun on Oct. 1 on this company's new Fourth Street Line, Moline, Ill. The route extends from the business district of Moline to Fourth Avenue and Fourth Street.

Keokuk-Jefferson City Electric Railway, Keokuk, Iowa.—A meeting was recently held in Shelbina to discuss the construction of this company's line from Keokuk to Jefferson City. A committee was appointed to solicit funds to defray the expense of having the line surveyed through Shelbina. H. W. Knight, Chicago, is interested. [Sept. 18, '15.]

Iowa City-Muscatine Interurban Railway, Muscatine, Iowa.—This company has removed its offices to larger and more commodious quarters in the Hershey Bank Building. Although it has been rumored that the negotiations which look forward to the company taking over the operation of the Montezuma branch of the Rock Island line have been concluded, A. D. Bowen, who is promoting the project, declared that no agreement has been signed up as yet. [May 29, '15.]

Salina (Kan.) Street Railway.—The differences between the city and this company have been settled and the material hauled away is being replaced. The company made application for a permit to build the track which was granted by the Mayor. No mention is made in either the permit or application of the new city ordinance to which objection was made. At the same time practically all provisions of the ordinance are to be complied with. There are to be double tracks from Ninth Street west to Thirteenth Street and then north to the Union Station. The only tracks on Bishop Street will be a double track from Thirteenth Street east for 150 ft.

Salina-Northern Railroad, Salina, Kan.—Plans are being considered for the extension of this company's line northwest from Osborne. It is reported that plans are under consideration for the connection of the Salina-Northern Railroad with the Arkansas Valley Interurban Railway, which is being extended to Salina. E. A. Tennis, Salina, is interested. [Sept. 18, '15.]

Brandon (Man.) Municipal Railway.—It is reported that this company's extension on Percy Street has been placed in operation and work will soon be begun on the extension along College Avenue and Eighteenth Street.

Detroit, Pontiac & Owosso Railway, Owosso, Mich.—The Michigan Railroad Commission has authorized a bond issue of $3,300,000 for the construction of this company's proposed line between Detroit and Owosso. It is asserted that the promoters have complied with all requirements of the commission. Plans are now being prepared by engineers for two routes into Pontiac, one of which will be chosen soon. Dr. Oliver H. Lau, Detroit, is interested. [July 24, '15.]

Hattiesburg (Miss.) Traction Company.—Citizens of Hattiesburg have filed a petition with the Mississippi Railroad Commission asking that the Hattiesburg Traction Company be forced to build an extension of its lines to the Women's College at Hattiesburg.

***McComb, Miss.**—It is reported that plans are being considered to construct an interurban railway from McComb to Summit, Fernwood and Magnolia, with a street railway in McComb. Guy M. Walker, New York, is interested.

United Railways, St. Louis, Mo.—When the grading of Taylor Avenue is completed this company will extend its Taylor Avenue line from its present terminus on Pope Avenue to Broadway, thus giving a connecting line between the extreme northern part of the city and Baden.

Moncton Tramways, Electricity & Gas Company, Moncton, N. B.—This company is laying 300 ft. of double track through the new subway on Main Street under the Intercolonial Railway. The special work for this double track has been ordered from the Canadian Steel Foundries, Ltd.

Morris County Traction Company, Morristown, N. J.—Hereafter, under an order of the Board of Public Utility Commissioners, this company will be required to operate its east-bound cars on the east-bound track and west-bound cars on the west-bound track on the Morris turnpike between Elizabeth and Springfield Junction. To facilitate this operation the board has ordered the company to construct a cross-over in Morris Avenue east of Main Street, in Springfield Township. There are two tracks, one on either side of the road in Morris turnpike, but the company has been operating most of its cars on the south-side tracks, thereby making it a single-track operation.

Monmouth County Electric Company, Red Bank, N. J.—The Board of Public Utility Commissioners has ordered this company to repair its tracks in Long Branch.

Buffalo, N. Y.—A contract has been awarded by the Tonawanda Board of Public Works to Louis P. Gipp, Buffalo, to remove the tracks of the defunct Tonawanda, North Main Street & Depew Railway in Young Street between Main and Delaware Streets at his bid of $1,346. The track paralleling it is owned by the International Railway and will be taken up by that company.

Long Island Railroad, New York, N. Y.—The Long Island Railroad has applied to the Public Service Commission for the First District of New York for permission to construct and operate a two-track extension from Flushing to Creedmoor, in the Borough of Queens, 5.4 miles. At present Creedmoor is reached by a branch extending from the main line of the Long Island Railroad diverging therefrom at Floral Park. By providing the proposed new line a more direct route from Manhattan to Creedmoor will be obtained, and in addition a rapidly growing section of Queens between Flushing and Creedmoor will be provided with railroad facilities. The commission will hold a hearing upon the application.

Hiawassee Valley Railway, Andrews, N. C.—The directors of this company have authorized the sale of $125,000 of bonds to complete the construction of its line from Andrews to Hayesville, 25 miles. S. E. Cover, Andrews, president. [April 24, '15.]

Alamance, Durham & Orange Railway & Electric Company, Burlington, N. C.—Chapel Hill and Bingham townships of Orange County have voted almost unanimously to issue bonds to aid in the construction of this company's line from Ossippee to Durham. Junius Harden, Burlington, president. [Aug. 21, '15.]

Piedmont & Northern Railway, Charlotte, N. C.—This company plans to construct an extension from its Gastonia line to Belmont.

Beaver, Meade & Englewood Railway, Beaver, Okla.—The Beaver Construction Company has received the contract for the completion of this company's proposed line from Forgan to Beaver. Grading has already been completed. The construction will include two small 14-ft. frame bridges on mud sills and one 350-ft. bridge on piling. L. A. Walten, engineer. [May 16, '14.]

Henryetta, Okla.—In addition to the proposed line from Henryetta to Dewar and Kusa it is planned to connect Henryetta with Rich Hill, Blackstone, Pleasant Valley and Coalton. James Liggett, Henryetta, may be able to give information; also the Board of Trade. [July 24, '15.]

Peterborough (Ont.) Radial Railway.—This company is reconstructing its track on Charlotte, Park and George Streets, rendered necessary by the city paving.

Trans-St. Mary's Traction Company, Sault Ste. Marie, Ont.—This company reports that it has rebuilt 4700 ft. of track. A concrete base with brick surface was used.

Northwestern Pennsylvania Railway, Meadville, Pa.—The State Water Supply Commission has approved the application of the Northwestern Pennsylvania Railway to construct a bridge across the Rhulings Branch, 1 mile south of McKean and to construct a bridge across Walnut Creek near Kearsarge.

Montreal (Que.) Tramways.—This company has laid 2 miles of new track and has reconstructed about 15 miles of single track on various streets in Montreal. It is contemplating the reconstruction of 3 miles of track. The company has placed an order in the United States for 1500 tons of 115-462 girder rail.

Dallas (Tex.) Southwestern Traction Company.—A survey has been begun of the right-of-way of this company's line from Glen Rose to Stephenville, which is the terminus of the line. E. P. Turner, Gaston Building, Dallas, president. [Aug. 21, '15.]

Three Rivers (Que.) Traction Company.—It is reported that this company has constructed 3.5 miles of track in Three Rivers and overhead work is now being put up. It is expected that this line will be placed in operation before the end of the year. Very little progress has been made in the construction of the suburban line, owing to the terms which the municipality asks for a franchise. [June 5, '15.]

Gray's Harbor Railway & Light Company, Aberdeen, Wash.—Street car service between Aberdeen and Cosmopolis has been resumed. The cars will not cross the West Bridge, but will stop on both sides. While officials of the company say that such service is operated at a loss, continual requests that it be established has led to the service being resumed.

SHOPS AND BUILDINGS

Humboldt Transit Company, Eureka, Cal.—The Humboldt Transit Company has filed with the California Railroad Commission an application for authority to issue and pledge eight first mortgage 5 per cent sinking fund thirty-year gold bonds to William Butterworth as collateral security for a loan of $4,000 at 5 per cent for a year or less, the money to be used to purchase a site of a carhouse in Eureka.

Ottumwa Railway & Light Company, Ottumwa, Iowa.—Construction has been begun on the three-story Leighton & McNett Building, the greater part of which will contain the new offices of the Ottumwa Railway & Light Company. The building formerly occupied was destroyed by fire.

Southwestern Light, Power & Railway, Oklahoma City, Okla.—The Arbuckle Construction & Improvement Company has received a contract from this company to construct repair shops at Arbuckle and a power station at Davis.

Toronto (Ont.) Suburban Street Railway.—Work will soon be begun on the construction of a carhouse and substation for the use of the new Toronto-Guelph extension of this company. The estimated cost is $10,000.

POWER HOUSES AND SUBSTATIONS

Ottumwa Railway & Light Company, Ottumwa, Iowa.—This company, under the supervision of the engineering department of H. M. Byllesby & Company, is increasing its power station capacity by the installation of a 200-kw., engine-driven generator. Improvements are also being made in the boiler room.

Public Service Electric Company, Newark, N. J.—This company has ordered from the Westinghouse Electric & Manufacturing Company one 1083-kva. 60-cycle, high-tension, 11,000-volt three-phase; low-tension, 2600-volt two-phase, air blast type duplex transformers; four 48-kva., single-phase, 60-cycle, 2400-volt, 10 per cent regulation induction regulators; and two 24-kva. 60-cycle, 2400-volt, single-phase, 10 per cent regulation O. I. S. C. induction regulators.

Interborough Rapid Transit Company, New York, N. Y.—This company has ordered from the General Electric Company six 4000-kw. rotary converters with three-phase transformers. This apparatus is for two new substations. Three of the converters will be installed in substation No. 45, White Plains Road, and three in substation No. 26, Jackson Avenue.

Salt Lake & Utah Railroad, Salt Lake City, Utah.—The Interurban Construction Company has placed an order with the Westinghouse Electric & Manufacturing Company for the Salt Lake & Utah Railroad for three 250-kw., 750-volt, d.c. rotary converters for series operation on 1500-volt circuit, three-phase, 60-cycle, 1200-r.p.m. compound-wound a.c. self-starting, together with three 150-kva., 44,000-volt, single-phase, 60-cycle, O. I. S. C. transformers with triple secondaries, and complete switching equipment for same.

Manufactures and Supplies

ROLLING STOCK

Buffalo & Lake Erie Traction Company, Buffalo, N. Y., has issued specifications for ten new double-truck cars.

Washington Water Power Company, Spokane, Wash., has placed in service a new double-truck, one-man car, equipped with smoking compartment.

Wilmington & Philadelphia Traction Company, Wilmington, Del., noted in the ELECTRIC RAILWAY JOURNAL as expecting to purchase twenty-five new cars, has ordered this equipment from The J. G. Brill Company.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., ordered from the Cincinnati Car Company last week three 50-ft., center-entrance, all-steel interurban cars, fitted with Westinghouse motors and equipment and air brakes.

Toronto (Ont.) Railway has been ordered by the Ontario Railway & Municipal Board to proceed with the construction of twenty-five cars with cross-seats on one side and longitudinal seats on the other, as noted elsewhere in this issue.

TRADE NOTES

Midvale Steel Company, Philadelphia, Pa., at a meeting of its board of directors on Oct. 4 elected A. C. Dinkey president to succeed William E. Corey, who acted as president temporarily for a week. Mr. Dinkey for several years has been president of the Carnegie Steel Company, a subsidiary of the United States Steel Corporation.

H. W. Johns-Manville Company, New York, N. Y., is exhibiting at the Electrical Show in New York City the latest designs of three lighting systems for which this company is sole agent: the I. P. Frink system of scientifically diffused reflective illumination; the Mitchell Vance artistic lighting fixtures and bronzes, and Gill Brothers "Parian Ware," the beautifully molded translucent ware used in semi-indirect lighting.

E. I. du Pont de Nemours & Company of Delaware, Wilmington, Del., has taken over the property and business of the E. I. du Pont de Nemours Powder Company of New Jersey. The new company assumes all liabilities of the old company, except capital stock and funded debt, and will carry out all contracts of the old company, there being no change in the personnel of the management, operations or methods of handling the business. It will issue capital stock to the amount of $120,000,000.

Northern Equipment Company, Erie, Pa., has issued catalogs describing and illustrating the Copes boiler-feed regulators. One catalog quotes the 1913 report of the committee on power generation, which shows the desirability of this method of feed control because it "enables peak loads of short duration to be carried with a more uniform working of the furnace, as sudden demands for steam will cause a fall in the water level without a corresponding increase in the rate of feed." One of the catalogs among other things contains charts descriptive of successful regulator tests in the power plant of the Boston (Mass.) Elevated Railway.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received the following awards at the Panama-Pacific International Exposition: Grand Prize for its exhibit of the Pennsylvania Railroad electric locomotive; Medal of Honor for a.c. and d.c. industrial motors and control apparatus, precision instruments, Le Blanc condensers, and on high voltage oil switches; Gold Medal for a number of different classes of apparatus, among which are steam turbines, a.c and d.c. generators and railway motors, transformers, rectifiers, starting, lighting and ignition systems, switchboards and accessories, and mining locomotives; Gold Medal for the most complete and attractive installation in the Palace of Transportation.

McDonald-Gibson Automatic Train Control, Inc., New York, N. Y., has secured patents on an automatic train-stop and speed-control system, the operation of which will not permit a train to approach within two sections of another train, wreck or any obstruction that will form a circuit by touching both rails. An important feature claimed

for the system is that it is not affected by weather conditions because the only operating mechanism is a relay switch of the standard railroad type. The general principle of the system is that sections of the d.c. third-rail, or trolley-contact wire, are fed with alternating current which is sectionalized by impedance loads placed at the end of the conductor sections. If the track ahead is occupied or obstructed the a.c. circuit in the section to be protected is de-energized through the operation of a system of relays, thus de-energizing a coil which controls an air-brake valve on the train and applying the brakes. If speed control is desired each relay switch governing the a.c. circuit may be equipped with an ordinary time-element device. William Gibson is president of the company, D. M. McDonald is secretary and treasurer, and J. C. McDonald is vice-president. The offices of the company are located at 391 East 149th Street, Bronx, N. Y.

Esterline Company, Indianapolis, Ind., manufacturer of "Golden Glow" railway headlights, delivered headlight equipment to the following railways during the month of September: Eastern Pennsylvania Railways; Argenta Inter-City Terminal Railway; Cincinnati Car Company for new cars of the Charleston Consolidated Railway & Light Company; Hot Springs (Ark.) Street Railway; Metropolitan Street Railway, Kansas City, Mo.; West Helena Consolidated Company, Helena, Ark.; Washington Water Power Company; Chicago & Joliet Electric Railway; Scranton (Pa.) Railway; Chicago, Lake Shore & South Bend Railway; Granite City Railway; East St. Louis & Suburban Railway; Ogdensburg (N. Y.) Street Railway; Tarentum, Brackenridge & Butler Street Railway; United Railroads of San Francisco; Seattle, Renton & Southern Railway; Windsor. Essex & Lake Shore Rapid Railway; Charleston-Isle of Palms Railway; Detroit United Railway; Roanoke Railway & Electric Company; Des Moines (Iowa) City Railway; Sioux City Service Company; Denver (Col.) Tramways; Mahoning & Shenango Railway & Light Company; East St. Louis, Columbia & Waterloo Railway; United Railways of St. Louis; New Bedford & Onset Street Railway; Bryan & College Interurban Railway; Lehigh Valley Transit Company; Iowa Railway & Light Company; Springfield (Mo.) Traction Company; Toledo, Bowling Green & Southern Traction Company; Virginia Railway & Power Company.

Midvale Steel & Ordinance Company, organized in Delaware with an authorized capital stock of $100,000,000, divided into 2,000,000 shares of only one class of the par value of $50 each, has contracted for the purchase of all of the capital stock of Worth Brothers Company, a Pennsylvania corporation, and for all the property and business of the Pennsylvania copartnership trading as the Coatesville Rolling Mill Company; also for somewhat more than 89 per cent of the capital stock of the Midvale Steel Company of Pennsylvania and for all the capital stock of the Remington Arms Company of Delaware. The directors of the Midvale Steel & Ordinance Company are: William E. Corey, Albert H. Wiggin, Samuel F. Pryor, Ambrose Monell, Frank A. Vanderlip, Alva C. Dinkey, Samuel M. Vauclain, William P. Barba, Percy A. Rockefeller, Charles H. Sabin, M. H. Dodge and F. W. Allen. Officers are: president, W. E. Corey; vice-president, A. C. Dinkey; secretary and treasurer, W. B. Dickson.

ADVERTISING LITERATURE

Walter A. Zelnicker Supply Company, St. Louis, Mo., has issued folder No. 180 on its second-hand railway equipment.

Hauck Manufacturing Company, Brooklyn, N. Y., has issued a folder which illustrates various effective applications of the Hauck burners in machine shops and for bending rails and making steel car repairs.

Ohio Brass Company, Mansfield, Ohio, has issued a sheet describing its Type J milling machine for bonding. It is stated that on one road recently an average was obtained by this machine of 149 joints per day for eighteen consecutive days.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued, as an appropriate guide or souvenir book for visitors to the International Exposition at San Francisco, an illustrated booklet containing large and stunning views of all the well-known natural wonders of the West, such as the Grand Canyon of Arizona, Yosemite Valley, Canadian Rockies, Mounts Hood, Ranier and Shasta and other beautiful scenes. The booklet also contains photographs of buildings and other architectural details of the Exposition.

S. K. F. Ball Bearing Company, New York, N. Y., has issued a catalog describing and illustrating the uses of its self-aligning ball-bearing hangers for belt and chain drive shafting. The catalog reproduces a chart which demonstrates, from laboratory tests, the saving of power effected by these self-aligning ball bearings over ring oiled babbitted bearings. The booklet also discusses the advantages claimed for the self-aligning ball bearing hangers, in enabling the use of a smaller motor, as regards lubricant saving, cleanliness and reduced fire hazard, and as compared with roller bearings.

Trussed Concrete Steel Company, Youngstown, Ohio, has issued a catalog illustrating the uses of the Kahn building products for railroad structures. In the field of reinforced concrete these products include all types of reinforcement suitable for all structures, from the smaller culvert to the largest viaduct or building. They also include Hy-rib, metal lath and steed stud construction, United States steel sash, and Kahn pressed steel construction. As shown by a large number of illustrations in the catalog, these products are used by the New York & Boston Railway, Philadelphia (Pa.) Rapid Transit Company, Los Angeles (Cal.) Railway, Omaha & Council Bluffs Street Railway, Louisville Railway, Chicago Railways, Portland Railway, Light & Power Company, Portland, Ore., and Richmond & Chesapeake Bay Railway. Another catalog issued by this company describes the Kahn expanded metal mesh for reinforcing concrete when applied to floors and roofs, roads and pavements, sewers and conduits, tanks and walls, and culverts and bridges.

NEW PUBLICATIONS

Department of Commerce, Bureau of Standards, has issued technologic paper No. 48, entitled "An Air Analyzer for Determining the Fineness of Cement," prepared by J. C. Pearson, assistant physicist, and W. H. Sligh, aid in the Bureau of Standards. This paper discusses the various methods employed in the mechanical analysis of cement and describes the development of a new form of air analyzer for this purpose.

The Law of Electricity. By Arthur F. Curtis. Matthew Bender & Company, 26 John Street, New York, N. Y. 1119 pages. Buckram, $7.50.

This is a complete modern work upon a subject of law that has shown enormous expansion during the last decade. Where formerly few decisions existed, now there are hundreds of reported cases that disclose well-defined rules of electrical law covering the powers, duties and liabilities of electric companies. Mr. Curtis' book is especially valuable because one-half of the decisions relating to electrical law have been reported since the publication of the last preceding textbook. The present work covers such topics as electrolysis, electrical injuries, electrical contracts, interference with currents, injuries to appliances, street railways, municipal ownership, master and servant doctrine, etc. Decisions of courts in the United States, England and Canada are cited.

Financial Developments in South American Countries. By William H. Lough. Bureau of Foreign and Domestic Commerce, Department of Commerce. 40 pages. 5 cents.

This reviews in about forty pages the situation as regards the currency, the money market, the principal banks and the general condition of business in Argentina, Bolivia, Brazil, Chile, Peru and Uruguay, during the last two or three years. Especial emphasis is placed on the results of the European war and the measures taken by the various governments, financial institutions and commercial communities to meet the situation thus created. There is also much up-to-date information with regard to the present state of affairs in South America as to credit extension, government finances, currency conversion, emergency measures and prospective changes and reforms.

The author is William H. Lough, vice-president of the Alexander Hamilton Institute, New York, N. Y., who has recently made a trip through the countries treated. The publication is to be had from the Superintendent of Documents, Government Printing Office, Washington, D. C.