

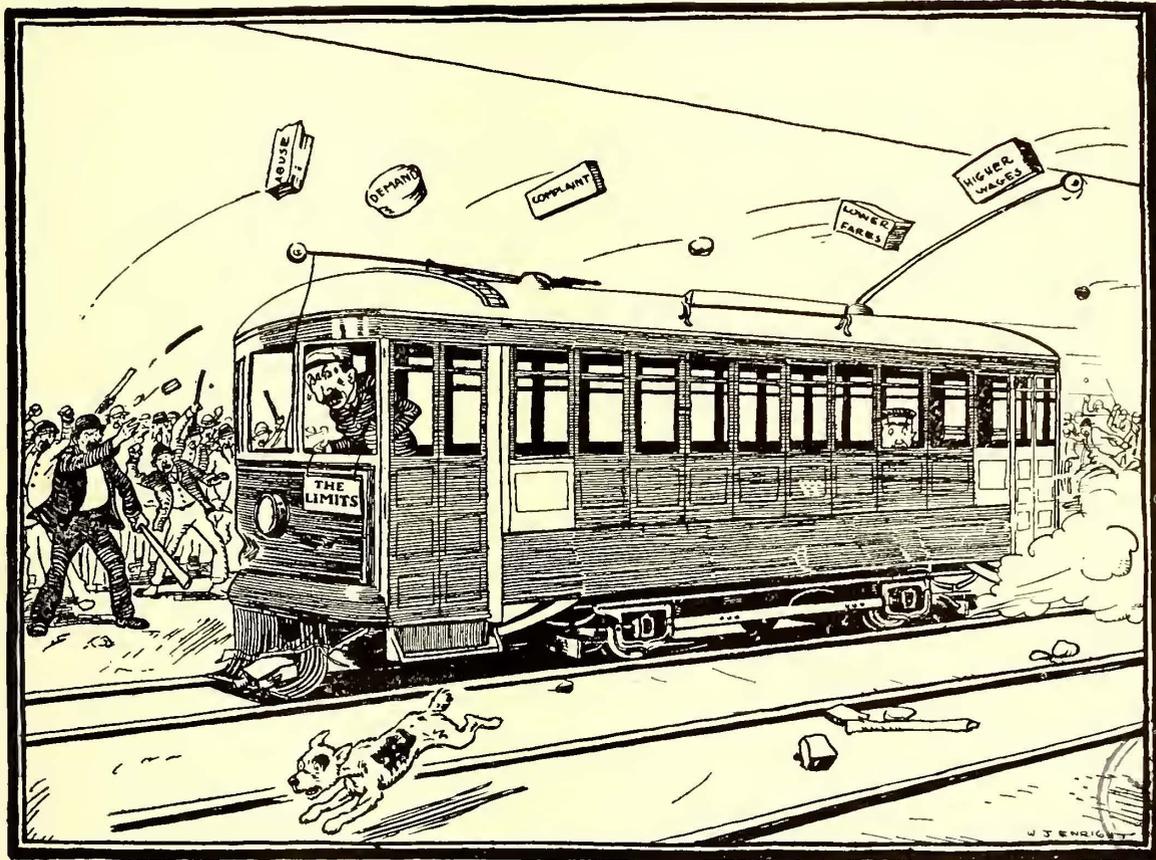
# Electric Railway Journal

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THE ONLY TIME NOT TO START A PUBLICITY CAMPAIGN

## What Is the Best Time for a Publicity Campaign?

Almost everybody agrees that publicity is the best policy.

Two questions remain: When? How?

The best time for publicity is NOW and all the time hereafter.

The only time not to start a publicity campaign is when the air is full of bricks thrown by citizens, officials, politicians and strikers.

Corporation publicity is not an umbrella for a sudden thunder shower.

It is a permanent shelter from misunderstanding, unreasonable attack, unfair dealing; and permanent shelters are not built in a day.

Think over the publicity campaigns you know about. Nine out of ten have been started in a crisis.

For years armor plate manufacturers allowed to exist unchallenged the belief that armor—some of it blow-holed—was being foisted upon the government by a little coterie of greedy manufacturers at enormously profitable prices.

These manufacturers waited until the Senate had passed a bill to establish a government armor plant and not until then did they start to show that their armor had been good, had been sold on a small margin of profit, at a lower price than any other

government pays, and would be sold in the future for less than it would cost the government to make it.

Do not make the Bethlehem (Pa.) mistake; follow rather the example of Rehoboam of Bethlehem in Judea, who "fortified the strongholds and put Captains in them, and store of victual, and of oil and wine."

For if you are a public service corporation there is a prospective crisis of some kind staring you in the face.

It may be labeled "Franchise Renewal," "Labor Trouble" or "Service-at-less-than-Cost," but it is there in the road ahead.

Publicity is preparedness against these specters.

Publicity is a short name for a big, broad policy of day by day, in season and out of season, keeping the public well informed as to facts, the knowledge of which will create belief and confidence in your honesty, good intention and good-as-can-be performance.

Confidence cannot be created in a day; it can only be created by consistent and persistent education.

The time for publicity, then, is like the need for it, and that is all the time.

## CONVENTION OF THE AMERICAN ASSOCIATION

The thirty-fifth convention of the American Electric Railway Association ended yesterday and compares well with any of those which have preceded it. Atlantic City always brings out a large attendance, and the convention this year was no exception to that rule. The final figures of attendance had not been compiled at the time this page went to press, but the tentative figures indicated a considerably larger number of persons present than at the 1914 convention, the last previous one in Atlantic City. The exhibits, although less numerous than hitherto, were good in quality and especially interesting. Perhaps the absence of a special exhibit last year added to the interest with which the exhibits were viewed.

The speakers on the program of the American Association consisted of Colonel Baker and Captain Wilson, who spoke on preparedness at the meeting on Tuesday; Ivy L. Lee, who presented an address on publicity on Wednesday, and the historical talks on Thursday. We have not included in this list the excellent paper by Mr. Kealy on valuation, that being really a part of the report of the committee on valuation. Of these addresses, the one most closely related to the internal affairs of the companies was that by Mr. Lee, and we hope that his straightforward treatment of the subject of publicity will be of help in shaping the future policy of both the individual companies and the association on this important subject. There is no mystery about modern methods of publicity, as we have pointed out many times in these columns, and as we are showing in the series of cartoons now being published in this paper. But if effective results are to be secured those who are endeavoring to secure publicity must be in thorough sympathy with both the idea of publicity and the manner of living which makes such a policy effective. We wish that the association, which is the logical body through which the local companies should co-operate in their individual campaigns, would do more to help the local companies in this regard.

A notable feature of the American Association committee reports was the report presented by Mr. Mortimer in behalf of the sub-committee on social relations of the committee on public relations. Owing to length of this report it is impossible to print it in this issue, but it will be published next week. It shows what can be done for the industry by assiduous work, and it can well serve as a model next year for all the other sub-committees of the committee on public relations as well as for the main committee. Public relations are generally recognized as being the most important subject before the association. Proper attention to this matter is the foundation of the fare question and the franchise question because unless the authorities and the public understand the problems of the railways improvement in their condition is almost hopeless. In our opinion the time has come for serious realization of this situation. The public relations committee must do much more than it has in the past if it expects support from the industry. It should cease to mark time and should lead in this important matter.

## PROGRAMS OF THE AFFILIATED ASSOCIATIONS

As the Atlantic City convention closed but yesterday, it is difficult to view it in true perspective at such close range. However, it is possible to indicate a few high points in the proceedings of the affiliated associations which are significant of current tendencies in the work of these associations.

The engineers seemed most concerned with the promulgation of standard specifications for materials and manufactured products. A great deal of money and a much greater deal of time, as measured in terms of money, have been expended in producing an imposing array of standards. At the present time the standards seem to be getting ahead of the industry, and the pressing problem before the Engineering Association is to secure a wider adoption of them. The association may well pause in the development of new standards, as it proposes to do, and study the adaptation of the present standard to operating conditions, as well as try to educate the industry in the economical adaptation of the standards to its requirements. It is easier to understand the present condition when one considers the enthusiasm, assiduity and thoroughness with which the compilation of the *Engineering Manual* has proceeded.

The Transportation & Traffic Association has been undergoing a heart-searching process during the meeting just closed which is very creditable to it, especially in view of its present and past achievements. This association has problems which are, perhaps, the most difficult of all to solve. In contemplating the magnitude of its field the Association has undertaken ambitious researches. In these much has been accomplished. However, as the Association frankly says, the problems have been so large that it has been difficult to obtain definite solutions or to affix the "Q. E. D." at the end. As one T. & T. official said to the writer, at the convention, "Our problems are very intangible, and therefore difficult of solution. We can well envy the engineers, who seem to be able to proceed from premises to conclusions. Mathematics doesn't help the transportation men much."

The Claims Association meeting this year illustrated the fact that the legal aspects of claim work are rapidly becoming subordinate to the larger phases of accident reduction. The claim agent has no reason to apologize for his existence. Humanitarianism comes within his ken as well as the making of a just settlement. He is perfectly willing, on behalf of his company, to acknowledge fault in case of accident, if such exists. He wants justice for the present, and knowledge of how to avoid a repetition of the accident for the future. If we gage the situation correctly, these were the underlying principles of this year's association program. The Accountants' Association meetings are discussed in the next column.

The convention is over, and we hope that the managements of our electric railway properties will realize the importance of having their subordinates assimilate the fruits of this convention and lend a hand in carrying out the plans which are being formulated.

## FACTS—AND THE WIDER VISION

Running through all the varied papers presented before the Accountants' Association this week was the idea that actual facts are needed for the solving of many electric railway problems. The efficient ascertainment and collation of facts through the use of an expert statistician, the thoroughly consistent use of facts instead of mere opinions in going value and other valuation matters, the frank presentation of facts to the public on franchise, investment and operating points—all these were among the matters touched upon at the several meetings.

Utility accountants are accustomed to dealing with facts, but those officials who in general determine public relations policies do not all rigidly adhere to facts in their publicity work. Too often argument and opinion take the place of actual data, or debatable theory the place of indisputable actuality. Moreover, the public often acts through prejudice, distrust or mistaken opinions about utilities. Such, of course, should not be so in either case. As Professor King stated, the modern utility and the public both have duties that are by no means antagonistic. On the one hand, the utility should present at all times facts and facts alone; on the other, the public should base its judgments on facts and nothing but facts. In no other way will the public relations of utilities show the desired improvement.

The association this year showed commendable progressiveness in the desire to secure criticisms from outside experts capable of analyzing its work in an unprejudiced way. There seemed to be, however, a tinge of disappointment when one speaker touched upon what he deemed to be inconsistencies and fallacies in commission accounting regulations, thus indirectly hitting at some of the provisions of the electric railway classification of accounts. We are not in accord with some of his criticisms, but, leaving this aside, we wish that the accountants had met more directly the points at issue.

The standard classification of accounts, without doubt, represents the laudable achievement of men trained by actual experience as to the needs of the industry, and changes in it should be made only after a most considerate examination of their worth. On the other hand, it will doubtless be susceptible of at least slight modifications under the laws of progress, and it is quite possible that with his wider vision the certified public accountant may in time see fundamentals underlying all industry to which the electric railway classification should be brought more closely in accord. Whether the future may bring actual changes or not, however, it is vitally necessary that the members of the Accountants' Association continue to hold an open mind on the subject, and that in mutually felicitating themselves as to past accomplishments they do not neglect to consider with all seriousness the best in modern accounting, wherever developed or by whomsoever suggested. Blind worship of the past or a Pharisaeic attitude of superiority would only dim the luster of past accomplishments.

## MANUFACTURERS IN THE ASSOCIATION

Although progress was made at Atlantic City this week in determining the future status of the manufacturers in the American Electric Railway Association much remains to be done. The Manufacturers' Association will be continued, and this we consider a wise move if for no other reason than that it provides a medium through which the manufacturers may exchange views as regards matters which come up in association work of special moment to them as a group. Later it may seem wise for the Manufacturers' Association to apply for an affiliated association charter, although such a charter necessarily would have to be quite different from those of the existing affiliated associations, as the purposes of the Manufacturers' Association are different from those of the present affiliated associations.

It has also been decided that manufacturers' representatives will be eligible for appointment upon any of the committees of the parent and affiliated associations where the services of such representatives would be of value to the industry and that the manufacturers as a whole will be represented by five members on the executive committee of the parent association. As this committee has consisted hitherto of nine members, this will mean that the committee will be increased to fourteen and that the representation of the manufacturers will be more than one-third of the whole. In this connection it might be said that the aggregate amount of dues paid by the manufacturing companies for the ten months' period of the association ended Aug. 31, 1916, the period shown in the secretary-treasurer's last report, were about 11½ per cent of the aggregate of those paid by the railway companies. But last year was a half year for the manufacturers, and with a full year and the same membership the dues would amount to practically 23 per cent. If the rent of exhibit space is added, it would make an additional 26 per cent, while the money contributed through advertising in *Aera* would add another 25 per cent of the annual dues of the railway companies during the last fiscal period. The total of these contributions then would be 75 per cent of the dues of the railway members, if we assume the same membership this year as last year.

We do not quote these figures as an argument for a larger representation of the manufacturers on the executive committee now because we realize that the representation need not be exactly proportioned according to the funds paid into the association's treasury and also because we realize that many details of the organization still remain to be worked out. Indeed, this is one of the principal duties of the incoming executive committee. We believe, however, that certain main principles should be recognized in this reorganization. One of these principles is that member companies, both railways and manufacturers, are on the same basis so far as privileges and responsibilities of office are concerned. The association is no longer one of railway men alone, and while it may seem strange for manufacturers to be eligible for the vice-presidencies or the presidency of the association we see no alternative if the member companies are to be equal in every respect.

# Achievements and Prospects\*

A Review of the Activities of the Association During the Past Year—Effects of the European War on the Electric Railway Industry

By CHARLES L. HENRY

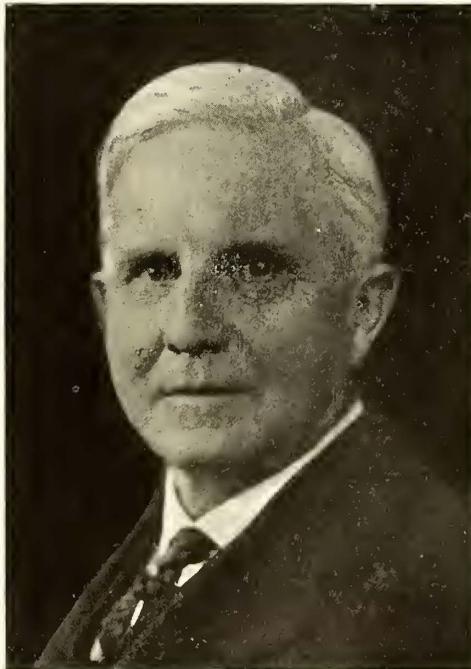
President Indianapolis Cincinnati Traction Company, Indianapolis, Indiana,  
and of the American Electric Railway Association

*Mr. Henry began his speech with a reference to the meeting last year in the Far West and spoke of the impressions made on those who took the trip, of the marvelous electric railway transportation systems inspected, the royal entertainment provided to the delegates, and the pleasure of the many meetings with friends, old and new. Taking up the problems of the industry he continued as follows:*

THE twelve months' cycle now ending is one that will be long remembered. The great European war, in which there are now fourteen countries involved and which has been in progress more than two years, still continues with unabated fury. So wonderful and far-reaching has been the influence of this war that the United States not only has not escaped from its influence, but, on the contrary, every channel of business, all the industries of the country, all the people of the country—bankers, tradesmen, manufacturers, workmen and farmers—all to a greater or lesser extent have been and are vitally affected. Many of our manufacturing industries are crowded by the production of war munitions and other war supplies. Exports of the products of our factories and farms, furnished to the nations at war, have in turn brought back a stream of gold into the pockets of the American producers. The profits arising from this export business, occasioned by this unusual and extraordinary demand from across the sea, have been such as to intoxicate the American people, and spreading out from the business centers, into almost every channel of trade and into every community throughout the land, there has developed a feverish, unnatural and unhealthy condition, until the American people have almost lost their moorings.

Prices of all commodities, products of the farm and workshop, have increased to such an extent as could not have been anticipated in a country not in actual war; speculation of all kinds has been stimulated, and a quiet people, who have heretofore always been content with ordinary business conditions, have been carried away into the whirlpool; usual every-day business has become insipid, and nothing in a business way that

does not promise quick returns and immense profits seems to satisfy their desires. Employment under ordinary conditions and at even reasonably advanced wages is by the workmen looked upon with contempt. In order to secure the necessary workmen in factories producing war supplies bringing enormous profits, wages have been abnormally advanced and workmen have been enticed thereby from their ordinary avocations. The whole industrial body has become restless and dissatisfied, demanding increased wages, sometimes justified, but in many cases wholly without the bounds of reason. This very naturally has been accompanied by a decreased interest in the work, and altogether there have been created conditions which make it impossible for an ordinary business to be conducted in a successful and profitable manner.



From the injurious effects of this general condition our industry has not escaped. The cost of all supplies for maintenance of our properties has been greatly increased; it has been necessary to increase the wages of employees in order to hold them and to help them, as far as at all possible, to meet the advanced cost of living with which they have been brought face to face; taxes have been made higher because of reckless appropriations and expenditures by legislative bodies and public officials, this being always incident to such conditions as now surround us. From all these we suffer and are not able in turn to increase the price of what we have to sell. Almost all other lines of industry, when the cost of production increases, can save themselves from the effects thereof by increasing the price of their product. The prices we receive for transportation of passengers, freight and express are fixed by ordinance, by law or by the regulations of some commission. Between the increased cost of production on the one hand, and no increase of compensation on the other, many

\*Abstract of address of the president of the American Electric Railway Association delivered on Oct. 10, 1916, before the convention in session at Atlantic City, N. J.

of our companies have suffered almost to the point of utter destruction.

Even in communities where, by reason of the stimulated business conditions, there has been a great increase in the number of passengers carried, the increase in income has been greatly, if not entirely, offset by the increased cost of operation.

#### CONDITIONS TO BE MET AFTER WAR

When the European war will close; whether we ourselves may not yet be drawn into it; or what may be the final effects upon our business conditions, are all matters of speculation, about which none of us can possibly speak with anything like certainty. This much we do know, however, that even if the war comes to an end in the near future, its baneful effects upon our business and industrial life will remain with us as a curse for many future months, if indeed it does not remain in perpetuity to injure and hamper us in many devious ways. Only after many years can we at all hope that the people will again be satisfied with ordinary business conditions such as they were accustomed to before the war, and during all of those years our industry, like others, will suffer from the conditions born of the war.

In the European countries, now being devastated, there is being forced upon their people, by reason of the demands growing out of the war, the most wonderful industrial efficiency that the world has ever seen. May we be permitted to hope that this country will not stand idly by and suffer the serious effects of the keen competition which this foreign efficiency is sure to bring, but will use every means possible not only to protect our home markets but to build up our own industrial efficiency to its highest point, so as to equal, if not surpass, the industrial efficiency of our European competitors. If this hope can be realized, we may see such a development in a business and industrial way within this country as has not heretofore been dreamed of. If this is done, we shall attract to our shores many people from the better portion of the population of foreign countries, who will be anxious to escape from the destructive taxation sure to follow the war, and we shall become a greater nation than ever contemplated by the wildest imaginations of our most enthusiastic citizens. It is to the future growth and development of the country that we must look for the curing and overcoming of evils coming to us as a result of the European war.

Surrounded, as we have been, by many discouragements during the past year, this association has gone steadily forward working for the industry it represents, holding what ground it could and advancing wherever

possible, and has made a record for the year of which it may well feel proud.

#### MEMBERSHIP OF MANUFACTURERS

As an outgrowth of a recommendation made by President Allen at the San Francisco convention, the association, last February, at the mid-winter meeting in Chicago, changed its constitution so as to admit to full membership in the association companies and individuals engaged in the manufacture and sale of electric railway supplies. For a number of years past the American Electric Railway Manufacturers' Association, composed of manufacturers and sellers of electric railway supplies, had done active and efficient work in connection with this association

in providing for and taking care of the exhibits and the entertainments at the annual meetings of the association and in many other ways aiding in the work in which we were engaged, but until the amendments to the constitution referred to were made, we did not have these people as members of this association, meeting with us around the council board, discussing and helping to shape the policies of the association, and uniting their efforts with the railway members in the committee work and other activities of the association. Today, as a result of these amendments, for the first time in the history of the association, we have seated with us, as full-fledged members, men engaged in the manufacture and sale of electric railway supplies. This increased membership has brought and will bring to us greatly increased strength and efficiency. The wisdom of the change has been strongly shown by the ready and enthusiastic work which has been done by the various committees largely composed of manufacturers. To whom was entrusted the arrangements for the ex-

hibits at this convention, and by whom the various entertainment features have been provided. No more prompt and effective work has been done by any committees of the association during the past year, and this week you are the favored beneficiaries of this work.

The association committee on company membership consisted originally of railway men only, because when it was appointed the membership of the association was limited to railway men. To this committee there was added a like number of manufacturers, and they at once entered upon the work intrusted to them and have exhibited great efficiency therein. The success of the convention proper, the wonderful exhibits prepared for our inspection and the heretofore unsurpassed program of entertainments, all attest the enthusiastic spirit with which our enlarged membership has taken hold of the work. Recently, when it was found necessary to send

### Getting at the Root of the Labor and Wage Problem

*In his presidential address at Atlantic City this week President Charles L. Henry made the following trenchant suggestions:*

**T**HE companies engaged in the electric railway business are quasi public corporations doing for the state and people a work delegated to them. They stand in an entirely different position from manufacturing and other strictly private business enterprises. A dispute or disagreement about wages or conditions of labor should never be allowed to develop into such a state as to interfere with the operation of these properties because, if for no other reason, this is an injury to the public from which the companies have received their commissions to construct and operate their properties.

What is needed is that there shall be a duly authorized public body to which either party feeling aggrieved may apply for relief and have the matter fairly determined without a resort to a strike or a lock-out.

There should also be legal inhibition of all strikes and lock-outs on public service properties.

If the cause of such strikes and lock-outs is removed, there is no reason remaining which will justify either a strike or a lock-out.

Let us, as representatives of this great electric railway industry, take a stand in favor of a just and orderly solution of these problems and we shall in so doing not only do a good thing for our employees and ourselves but also for the great public which we serve.

out a hurry-up call to the members of the association to assist in securing the exemption of electric railways from the provisions of the threatened so-called eight-hour law, recommended by President Wilson, the manufacturing members quickly responded to the call with the same enthusiasm shown by railway members.

The work of amalgamation of the railway and manufacturer members has been but commenced and the complete amalgamation can be brought about only in the course of time. I have no definite recommendation to make at this time except to say that the manufacturers must be represented eventually on the executive committee. There is no constitutional provision at present by which they can officially be members of this committee, but I suggest that this meeting of the association elect two from among the manufacturer members who can sit *ad interim* with the executive committee and aid with their advice.

#### NECESSITY OF CONCERTED ACTION

At no time in the history of the association has the need of its work been better exemplified than during the recent months. The growth of the nation's population, accompanied by the increased magnitude, multiplied numbers and diversification of its industrial and business interests, has created such a condition as makes it impossible for any business or industrial interests to make themselves heard or felt in matters of legislation and administration, whether national, state or municipal, unless they are grouped together in a compact, organized form, thus being able to present promptly and effectively their views on any matter in which they are interested. Nor is it possible that they can in any other way exert the necessary and proper influence upon the public at large which will bring about a clear understanding of controverted matters and cause the people to see, as they should, the questions under consideration. "United we stand, divided we fall," is truer to-day than ever before.

Our association, as the organized representative of the electric railway interests of America, in this day of organizations, stands out strongly and has been and is doing more effective work than any other similar organization with which I am acquainted. The form of its organization and plan for carrying on its work commends itself more and more, year by year, for its efficiency and the results attained. Learning from the experience of legislative and other bodies, it has adopted the plan of doing through committees much of its work which requires careful investigation and study. Following this plan, not only the American Association itself, but also its four affiliated associations have from time to time constituted committees to consider and report upon matters of special interest as well as those questions which are more constant in the attention which they require. This organization and this plan of work make it possible to take up and give proper attention to any question in which the industry is interested, and to develop plans for the benefit of the various member companies.

#### PROGRESS DURING THE YEAR

During the past year the work has been carried forward by various committees on some of the most pressing subjects, among which I may name that of valuation, electrolysis, overhead construction, public relations, operation of motor vehicles, compensation for carrying United States mail, insurance and taxation, and on most of these much progress has been made. During the year a number of questions have come up before Congress and the Interstate Commerce Commission in which we were interested, and the manner in

which they have been handled by the association, through its federal relations committee, is a marked illustration of what can be accomplished by intelligent, painstaking and united effort. Only a few weeks ago we were suddenly apprised that the President would recommend to Congress the passage of the so-called eight-hour law for interstate carriers. At once it was evident that there was great danger that electric railways doing interstate business might, very disastrously to them, be included in the provisions of such a bill, and as but few days remained of the session of Congress, whatever action was taken would be quickly taken and without very much consideration. The association, led by its committee on federal relations, at once took up the question and succeeded in getting the electric railways of the country exempted from the provisions of the bill. How close a call we had you will understand when I tell you that the bill, which finally became a law, when introduced in the House, did in its general terms include such electric railways, and it was only through the influence of this association, exerted as stated, that an amendment exempting them was secured on the floor of the House.

#### LAST MID-YEAR CONFERENCE

The mid-year conference of the association, held in February at the city of Chicago, in respect to the attendance, the spirit manifested, the program produced, and the work accomplished, was perhaps the best mid-winter conference the association has ever held. A large number of members and invited guests were seated at the dinner given at the Congress Hotel and were addressed by speakers of prominence, to the very great interest of all present. Senator Underwood of Alabama did the association the honor of being present at the dinner, and delivered a very interesting, valuable and instructive address. These mid-winter conferences are constantly increasing in their value and benefit to the association, and those of you who have not been attending them should in the future avail yourselves of the privilege.

#### BUREAU OF INFORMATION

The bureau of information, maintained at the headquarters of the association, has been of great and far-reaching benefit. It has usually been able, on request by various companies, to supply promptly desired information on every phase of the electric railway industry. It is at all times provided with a vast amount of valuable information on operating and other questions collected from the member companies. If the information requested is not available and on file at the time, special investigations are conducted and the information secured with a minimum of delay. Many companies more and more avail themselves of this service, which costs them nothing except the dues which they pay as association members.

#### PROBLEMS OF PUBLIC RELATIONS

There is no part of our work but in some manner brings us in contact with the public. The very nature of our business is such that we constantly, at every turn, deal with some portion of the public, either directly or through their official representatives. Congress, the Interstate Commerce Commission, State legislatures and public service commissions, city and town governmental bodies, all have to do with matters regulating our business and are all to a great extent influenced by the attitude of the citizens themselves. Passengers riding on our cars, shippers of freight and express, damage claimants, trespassers on our rights-of-way, travelers on the public highways where our

tracks are laid, are all parts of the great public, and with all of these we must deal. The people at large are interested in the kind of service we give and are always ready to complain of what is wrong, if even sometimes slow to praise what is right. If we are unjustly taxed, it is usually because the great body of citizens, either from want of knowledge on the subject or on account of prejudice, thinks we should be thus taxed. In case of labor trouble, the attitude of the public is of the greatest importance. Indeed, it would be difficult to point to anything connected with our business which does not bring us in some way to deal with the public. How great is the importance, therefore, of our public relations is perfectly evident to all of us, and all of us have, with more or less success or failure, been using our best endeavors to smooth out whatever difficulties arise between our various companies and the public we serve. The *ELECTRIC RAILWAY JOURNAL* and *Electric Traction*, as well as the *Aera*, our association magazine, have given great and constant attention to these matters, and much valuable work has been done by them. The association, through its committee on public relations, has in successive years been considering some of the greater questions lying within this field, and while they have not accomplished as much as they desire, they have made substantial progress along several important lines. The best thought that can be brought to bear on these questions should be devoted to their study, to the end that we may discover and put into use and operation the most desirable plans for bettering our situation in relation to the public.

#### VALUE OF COMPANY SECTIONS

The development of the company section movement in the association still continues very promising. During the year a number of new company sections have been organized, and the interest in the old as well as the new sections has been increasing. Nothing in the work of the association gives better promise than the enlargement and development of this movement. It was my privilege during the year to visit a number of the company sections and address them at their meetings. This gave me an opportunity to study better than I ever had been able to do before the work of the movement, and with this increased knowledge of the work I wish to impress urgently upon you the desirability of the organization of company sections among the men of your various companies. By becoming members of a company section, they receive direct the *Aera*, and get various other benefits, but the greatest advantage perhaps is that they feel that they are actually personally members of this association and, therefore, take greater interest in its work.

*Aera*, during the four years of its publication, has been growing steadily stronger in the work which it is doing and constantly gaining from the association members a higher appreciation of its usefulness and benefit to them and all interested in the industry. As was expressed very clearly in an article in the magazine by the president of the Transportation & Traffic Association, this magazine gives us a "convention all the year round," as it forms a medium of communication between association members on any and every subject relating to the industry. It now occupies a position from which it is having a valuable influence directly upon the public mind as well as through the medium of other publications influenced by it throughout the country. The cost of its publication has been somewhat increased during the past year, more especially on account of the advanced price of paper, but even with this it is remarkable that so good a publication has been issued without greater expenditure. You will be pleased to know that the receipts from advertise-

ments during the past year have been increasing constantly, and the margin between the amount received from advertisements and the total cost of the publication is growing smaller and smaller. The indications are that, in the not distant future, the publication of the magazine will cease to be any financial burden to the association.

You will no doubt listen with great interest to and be pleased with the report of the advisory committee having charge of this publication. Its work has been constant and painstaking, and the association is justly proud and appreciative of its success.

#### AS TO CARRYING OF MAIL

There is one matter which, year after year, has occasioned a great deal of work and much anxiety on the part of our committee having the subject in charge. I refer to the compensation paid to electric railways for carrying United States mail. As shown by the report of the committee at this convention, the last Congress cut down the amount of the former appropriation for carrying of mail by electric railways within cities. In addition to this, the compensation paid interurban electric railways for the carrying of United States mail is not and never has been reasonable, even as compared with the compensation paid steam railroads. There seems never to have been a clear understanding in the Post Office Department of the value of the service rendered by electric railways in the carrying of mail. It will be necessary to do some very active and efficient work in connection with this matter if the electric railways are to be fairly treated, and I request your hearty co-operation in these matters. As illustrative of the situation regarding mail service by interurban roads, let me read to you a letter from Vice-President Collins of the Michigan United Traction Company, stating fully a case in point:

Referring further to our conversation with regard to the compensation received for carrying United States mail, beg to advise that while we were operating the Michigan Railway Company as a steam road between Augusta (called Gull Lake Junction) and Allegan, we were paid on a weight basis and received for this service compensation of \$2,232.01 per annum, service being six round trips per week, and the distance between Gull Lake Junction and Allegan 34.81 miles, which would figure per annum 21,791.06 miles, making the receipts per mile carried of 10.24 cents. However, we did not carry the mail from Gull Lake Junction to Allegan, but carried it from Gull Lake Junction to Monteth, a distance of 21.91 miles. This later was changed from Gull Lake Junction to Doster, a distance of 14.45 miles. The compensation received for this service was \$2,232.01 per annum, the same as though the mail was carried through to Allegan.

However, when electric operation was put into effect on this division, notice was received from the Postal Department that we were to carry the mail two round trips daily except Sundays between Gull Lake Junction and Doster, a distance of 14.45 miles, for which service a compensation of \$542.74 per annum was to be paid, making the receipts per mile carried of 3 cents. In other words, in place of paying \$2,232.01 per annum for this service they are now only paying \$542.74, and we are making two round trips daily instead of one. The electric railway, therefore, is furnishing additional service, and receiving for the same \$1,689.27 per annum less.

#### WORK OF COMMITTEES AND ASSOCIATIONS

Our four affiliated associations have been doing great work. The programs for the various meetings which they will have during this convention make it desirable that you should all attend such of the meetings as possible, and by so doing you will become fully advised of the valuable work that these associations are doing.

The report of the committees of the American Association, and also of the affiliated associations, are full of interest and should be carefully read by every one interested in the work of the association. It would not

be wise for me to undertake to give a synopsis of any of these reports; they should be read in full and carefully studied in all their bearings.

In this connection I want to call your attention to a matter deserving your most earnest consideration. As I have indicated, a very great part of the work of the American Association and of its affiliated associations is, and must necessarily be, done by committees, and this work is of the very greatest importance to the association and to the industry. It cannot be properly attended to and the desired results secured unless members accepting appointments on the committees attend the meetings of the committees and otherwise give the necessary attention to the work in hand. This we know will require some sacrifice and some trouble, but they should make this necessary sacrifice and go to this necessary trouble, and give their best efforts to the work. I especially appeal to the management of the various member companies that they urge such of their people as may be committee members to give to the work of the committees the proper time and attention. This, in many cases, has not been done, and the association work has correspondingly suffered.

#### CO-OPERATION OF THE TECHNICAL PRESS

As the years have come and gone the association and the industry have had in the *ELECTRIC RAILWAY JOURNAL* and *Electric Traction* staunch and constant friends and forceful supporters, and to them we owe, and all feel, a heavy debt of gratitude. It is pleasant to know that the companies publishing these magazines were among the first to become full-fledged members of the association under the amended membership provisions adopted last winter. The owners of these publications and their staffs of able assistants have always been vigilant, every-day friends of the association. By their counsel and advice, as well as by their public advocacy, they have been many times of the very greatest help.

#### ASSISTING THE WAR DEPARTMENT

Within the last few months the word "preparedness" has been worn almost threadbare and has been made to cover some of the most foolish suggestions before the American people. The first general use of the word was, however, the outgrowth of the loyal and patriotic feeling of the nation that the present European war was a warning to us which should be heeded; that we should see to it that we did not allow ourselves to remain in a helpless condition not able to make proper defense in case of attack by any outside power. Some, yes, many things, have been accomplished looking to this which give great promise for the future, even though along with them other things have been done which are serious elements of weakness. It is our duty, as a part of this great people, to do our proper share of the work necessary to see that our nation is prepared to protect itself against all comers. During the past year a committee was appointed, with General Harries as chairman, to co-operate with the War Department in laying plans for help by electric railways in the defense of the country in case of war, and this committee has been at work along these lines with indeed very satisfactory results. In to-day's program a place has been given to the consideration of our duty in the general work of preparedness.

#### LABOR AND WAGES

With the recent war prosperity there has come renewed and intense wage and labor agitation with the usual resulting bitter controversies and strikes. The conditions have in many instances reached an unbearable stage, so much so that now, more than ever before, the people at large have become aroused and alarmed,

as the very foundations of society seem threatened. The result is that the best thinkers among our patriotic citizens are seeking for a remedy that shall avert the threatened evil results.

The companies engaged in the electric railway industry are quasi-public corporations doing for the State and people a work delegated to them. They stand in an entirely different position from manufacturing and other strictly private business enterprises. A dispute or disagreement about wages or conditions of labor should never be allowed to develop into such a state or condition as to interfere with the operation of these properties because, if for no other reason, this is an injury to the public, from which the companies have received their commissions to construct and operate their properties.

In order to avoid the oft-threatened injury to the public two things are necessary. There must be as a first step a way provided whereby all controverted questions about wages and labor conditions, concerning which the immediate parties in interest cannot agree may be considered, determined and settled by some duly authorized public body that will carefully and conscientiously weigh all of the matters bearing upon the questions under controversy and in its decision do even and exact justice between the parties concerned, including the great body of the people. The old and usually resorted to system of arbitration does not meet the needs of the hour. Usually it is not resorted to until much of the damage to the public, the companies and the employees is already done; and when resorted to the decision of the arbitrators is frequently unsatisfactory to all parties because it is not always based upon the exact principle of justice and right which in such matters as well as all others should ever prevail.

What is needed is that there shall be a duly authorized public body to which either party feeling aggrieved may apply for relief and have the matter fairly determined without a resort to a strike, or a lockout. Both employer and employee I know will hesitate to yield this point but such a procedure is necessary for the proper and orderly conduct of the business on which the people so much depend, and the time has come and is now here when there should be agreement upon this point. In all cases in disagreement the parties opposed must finally yield to the decision of some other person or persons, unless the controversy is to be kept up to the point of destruction. Why not then willingly, assent to a plan whereby such an outside decision may be had in an orderly way and prevent all of the injuries which now result from the present situation?

The other point to be reached is a necessary result of the first, and that is that there should be legal inhibition of all strikes and lock-outs on public service properties. If the cause of such strikes and lock-outs is removed there is no reason remaining which will justify either a strike or a lock-out.

Let us as representatives of this great electric railway industry take our stand in favor of a just and orderly solution of these problems and we shall in so doing not only do a good thing for our employees and ourselves but also for the great public which we serve.

Three days from now I shall turn over to the new president, whom you will have then elected, the gavel which you placed in my hands one year ago at San Francisco, and this is the last time that I shall formally address you as your president. To say that I have appreciated highly the honor you conferred upon me and the confidence shown in me by choosing me as your presiding officer would be only a weak expression of my real feelings. This association represents an industry second to none in importance. The city electric railway

service and the interurban electric railway service are perhaps of more value to the people than any other single industry. It is a great honor to us, as an association, to represent this great industry, and I have felt the heavy weight of the responsibility resting upon me during the year while acting as your president.

#### LOOKING TOWARDS THE FUTURE

The future work of the association and its usefulness depend entirely upon the continued interest of its members and the efforts which they will put forth to carry forward the work. It already, in its membership, represents a very large per cent of the electric railway people of the country, but there are many companies, some large, but mostly small, which should be but are not members of the association. It is practically impossible to present the desirability of membership in the association to non-member companies otherwise than by personal conference and personal solicitation. It is for this reason that I request of you that during the coming year you will look about in your various localities, learn what companies are not members of the association and personally take it upon yourselves to see the officials of these companies, show them the benefits to be received by being members of the association and the duty that rests upon them to join with other companies in this great work. If you will all do this, the end of the next association year will see very few electric railway companies in the United States not members of the association. I also want to make the same earnest request of the manufacturing members of the association. If you do the missionary work

among your fellow manufacturing companies over the country, the number of manufacturing members can be largely and rapidly increased, and it will not be long until, with our combined membership, we shall be a much greater power in all the affairs in which we take part than we have ever been before.

I cannot take my seat without referring to the most remarkably loyal support given me by members of the association, both railway men and manufacturers. It has been a constant surprise to me and has urged me on to the best efforts I could put forth. Almost without a single exception, whenever I have called upon either a railway man or a manufacturer to assist in any part of the work, he has given me that assistance, not grudgingly but enthusiastically.

To your capable, efficient and hard working secretary and treasurer, Mr. Burritt, I desire, in this public way, to return not only my personal thanks, but the thanks of the association at large for the wonderfully able, loyal and untiring way in which he has looked after the affairs of the association. To his associates in the office at New York, one and all, I also desire to express my appreciation of their loyal and efficient work.

And now, as I close this, my last address to you, let me say that it has been a real pleasure for me to work with you for the association during the year about to close, and that I look forward to the future development of its power and efficiency with the very greatest interest. I shall carry with me during the future years of my life most happy recollections of the time when you permitted me to serve you as your president.

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“THERE is no part of our work but in some manner brings us in contact with the public. The very nature of our business is such that we constantly, at every turn, deal with some portion of the public, either directly or through their official representatives. Congress, the Interstate Commerce Commission, state legislatures and public service commissions, city and town governmental bodies, all have to do with matters regulating our business and are all to a great extent influenced by the attitude of the citizens themselves. Passengers riding on our cars, shippers of freight and express, damage claimants, trespassers on our rights-of-way, travelers on the public highways where our tracks are laid, are all parts of the great public, and with all of these we must deal. The people at large are interested in the kind of service we give and are always ready to complain of what is wrong, if even sometimes slow to praise what is right. If we are unjustly taxed, it is usually because the great body of citizens, either from want of knowledge on the subject or on account of prejudice, thinks we should be thus taxed. In case of labor trouble, the attitude of the public is of the greatest importance. Indeed, it would be difficult to point to anything connected with our business which does not bring us in some way to deal with the public. How great is the importance, therefore, of our public relations is perfectly evident to all of us, and all of us have with more or less success or failure, been using our best endeavors to smooth out whatever difficulties arise between our various companies and the public we serve.”—*President Charles L. Henry.*

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# Overhead Charges in Valuation Work\*

*Only charges directly associated with cost of reproducing physical and corporate elements of property are discussed. Amounts to be allowed. What charge should not be depreciated*

By PHILIP J. KEALY  
President Kansas City (Mo.) Railways



THERE are many ways of determining the value of public utility companies, and irrespective of how much weight it may have been given in the final determination, the one premise by which the value is generally judged is that of the "cost of reproduction new." An inventory or listing of the structural units of a property is comparatively easily ascertained, and the completed cost in place of the various structural units is somewhat more difficult to correctly establish. The determination of the cost to reproduce new the complete plant of a public utility corporation, however, is a matter not only difficult of finding out, but one which calls for sound business judgment and expert knowledge of the particular business in question far beyond that required in merely ascertaining the number or value of the individual structural units going to make up the completed whole.

The cost of reproduction new of public utility corporations is generally ascertained by the following three steps: (1) Obtaining bare cost of material and labor in place; (2) addition of various percentages to the items listed in (1), so as to give the total cost of the physical property, and (3) addition of those intangible elements of value which are always found in a complete going concern. There is very seldom any material difference between either side of a controversy as to the value of (1), and if the work of the engineers or accountants who prepared the various inventories be properly and correctly done, there should be practically no difference in this item. However, opinions frequently differ as to the amount of percentages to be added in (2). These are generally referred to as "overhead charges," and, considering the extent to which the cost-to-reproduce-new theory has been applied, or the broad way in which it has been used in gaging the value of public utility properties, it is indeed surprising that more definite information upon the subject is not available.

This is undoubtedly due to the fact that the old book costs of public utility corporations seldom, if ever, correctly furnish a gage of the amount of these costs and for good reasons. Most such properties represent a gradual development. The cost-to-reproduce-new theory assumes that the plant is instantaneously (or primarily so) developed. In a gradually growing business those charges which correctly formed a part of the cost-of-reproduction-new were generally absorbed in the daily operating expenses of the company. Legal expenses arising from the promotion of subsidiary companies or the expansion of the existing one; engineering charges, interest during construction, contingencies, all were usually charged directly into the cost of the work, without being distinctly or separately set out. Nor had the science of accounting reached its present stage of development. Certainly there was not then the uniformity of accounting practices that now exists, and

consequently these items, which are now recognized as proper capital charges, were largely, if not entirely, charged to operation. Moreover, at the time plants now under investigation were constructed and developed, the vital necessity of correctly determining and properly segregating such charges was not realized. Therefore, in determining the cost of reproducing a property, the appraiser is but slightly aided by existing records as to the proper amount of overhead charges, and must rely largely, if not entirely, upon his individual experience and judgment in such matters.

## SO-CALLED INTANGIBLES NOT TO BE CONSIDERED

Many authorities or authors have considered as "overhead charges" items which by others have been included in the cost of the physical elements. Thus, in defining the subject, they consider every additional allowance other than the mere cost of unskilled labor and the structural cost as an "overhead charge," *i.e.*, they consider that the cost of installing track, poles or switchboards should properly include the expense of labor installing same. But the expense of the engineer who laid out the design, or of the lawyer who secured frontage consents permitting the installation of track or poles, is not so considered, but is referred to as an "overhead charge." Others assume the term to cover only the expense of items which have to do with the creation of the entire enterprise, as, for example, the legal expense in connection with the incorporation of the enterprise and its successful financial launching. Similarly, interest during construction, or carrying charges, are frequently so termed. Again, "overhead charges" are referred to as covering those intangible elements of value associated with every going concern, including such items as good-will or going value, cost of attaching the business, franchise value, accrued deficit, etc.

In this article, without desiring to introduce additional phrases into a subject already overrun with them, I want to clearly distinguish between the two kinds or varieties of "overhead charges": (a) Those which are directly associated with the cost of reproducing the physical and corporate elements of the property; and (b) Those which arise in producing its business. This article will confine itself to describing or defining those "overhead charges," so-called, of the first character, and there will be no discussion of those of the second character, more generally referred to as intangible values.

## HOW THE TERMS ARE DEFINED

Each of the following enumerated charges forms a definite tangible portion of the cost of every physical entity going to make up a property. In many cases they can be so allocated as to apply directly to the particular unit, in which case it is preferable that they

\*Abstract of a paper delivered before the Atlantic City Convention of the American Electric Railway Association on Oct. 11, 1916.

should be so applied. In other cases they can be applied to a class of units. Others of them, having to do more with the creation of the company itself, cannot be so applied, but wherever it can be so done it is far better in making an appraisal to weave into the individual unit costs as much of the so-called structural "overhead charges" as it is possible so to do. Many of those charges hereinafter enumerated duplicate each other, and it is not intended that all of them should apply in any one property to the various elements going to make up the completed whole.

#### 1. *Engineering and Superintendence:*

This item includes the cost of preparing working plans, specifications and contracts, supervision, progress reports, estimates for payments, together with the expense of shop inspection, tests and field engineering. No sum should be added to cover this expense where a separate allowance is made for architect's fees, on materials which are carried in stock, or upon furniture and fixtures, automobiles and miscellaneous utility equipment. It is difficult to attempt to set out a percentage which should be allowed to cover this expense, since the conditions surrounding the work largely determine it. The size of the enterprise will also have considerable effect upon the amount which should be allowed, as it is apparent that the cost of engineering and superintendence upon a small concern will be proportionately much greater than upon a large one.

Moreover, this percentage will vary greatly according to the particular enterprise in question. Illustrative of this fact, a firm of Philadelphia engineers were recently allowed 4 per cent to cover the cost of engineering and superintendence during the erection of a power house which was constructed at an approximate cost of \$2,500,000, located in a Middle Western city, while a large Eastern concern was allowed 8 per cent to cover the cost of engineering and superintendence on the value of all labor and material going into the erection of a hydroelectric power plant. In the construction of the Pennsylvania tunnels the cost of engineering amounted to 7 per cent; in the reconstruction of the Chicago traction system the engineering cost was approximately 3 per cent; in the construction of the New York subways the cost of engineering has exceeded 6 per cent, in which figure is included the expense of the Public Service Commission; and a firm of Boston engineers who have had a broad construction experience undertake engineering work on percentages ranging from 6 to 15 per cent, depending upon the amount and character of the work involved.

Thus it is apparent that the amount which should be allowed to cover engineering costs will depend almost entirely upon the local conditions surrounding the property under consideration and is a matter for the appraiser to determine at the time the valuation is made.

#### 2. *Incidentals or Contingencies (Omissions):*

This charge should cover expenses outside the contract cost, particularly extras. Such expenditures may be due to change in design, interference in construction for various causes, cost of trial operation, expense of removing unseen obstacles, delays in work, labor troubles and other kindred items, which are not easily discernible at the time of the appraisal. There should also properly be covered under this head an allowance for omissions in inventory, because, no matter how careful or how detailed the inventory may be, there is bound to creep into the same more or less error, owing to the fact that it is impossible accurately to inventory the property under consideration.

Illustrations of items which fall under this head are

numerous and familiar to all engineers engaged in construction work—unexpected fills, removal of gas and water mains, sewers, removal of drains and other obstacles, cave-ins, floods, cloudbursts and various other incidents too numerous to mention. All engineers have encountered in their work cases of this kind not foreseen at the time the work was begun, and unless an allowance for such contingencies is provided, work will be completed at a financial loss. The trouble, expense and delays experienced in the construction of the Panama Canal well illustrate this point. During a recent hearing before the valuation committee of the Interstate Commerce Commission, Mr. Holbrook, chief engineer Union Pacific Railroad, stated that after the completion of the Lucin cutoff across Great Salt Lake, he had his engineering staff estimate the cost of the work already completed and the highest estimate was 40 per cent under the actual cost.

#### 3. *Organization Expense:*

Included under this head is the cost of general office expense, securing of bids, preparing of contracts, estimates on the cost of material, inspectors, watchmen, timekeepers, paymasters, the salaries of officials and the legal expenses directly attributable to construction. This charge should also include the cost of tools used up or lost during construction (frequently a very costly item), as well as all transportation expense directly associated with construction cost, *i.e.*, carfare, livery, living expenses of men in field, railroad fare, etc. If the property is constructed by a general contractor and an allowance is made for his services, then the amount which should be allowed to cover this item will be considerably reduced, owing to the fact that some of the duties falling under this head are performed directly by the contractor's organization.

#### 4. *Architect's Fees:*

This item provides for the cost of designing, drafting and general supervision of all work incident to the construction and equipment of buildings. Where an allowance of this kind is made, no sum should be added to cover the cost of engineering, since that expense is absorbed by the allowance made to the architect. Care should be exercised, however, to see that the allowance which is made is sufficient to cover whatever expense is necessary incident to the general inspection and approval of the work. There is no uniformity in the percentage allowable to cover this item and the appraiser in determining it must be guided largely by his own experience in such matters, as well as the custom prevailing in the locality in which the property he is valuing is located.

The American Institute of Architects has established a schedule of proper minimum charges which reads as follows: "The architect's professional services consist of the necessary conferences, the preparation of the preliminary studies, working drawings, classifications, large scale and full-size detailed drawings, and of the general direction and supervision of the work, for which a minimum charge, based upon the total cost of the work complete, is 6 per cent. The total cost of the work is interpreted as the cost of all materials and labor necessary to complete the work, plus contractor's profits and expenses, as such work would be if all the materials were new and all labor fully paid at market prices current when the work was ordered. Certain of the Eastern architects are now considering a plan whereby the expense of all draftsmen and engineers shall be charged direct to the job under construction and the architect allowed a percentage on the cost of the work when completed.

### 5. *Real Estate Expense:*

This expense covers the cost incident to the selection of the site, search of title, survey, purchase and legal fees incident to the acquiring of the property, as well as the expense of juries, commissioners or arbitrators in condemnation cases, cost of removing buildings, cost of plats, abstracts, notarial fees, recording deeds and the examination of titles, cost of abutting damages and agents' commissions. The customary allowance for such expense, will vary according to the character of the property under consideration. It is obvious that the cost of procuring a right-of-way through a very populous territory for an interurban line would be much greater than the cost of procuring isolated tracts of land upon which to locate carhouses or substations. The appraiser, in determining this allowance, must necessarily be guided by the local conditions surrounding the property which he is valuing. For example, most localities have real estate boards, which have certain fixed fees covering the purchase of lands. In Kansas City, Mo., the commission is 5 per cent on sales of \$3,000 or under, and upon sales of more than \$3,000 it is 5 per cent upon the first \$3,000 and 2.5 per cent upon the amount in excess of this sum.

### 6. *Purchasing and Handling (Includes Stores Expense):*

Included under this item is the expense incident to receipt, inspection, care and distribution of all materials and supplies, and such adjustments as may be necessary on account of overcharges, breakage or shortages. An allowance is made to cover this expense only on materials which are carried in stock, upon furniture and fixtures, automobiles and other miscellaneous utility equipment, and upon large units, such as power-house equipment, upon which a separate contractor's profit has not been allowed. This item may be subdivided as follows: (a) Purchasing; (b) inspection of material; (c) stores and store yard expense, and (d) loss and breakage in stores.

### 7. *General Legal and Corporate Expense:*

This includes fees and expenses incident to the incorporation of the organization, securing certificates of public necessity and convenience, cost of printing securities, payments to trustees, expenses incident to marketing securities and the general legal expenses necessary and incident thereto. It is difficult to arrive at an estimated percentage which will properly take care of these items, but it is obviously an expense bound to occur in building up every business. The corporation must be properly and safely organized; it must be put upon a sound basis for operation; reliable legal advice must be obtained to do this, as well as continually to advise the management of the company during the process of construction. It is certain that these expenses have, during the last few years, greatly increased, owing to the establishment of public service commissions or other regulatory bodies.

In the recent reorganization of a street railway system in the Middle West, this expense was well demonstrated. The property was in the hands of receivers, who negotiated a new franchise ordinance with the city, later adopted by a vote of the people. These negotiations extended over a period of practically two years, during which time the utmost publicity was given to the same, all at considerable expense. After the franchise had been adopted, the question of refunding the old obligations was taken up with the representatives of the various classes of bondholders, and a year and a half of continual negotiations ensued before a plan of reorganization was finally agreed upon by all parties thereto. This plan of reorganization was then submitted to two public service commissions for approval, and certificates of public necessity and convenience

were obtained. Afterward a decree of foreclosure and sale was ordered, the property was sold and finally new mortgages were prepared covering the securities, which were issued under the plan of reorganization. Many similar steps were taken in the reorganization of the Chicago Surface Lines and the Cleveland system, where like expenses were incurred.

### 8. *Contractor's Profit (Labor and Material):*

Included under this item is the profit of contractors and sub-contractors for supervision, direction and completion of specific construction work. Generally this percentage is applied to all units excepting those purchased complete from the manufacturer, and even on such items a contractor's profit is usually applied on the labor costs of installing the unit, provided the manufacturer's price did not include installation. No contractor's profit should be allowed on items carried in stock, on furniture and fixtures, automobiles and other miscellaneous utility equipment, if, upon all of which, there has been an allowance made to cover the cost of purchasing and handling. The term is, however, only a general one and includes the expense of purchasing, handling, managing and preparing estimates of the construction of any property. Consequently this expense will occur, no matter whether property is constructed by the company itself, or by a contractor.

### 9. *Taxes During Construction:*

This includes all real, personal and other taxes, special or otherwise, payable to the government, state, county, or city authorities, on the property during process of construction. The amount which should be allowed to cover this item can often be obtained by employing the same method of assessment as that used in the vicinity where the property is located. If company vouchers are available, the amount of taxes paid during the construction should preferably be so determined.

### 10. *Insurance During Construction:*

This insurance covers the cost of fire and casualty, public and employers's liability, tornado, workmen's compensation, flood and all other forms of insurance which are necessary adequately to protect the property during the process of construction. The amount of the fire insurance can be determined by eliminating from the appraised value of the property the non-insurable items and applying thereto the legal rates applicable to the kind of insurance involved. The cost of the other forms depends upon the particular requirements of the state where the work is performed, as well as upon the nature of the property being appraised.

### 11. *Interest During Construction (Carrying Charges):*

This includes a percentage to cover interest lost upon the money expended during the construction of the property and prior to its operation. Interest occurring on idle capital, no matter whether the same be represented by plant or cash, preparatory to putting the property in service, has been time and time again included as an element of the cost of reproduction new by public service commissions and courts. The only debatable question in regard to this is the period over which the interest allowed should extend and the rate which should be fixed. In order to determine accurately the amount of this charge, it is necessary for the appraiser to prepare a chart showing the estimated time of reproduction, separately listing the different elements which make up the property, and then, by a construction program, to ascertain the amount of money which will be required and the time when it must be available for use. After these amounts have been determined as accurately as possible, by applying the legal rate of interest for the state in which the property is located,

it is purely a matter of calculation to determine the amount which should be included in the appraisal to represent this element of value.

CARRYING CHARGES OR INTEREST DURING CONSTRUCTION  
BASED ON A THREE-YEAR PERIOD WITH INTEREST AT 6 PER CENT PER ANNUM

0 Years	1	2	3	Total Investment	Interest per Cent	Total Interest
Overhead distribution system (except services) of Kansas City Electric Light Company				\$923,213	9.0	\$83,089
Underground distribution system				793,309	9.0	71,397
Steam heat distribution system				330,962	9.0	29,786
Real estate				215,481	6.75	14,544
Buildings				409,837	6.0	24,590
Power Plant						
Equipment				1,724,341	4.5	77,595
Transformers				276,642	4.5	12,448
Lighting fixtures				109,001	4.5	4,905
Services				260,614	4.5	11,727
Meters				436,480	3.0	13,094
Total				\$5,479,887		\$343,180
Average interest					6.24	

The manner of calculating the amount of interest during construction is graphically shown in the accompanying table, which represents the manner in which interest during construction was determined in the appraisal of the Kansas City Electric Light Company. The assumption in this particular instance was that, the reproduction of the plant having been determined upon, the various distribution systems would be first constructed, their construction extending over the longest period of time. After this work was well under way, the real estate was next acquired. It was further assumed that work on the buildings would be started shortly afterwards. After the buildings had reached a certain state, the installation of the power plant equipment was commenced, the last step in the completion of the entire plant being the installation of the meters at the residences of the various customers. Interest was figured at the rate of 6 per cent for one half the time each of these various portions of the system were under construction. For instance, the interest on the overhead distribution system was figured at 9 per cent, its construction extending over a period of three years, whereas the interest on the meters was figured at but 3 per cent, it being assumed all meters could be installed in one year's time.

12. Promotion Expenses:

Included under this head are the initial engineering, legal and financial expenses preparatory to the organization of the concern. By this is meant the expenses incident to preliminary surveys and studies of location, tentative completion of maps, profiles, plans, specifications and estimates; the expenses incident to the procuring of franchises, consents, permits, easements, releases and options, and the expenses incident to the preparation of prospectuses and other expenses of a similar nature. The character of the utility involved will largely determine the sum, if any, which should be allowed to cover this expense.

13. Cost of Financing:

This head covers two items of expense (a) the actual discounts arising from the sale of securities; and (b) the cost of brokerage. Included in the latter is the actual commission paid to underwriters for the sale of securities, for, regardless of whether securities are sold at a large discount or at a premium, the expenses of getting them into the hands of investors must be paid for by the company issuing the securities.

At this time the question of the inclusion of bond discount is debatable, and there appears to be no fixed

rule regarding whether it should be included as an element of value in the cost of reproducing a property or should be entirely excluded. Some public service commissions have taken the first position and some the latter, but that the investor should be allowed a sufficient return upon his investment, that will offset any discount which may have been incurred in marketing the securities, is admitted by both. It has frequently been stated that the amount of bond discount represents simply an adjustment of the interest rate. The Interstate Commerce Commission has required that bond discount be written off within a period equal to the life of the bonds and the actual amount so written off be charged to interest account. This, however, does not meet the question as to the inclusion of bond discount in the original cost-of-reproduction-new, for there is a tremendous difference between writing something off which is already included as against not including it. In other words, the writing off of bond discount does not differ from the amortizing of the value of the entire plant, provided the profits are large enough to permit, but unless a direct penalty is to be imposed upon the investor and a part of the cost to him of putting his plant into condition to serve the public is to be confiscated, he must be allowed a fair return on the entire investment he has assumed, which, necessarily, includes the discount in the price at which his securities were sold.

In a late decision handed down by the Privy Council of England in the case of the National Telephone Company, Ltd., vs. His Majesty's Postmaster General, this question was very ably and thoroughly discussed. The question at issue here was whether there should be an allowance made covering the discount upon bonds. The court in discussing this matter said: "It has been said that it cannot be an element adding to the value of the plant. The thing desired here is the plant in *situs*, and the cost of construction, less depreciation, is the method by which the value has to be ascertained. It follows that every expense which is necessary, in order to construct, is an element to be considered and has to be considered because it is necessary in the process of construction. The thing to be transferred, say a pole, must be procured, transported and erected; each of these steps is necessary to the existence of the pole in *situs*; each of these steps costs money, and raising this money is itself an expense, and one as necessary to the existence of the pole as any of the other steps."

AMOUNT OF OVERHEAD TO BE ALLOWED

While there is by no means a unanimity of opinion as to what amount of "overhead charges" should be allowed, the present tendency is to include some such charge as a part of the cost of reproducing the physical property and, as the science of valuation is developed, as more thorough research is undertaken and more careful cost analysis made, the more evident is the need of such allowance and the more seeming willingness on the part of public service commissions and regulatory bodies to include it. The following percentages have at different times been used by engineers in valuation work and, subject to revision for local conditions, will adequately provide for "overhead allowances":

1.—Engineering and superintendence	5-15 per cent
2.—Incidentals or contingencies	5-20 per cent
3.—Organization expense	5-15 per cent
4.—Architect's fees	5-10 per cent
5.—Real estate expense	5-7 per cent
6.—Purchasing and handling	2 per cent
7.—General legal and corporate expense	5 per cent
8.—Contractor's profit (labor and material)	10 per cent
9.—Taxes during construction	1½ per cent
10.—Insurance during construction	½ per cent
11.—Interest during construction (per annum)	Legal rate
12.—Promotion expense	8 per cent
13.—Costs of financing	5-15 per cent

These percentages cannot be added to obtain a total overhead charge, since the first six items will apply

only to certain classes of physical property while the remaining ones apply to the enterprise as a whole. Moreover, many of the charges discussed apply only to material costs, others only to labor costs, while some in turn apply to both material and labor expense. Some of the charges also will not apply if others are used, i.e., architect's fees replace engineering expense. It might be well to reiterate at this point that the first six items above given should be so far as may be possible worked into the individual unit costs. Properly they should not be referred to as "overhead charges."

While these percentages will vary somewhat, according to the size of the property involved and the location in which the same is situated, still, as a general average, they represent charges which should be added to the cost of material and labor in place, in order to obtain the total cost of the physical property.

DEPRECIATING OVERHEAD CHARGES

Just as there is considerable difference of opinion as to the amount of "overhead charges" which should be allowed, so also there exists a difference as to whether or not they should be depreciated in determining the cost-to-reproduce less depreciation of public utilities. While it is clear that certain of the "overhead charges" (so-called) discussed in this paper should be depreciated, a full consideration of the subject permits no escape from the conclusion that certain others should not be depreciated. For instance, the cost of engineering and superintendence, expense of purchasing and handling, real estate expense, architect's fees, etc., can generally be allocated to the individual physical elements or classes of elements going to make up a property. When these elements are renewed or replaced certain "similar charges" will again arise in the replacement and, therefore, it follows that the "overhead charges" pertaining to or bearing upon the article replaced should be depreciated with it, since they (the "overhead charges") in this sense are depreciated.

On the other hand, "overhead charges" of the nature of legal expense incurred in initiating the enterprise, interest, insurance and taxes during construction, and costs of promotion do not depreciate and should not be depreciated. This is for the reason that most public utilities are continuous operating entities. As far as it is now within our foresight and judgment, they will be in operation and serving the public for generations to come. The enterprise will not have to be renewed. The individual physical elements going to make up the plant rendering this service will be renewed, but never again will the corporation be re-incorporated; nor will frontage consents, for example, have to be secured, nor will certificates of public necessity and convenience have to be obtained from public service commissions.

In order to simplify accounting, interest during construction should not be depreciated. Otherwise, absurd practices would arise in utility accounting, for it would then be necessary to ascribe to each individual physical element of the property its proportion of the total interest during construction charge, and as a pole, or a stretch of track, or a portion of a water main was renewed, the proportionate amount of interest during construction originally charged would be charged off for the replacement of each piece and again added on for the renewal. In short, interest during construction is generally included as a lump sum, is not allocated to individual physical elements, does not arise in renewals and betterments, and should therefore not be depreciated.

Another phase of this subject is this—for each depreciable item of plant an allowance should be made in the amount of depreciation charges annually set aside.

Therefore, if it is considered that "overhead charges," such as interest, taxes and insurance during construction, and similar charges do depreciate, it would be necessary for the management (for the utility's protection) to set aside a depreciation reserve to cover the same. Yet this would never be used, since the charges never re-occur. Consequently the operating expenses would be unnecessarily increased and the cost of service to the consumer higher, because of this practice. Therefore, in considering the depreciation of "overhead charges," it would seem most fair that those items of overhead expense directly chargeable to the physical elements should be depreciated, but that those "overhead charges" incurred in initiating the enterprise and which cannot, either conveniently or properly, be directly charged to the various physical elements, should not be depreciated. And this must be the practice, in fairness not only to the public utility corporation but to the consumer.

HOW OVERHEAD CHARGES HAVE BEEN APPLIED

As previously stated, courts and public service commissions by their recent decisions have recognized that "overhead charges" should properly be added to the construction costs of the property in order to determine its reproduction value. The only difference of opinion between these bodies is what should be termed "overhead charges" and what percentage should be allowed to cover the same. In the following I have selected at random various appraisals which have been made during the last ten years, which very clearly show that even as yet these questions have not been definitely decided:

*Wisconsin Railroad Commission:*

The engineering department of the Wisconsin Railroad Commission has almost uniformly allowed the following "overhead charges" in its valuation work:

Engineering and superintendence . . . . .	4 per cent
Organization and legal . . . . .	2 per cent
Interest during construction . . . . .	4 per cent
Contingencies . . . . .	2 per cent

Total . . . . . 12 per cent

*Chicago Elevated Railways:*

In its appraisal of the Chicago Elevated Railways, Prof. G. F. Swain added 30 per cent for "overhead charges," including engineering, legal expenses, contingencies, taxes, insurance administration, promotion, organization, interest during construction and brokerage. The valuation committee, consisting of J. J. Reynolds, John Ericson, E. C. Shankland and Geo. Weston, added 18 per cent for "overhead charges" to cover substantially the same items.

*Metropolitan Street Railway, Kansas City, Mo.:*

(Total value approved by Judge W. C. Hook and the Missouri Public Service Commission.)

In his appraisal of this property, Bion J. Arnold added an average of 11 per cent to cover the cost of organization, engineering and incidentals. In addition thereto, 3 per cent was allowed as carrying charges and 2 per cent for general legal and organization expense. Also 5 per cent was allowed for the costs of financing. Total "overhead allowance," 22.3775 per cent.

*Kansas City Electric Light Company:*

In the appraisal of this property, an average of 9.6 per cent was added to cover the cost of engineering, organization and incidentals. In addition thereto, 6 per cent was allowed as carrying charges, 1 per cent for general legal and organization expense, and 3 per cent for contingencies, which included insurance and taxes during construction. Moreover, 7.5 per cent was allowed as the costs of financing. Total "overhead allowance," 29.602 per cent.

In making an appraisal of this same property, the Missouri Public Service Commission, in addition to the general contractor's profit of 10 per cent made an overhead allowance of 6 per cent for interest during construction, 1.5 per cent for taxes, 0.5 per cent for insurance, 1 per cent for

legal, 5 per cent for engineering and 2 per cent for contingencies, making a general "overhead allowance," exclusive of an allowance for contractor's profits, of 16 per cent.

*Chicago Surface Lines:*

Appraisal made by Bion J. Arnold, M. E. Cooley and A. B. DuPont. Interest during construction, legal expense, contingencies and brokerage, 10 per cent. Organization, engineering and incidentals, 11 per cent.

Total "overhead allowance," 21.7 per cent.

*Chicago Consolidated Traction Company:*

Appraisal made by Bion J. Arnold and George Weston. Organization, engineering and incidentals, 14.6 per cent. Legal expense, interest during construction and contingencies, 5.8 per cent. Expenses incident to conducting the work, furnishing equipment and brokerage, 18 per cent. Total "overhead allowance," 38.4 per cent.

*Cleveland Railway:*

Decision by Judge Robert W. Taylor. Specific "overhead charges" to cover contingencies, uncertainties, purchasing and handling, 5.88 per cent. General "overhead charges" to cover financing, engineering, legal expense, organization, administration, insurance, superintendence, interest during construction, delays not covered by specific allowances, contents, litigation with property owners, incidentals and contingencies, 16.30 per cent. Total "overhead allowance," 22.18 per cent.

*Puget Sound Electric Railway:*

Appraisal by the Washington Railroad Commission. Total "overhead allowance," including engineering and superintendence, supervision and management, contingencies, legal and general expense and interest during construction, 19 per cent.

*Michigan Railroad Appraisal:*

Appraisal made by Prof. M. E. Cooley.  
 Value of the physical property, exclusive of any "overhead charges" ..... \$170,291,556  
 Overhead allowance ..... 32,424,706  
 Total ..... \$202,716,262

	Amount	Per cent of structural cost
Engineering .....	\$ 5,386,772	3.2
Contingencies .....	18,428,759	10.8
Legal .....	673,349	0.4
Interest during construction .....	5,290,549	3.1
Organization .....	2,645,277	1.5
Total .....	\$32,424,706	19.0

*Minnesota Railroad Appraisal:*

Appraisal by D. C. Morgan, engineer of commission.  
 Physical property, exclusive of "overhead charges" ..... \$345,260,419  
 Overhead allowance ..... 61,264,765  
 Total ..... \$406,525,184

	Amount	Per cent of structural cost
Engineering, superintendence and legal expense .....	\$12,133,642	3.5
Contingencies .....	17,869,703	5.2
Interest during construction .....	31,261,420	9.0
Total .....	\$61,264,765	17.7

*Des Moines Water Company:*

Value fixed by Judge Smith McPherson.  
 Physical property, exclusive of "overhead charges" ..... \$1,452,092  
 Overhead allowance ..... 233,856  
 Total ..... \$1,685,948

	Amount	Per cent of structural cost
Engineering, superintendence and general legal expenses .....	\$116,928	8.0
Interest during construction .....	116,928	8.0
Total .....	\$233,856	16.0

*New York, New Haven & Hartford Railroad:*

Appraisal made by George F. Swain.  
 Inventory reproduction cost ..... \$259,635,934  
 Overhead allowance ..... 40,333,824  
 Total ..... \$299,969,758

	Amount	Per cent inventory cost
Engineering .....	\$ 5,574,038	2.2
Contingencies .....	5,574,039	2.1
Interest and brokerage .....	23,554,678	9.0
Legal expense .....	2,475,389	1.0
General expense .....	3,155,680	1.2
Total .....	\$40,333,824	15.5

*Coney Island & Brooklyn Railroad:*

Decision by Public Service Commission of New York.  
 Total "overhead allowance," including contractor's profit, engineering, organization and incidentals, 24.81 per cent.

*Milwaukee Electric Railway & Light Company:*

Appraisal by Wisconsin Railroad Commission.  
 Contingencies and omissions..... Per cent 3  
 Interest ..... 3  
 Engineering ..... 4  
 Organization and legal..... 2  
 Total overhead allowance..... 12

*Coney Island & Brooklyn Railroad:*

Appraisal by Frank R. Ford.  
 Physical property..... Amount Per cent of physical cost  
 Promotion and legal expense.... 421,200 6.42  
 Property owners' consents..... 278,500 4.25  
 Organization expense..... 195,640 2.98  
 Incidentals ..... 276,460 4.22  
 Engineering expense..... 230,792 3.52  
 Contractor's profit..... 527,514 8.04  
 Interest and taxes..... 561,345 8.56  
 Total ..... \$9,049,898 37.99

*Detroit United Railway (City Lines):*

Appraisal by Robert B. Rifenberick.  
 Material and labor..... \$18,663,536  
 Incidentals ..... 1,050,294 5.62  
 Contractor's profits..... 1,148,777 6.16  
 Liability insurance..... 114,264 .61  
 Builder's risk..... 17,243 .09  
 Architect's fees..... 62,551 .34  
 Cost of acquiring land..... 79,463 .43  
 Engineering ..... 720,955 3.86  
 Organization ..... 1,092,122 5.85  
 Carrying charges ..... 2,064,111 11.06  
 Financing ..... 1,999,894 10.72  
 Total ..... \$27,013,210 44.74

# Training Men for Supervisory and Executive Positions\*

*Minor officials need to be trained along certain definite lines, under guidance of executive operating official. Men should be raised from ranks for supervisory work. One-man organization discourages original thinking*

By L. C. BRADLEY

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THE purpose of this paper is to discuss, in a general way, the training of employees who have as a part of their work the observation, supervision or control of other employees in the transportation department. The importance of proper training of this class of employees is very great, as upon it, to a large extent, depends the efficient operation of the road. When the trainmen leave the school of instruction and become regular motormen and conductors on the cars, they are then dependent wholly for further development, their attitude toward the company, satisfaction in their work, upon this class of employees. To supplement the training that they, individually, have received, it is important that they be placed under men whose ideas and methods have been developed with similar care.

## SELECTING MEN FOR SUPERVISORY AND EXECUTIVE WORK

The selection of men for supervisory and executive positions should be made from the ranks wherever it is possible. The main reason for this is that it creates an incentive for good service on the part of the subordinate employees. To make this a sufficient incentive, the selection should be based upon good service. The most competent employee, all qualifications considered, should be selected to fill the vacancy in the supervisory position. Selections should be made from the ranks for the additional purpose of getting the value of knowledge already gained as to the local methods of operation.

It has been the general rule in street railway operation, in promoting employees from the ranks to supervisory positions, to give very great weight in selection to the quality vaguely known as executive ability. The exact definition of executive ability, from the standpoint of the average person who has the right of selection, is sometimes of a very indefinite nature. The old idea that executive ability is sometimes born in a man and cannot be created or developed, is a fallacy. The average hero-worshipping biography, intended for school-boy consumption, states that the subject of the work was a leader from boyhood. As a matter of fact a great number of our boyhood leaders have sunk away somewhere into insignificant positions, and many positions which call for the direction of numbers of men are filled by those who never evinced a single symptom of leadership in the playground or school yard sense.

In the street railway business, more than in almost any other, the old idea has survived that the inspector or supervisor must be a boss, and that being a boss, he must have the heavy jaw or undershot chin that proclaim his boss-ship. In almost every other business, however, it has been demonstrated that the ideal executive is the man with the keen observation, alert mind and intelligence enough to study and learn the ways in which a man can gain and hold the loyalty, respect

and confidence of those over whom he has supervision and who seek direction from him.

In selecting men from the ranks, therefore, for supervisory positions, consideration must be given not only to competent service, loyalty and appearance, but also to keen observation and that quality of intelligence which might be denominated "teachableness"—that quality by which a man can learn not only from the direct instruction of others but from observation and experience.

## TRAINING TRANSPORTATION OFFICIALS

The Transportation & Traffic Association committee on the training of transportation employees in its report for 1912 recommended that supervisory officials be trained along certain lines, which I have taken the liberty of rearranging as follows: Handling of subordinates; details of operation; comprehensive control within the limits of designated authority; demonstrative methods; economic innovations, and company policy. Each of these will be taken up in turn.

### *Handling of Subordinates:*

The proper handling of subordinates is, of course, the "crux" of the official's ability. If he is incapable of handling subordinates, he is not a proper official. It is in this phase that the need of training is greatest and the need is least served. We would not think of making a man an inspector who had never run a car or who did not know something about the objects or ideals of a street railway organization, but we do take a man on the strength of his individual work and attainments and give him a position of directing others, although he may have had no previous experience in this line. The direction of subordinates is something that can be taught just as easily as the mechanical operation of a car, and much wear and tear on the machinery of an organization can be saved by taking the minor official in hand at the proper time and systematically and carefully pointing out the way by which he can properly direct his subordinates.

Up to the time that one is given a supervisory or executive position, his whole progress has depended upon the work which he, individually, can accomplish. What is more natural, then, than for him to continue to strive to show how much work he, individually, does after being given the supervisory position. One of the first things that should be inculcated in him is that he is not to be judged by the work which he, individually, does, but by the results secured from the work of his subordinates. The first quality, therefore to be developed in the supervisory official is self-effacement—in other words, the losing of his identity in the results to be accomplished, the gaining of loyalty and respect from his subordinates by seeing that they are given the credit for results secured and the minimizing of

\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Transportation & Traffic Association on Oct. 10, 1916.

personal achievement to the usefulness of the official's organization.

The second quality to be inculcated in the minor official is that of patience. For an individual working with a piece of machinery, impatience with slow results is sometimes a worthy quality, but men are different from machinery and in order to secure satisfactory results from them it is not only necessary to have an ideal to reach, but the patience to wait for the accomplishment of that ideal. Men are not machines. They learn by mistakes. They can be made to do better work through the suggestive knowledge that they have made mistakes, and that they are too intelligent to repeat them. Individual handling of men means patience, and this is the essential quality of the executive official. The firmly closed lips of the average great executive do not denote obstinacy or pugnaciousness, but are the result of patient waiting, year after year, for the results previously visualized in the mind. The impatient executive is avoided as much as possible by all high-minded employees; while the man who is patient is lovable and wins the hearts of his fellow employees. Not all patience is a virtue, however, and exaggerated patience may easily become a vice.

The third quality to be inculcated in the supervisory official is sympathy, not in a sentimental sense, but in the sense of a genuine understanding of the men whose efforts he directs and a sincere intention to aid in the problems and the working out of his ideals. One cannot be a true executive who does not possess this sympathetic understanding and aim. If a man is working under the direction of another who understands him and his troubles and who seeks to aid and advance him in every way possible, then his work becomes a part of his life, and a desire to work properly and successfully becomes as strong as the desire to live properly and successfully. This sympathy frequently gives understanding as to the cause of breaches of discipline, and through this understanding of causes, the ability to prevent them.

The fourth quality to be developed is appreciation. A man cannot be a true executive without being grateful for efficient work on the part of his subordinates, and he also should have the desire and ability tactfully but certainly to make the employee aware of the fact that his efforts are appreciated and in due time will be rewarded. The employee should be made to feel that his appreciation is impartial and just; that his good work is not to be used for the glory or advancement of his superior, but that the credit goes to the man who produces the good work. The appreciation should not be captious or uncertain, depending upon the whim or feeling of the executive or supervisor. It should not be too lavish, for compliments, of themselves, indiscriminately bestowed, lose their savor. Nor should it be too sparing, because the isolated compliment does not atone for months of apparent indifference.

### (2) *Details of Operation*

A comprehensive understanding of the details of operation is, of course, necessary to any official. This understanding must be an intelligent one that comprehends not only all facts and methods in regard to the system's operation, but the reasons for these and also the reasons why other methods are not used instead. This complete understanding can be reached, not only by interested observation of the road upon which the official is employed, but by the study and observation of street railway methods and history in general, this study being facilitated by the reading of journals devoted to street railway business; by trips of inspection to other street railway systems and by attendance upon state and national conventions.

In this connection I cannot but deplore the tendency in many street railway companies of allowing only what might be termed the higher officials to attend these conventions, thus depriving the rank and file of the executive and supervisory officials of the benefits of hearing the papers and discussions on timely topics at these conventions. The more the supervisory and executive employee knows about the details and methods of operation of street railways in general, so much the more efficient does he become in the scope of his duty. Consequently, it becomes the duty of the manager to make access to wider knowledge for this class of employees easy and attractive, and in no manner is this access made easier than by attending these conventions.

### (3) *Comprehensive Control within the Limits of Designated Authority*

It is equally important in the satisfactory development of the minor official that, within the limits of his designated authority, his control be comprehensive; that he feel this responsibility and not be afraid to exercise his authority. This is directly the antithesis of the practice pursued on those roads in which there is a general manager or a general superintendent who feels that no single detail can be attended to without his personal supervision. Such a manager or superintendent may, by unusual ability, have a well-managed railroad, but this method stifles the development of the unfortunate individuals who are supposed to be holding minor official positions on that road.

Such an organization, depending as it does upon an unusual genius, must go to pieces when that genius is removed from such sphere of activity. The road then is disorganized and must work like a wrecked piece of machinery until its owners can discover some other rare genius to take the place of the one removed, or else submit to the slow and tedious process of building up an organization, founded upon common-sense and modern systematic methods, in which the development of the official force of the road is contemporaneous with and equivalent to the demands made upon the ability of such force.

The machinery of a well-balanced organization is not damaged, or even slowed down, by the removal of any member, no matter how important his position. It is a rational scheme, composed of intelligent human beings, co-operating toward a common end and not depending upon the unusual natural ability or talents of any one member. The one-man organization can never be as efficient as that organization in which all the officials, within the scope of their designated authority, have more or less of a free rein.

"The Message to Garcia" would never have been delivered if the sender thereof had outlined the full course of the journey from start to finish and had prescribed the methods by which the bearer should meet each obstacle as it arose. The message was delivered because it was put up to the individual to deliver and he did so. The same reasoning applies to the work of the minor official. He can never be developed unless the full responsibility for the results to be secured by this work is placed upon him and it is left to him, through his own individual attainments, training and judgment, to carry on the work for which he has been selected.

### (4) *Demonstrative Methods*

Familiarity with the details of operation of the road upon which an official is employed, as well as an intelligent conception of the methods and advances made in the street railway industry as a whole, will inevitably, in the natural evolution of ideas, place the minor official in such mental condition that he will be a continual

schoolmaster to the men under his control or in his department. The old saying that "Out of the fullness of the heart the mouth speaketh" could be well paraphrased to mean that "Out of the fullness of the mind comes the best teaching."

#### (5) *Economic Innovations*

Similarly, from a sound understanding of conditions as they exist, comes the best suggestions for improvements in conditions. Here again is a field where a great many mistakes have been made by managements in the past in discouraging suggestions for improvements or betterments on the part of minor officials. Of course, it should be well grounded in the mind of the executive and supervisory force that before suggestions are made as to changes in methods or equipment, the advantages and disadvantages probably resulting from such change should be well considered, and that the suggested improvement should be advanced only after careful consideration, and should be accompanied by intelligent reasons for adoption. Ideas, even of the most revolutionary description, should not be discouraged. On the contrary, original thinking should be encouraged, but such thinking should be trained and developed along lines that will tend to make such thought productive. The greatest handicap of the one-man organization is the fact that original ideas are but rarely developed. The one-man executive is too busy to have original ideas of his own, or, if he has such ideas, he has not the time to study them out carefully, while his desire to keep control in his own hands discourages original thinking on the part of others.

#### (6) *Company Policy*

By no means least in importance is the proper training of supervisory and executive employees along lines of public relations. Their sphere of usefulness, under proper direction, is unlimited. Moreover the training is imperative, if we would take full advantage of our available resources. The Code of Principles sets forth clearly the responsibility of public utilities and commits the member companies to a high standard of business obligation. Whether the spirit behind the principles has been universally adopted I do not know, but assuredly if street railways under private ownership and operation are to carry out their functions properly, the principles enunciated must be disseminated among the people.

I sometimes fear, however, that the doctrine of the code appeals only to that class of our citizenship whose intelligence enables them to comprehend the intricate details of financing and management. No one questions the soundness of the principles, but I am one who believes the work of education or co-operation should start with our own employees. It is safe to say that a vast majority of the 300,000 employees engaged in street railway service in this country (a formidable army for disseminating correct information), have no intelligent conception of the aims and purposes of the companies for which they work.

A notable example of the policy of informing the supervisory and executive employees as well as subordinate employees on all matters pertaining to public relations is that of Mr. Lillenthal of San Francisco. Recent events have fully demonstrated the wisdom of his course.

In one of the larger cities of this country a franchise election was held, and I am reliably informed that a substantial majority of the subordinate officials and employees were wholly uninformed as to the merits of the controversy. These men, from their very attitude desired to render service, but their statements in reference to the matter were pathetic in the extreme. Need-

less to say, the election was unfavorable to the company and failure to enlist the active interest of the employees was unquestionably one of the contributing factors. Loyalty and enthusiasm, rightly directed, will surmount many difficulties.

If the policy of any company is understood and believed in by the executive and supervisory force, they will in turn imbue the individual employees with an understanding and feeling of such policy. In this case, then, the company will cease to be a cold, unfeeling corporation, with purely paper policies, and become an aggregation of sympathetic, human beings, actually living and working out this policy day by day.

Motormen and conductors, learning the principles of the air brake and controller in schools of instruction, may learn how to operate a street car and become familiar with schedules, but the true learning of the expression of the company toward the public must come after they have begun to work upon the cars, through their association with each other and with the individuals who immediately direct their activities. It becomes, therefore, a matter of prime necessity that the inspector, the instructor, the supervisor, the division superintendent and similar officials should understand, appreciate and impart this spirit of the organization.

#### METHODS OF TRAINING MINOR OFFICIALS

Manifestly, in all except the very largest of street railway organizations, it would be impracticable to have a formal school for a supervisory and executive employee. It is not clear that in any case such formal school would be desirable for this class of employees. In my opinion, this training must be systematically imparted by the executive operating official of the individual company, whether this official be termed manager, general superintendent or by other title. This training must be kept in mind in all the relationship of such executive to the minor official, and should be supplemented by regular, stated meetings of this class of employees, at which there should be discussion and instruction on the training subjects previously enumerated.

These meetings should not be held so often as to partake of the nature of a schoolroom, but should be held often enough for the impressions formed from meeting to meeting to overlap, so that the minor official is continually conscious of the principles set forth at these meetings. It would be the wisest plan to have these meetings called for other purposes than that of instruction. For instance, a regular series of accident meetings, to discuss accidents that have occurred and methods of eliminating them; safety-first meetings, called at stated times for the purpose of minimizing accidents; or company luncheons, at which some paper is read or a talk made to assist the minor official along the lines here suggested. I cannot emphasize too strongly the need of social or semi-social gatherings as a splendid medium for humanizing the official force. It is essential if harmony, team work and the fullest development is to be obtained.

While I have suggested that this work of education should be carried on by the executive operating official, it is by no means necessary that such official always give these lectures or discussions himself. The reading of articles by other persons, touching these subjects; the discussion of these subjects by the members of the supervisory force themselves, or the discussions of such subjects as are touched upon from time to time in trade publications, would all be of use and effect.

This direct training of the minor official, however, must be supplemented by observation and encouragement of the minor official in the handling of his individual problems as they may arise, such observation

being always in the form of sympathetic interest and not a solution of his problems for him. This training should also be supplemented by a broadening of the minor official's knowledge and training, through the medium of the street railway publications and of the state and national conventions. The members of this class of employees should be encouraged with every chance to prepare a paper or to participate in the discussion of subjects at these conventions. His contribution should be made the subject of comment and discussion by the entire official family of the company. It could well be distributed among all the employees of the company, for the work or attainments of one member of the company might well be considered the property and pride of the whole company.

In conclusion, no organization should lose sight of the fact that its success and prosperity is due to the work of its combined forces, and no man in its employ who has risen in any degree whatsoever above the ranks

should be too unimportant to have his growth and development followed with careful and individual concern. The employee may not know that his natural talent is being studied; that his character is being developed; that his training is being systematically carried on by advice, counsel, or by direction. He only knows that as he becomes qualified the position of greater responsibility awaits him; that as more responsibilities fall upon him, greater avenues will open for him to become acquainted with the manner in which to meet such responsibilities; that as the time arrives when he has exhausted the possibilities of the line of work in which he is engaged, he may many times, without previous request, be transferred to other work, opening up possibilities for a new development. He further knows that so long as he is ambitious to advance, he need not worry about his position, and thus he has that peace of mind which is the best environment for the growth of ideas.

## The Engineering Development of the Electric Railway\*

*Beginning with the researches of Prof. Joseph Henry, the author traces the history of electric traction in this country and abroad, and tells in detail of the Richmond electrification in which his company lost \$75,000 on a \$110,000 contract*

By **FRANK J. SPRAGUE**  
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**S**PEAKING generally, the whole electrical industry, so far as it is dependent upon dynamo electric machinery, may be said primarily and largely to rest upon the researches of the famous American scientist, Joseph Henry. The first real suggestion of the electric railway in the United States seems to have come from a Vermont blacksmith, Thomas Davenport, who is reported to have operated a toy motor on a small railway in 1834. In 1838 Robert Davidson, a Scotchman from Aberdeen, began the construction of a locomotive equipped with a motor. His engine attained the respectable speed of 4 m.p.h. in a trial conducted on the Edinburgh-Glasgow Railroad. Among other pioneers were Prof. Moses G. Farmer and Professor Page, the latter with the government aid constructing a small primary battery car which reached 19 m.p.h. on a road between Washington and Bladenburg.

The above and other experiments were doomed to commercial failure not alone because the source of power was the primary battery, but because the motors were of crude design and construction, based upon the attraction of keepers or solenoids. Between 1845 and 1870 the self-exciting dynamo was developed and between 1867 and 1872 its reversibility was discovered. However, in the quarter century ending in 1875 there appeared to be a complete cessation of electric railway experiments.

### EARLY COMMERCIAL WORK

Among the European concerns engaged in building dynamos for lighting and other purposes that of Siemens was the most prominent. In 1879 this firm showed at the Berlin Exposition a small car operated from a third-rail with track return. Soon after among other inventors Stephen D. Field and Thomas A. Edison be-

gan electric railway experiments. Priority of invention was awarded to Field, who early contemplated the operation of street cars in San Francisco. In 1880 Edison built a small road at his Menlo Park laboratory, and in the following year Siemens and Halske established a 1½-mile, one-car line at Lichterfelde, near Berlin. The latter may be considered the first commercial electric railroad. This equipment was followed by one at the Paris Exposition where overhead distribution was used for the first time.

In 1881 I constructed at the torpedo station, Newport, a dynamo which had two armature circuits and a plug switch by means of which series-parallel combinations could be made. Tests of the machine under these conditions were made, first as a dynamo and later as a motor. Some years later there was combined with the simple series-parallel control the variation of current strength by varying a resistance in the circuits of the motors. The validity of the patent on this invention was not established for some time, and in the end an adjudication of the claims of rival inventors was avoided probably by the combination of the contending interests.

In the early eighties other inventors were becoming active, among them Dr. Finney of Pittsburgh, Professors Ayrton and Perry of England, Dr. Fleeming Jenkin of Scotland. Siemens and Halske constructed an experimental road near Meron, in the Tyrol, to demonstrate the possibilities of electric traction for the St. Gothard tunnel, and also small lines at Frankfurt and Molding.

In 1882, while connected with the United States Navy, I procured an assignment to the *Lancaster*, sailing for the Mediterranean, then received leave from my ship, and subsequently obtained orders to the British Elec-

\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Association on Oct. 12, 1916.

trical Exposition at Syderham. While riding on the underground road I conceived an ideal of electric propulsion based upon the use of the tracks as one conductor and for the other a system of rigid overhead conductors all in one plane. Soon after, resigning from the Navy, I returned to the United States and, after spending nearly a year with Mr. Edison, formed the Sprague Electric Railway & Motor Company. At the same time the Edison and Field interests combined to form the Electric Railway Company of the United States, and operated a small locomotive, the "Judge," which ran around the gallery of a building at the Chicago Railway Exhibition. In the winter of 1882-1883 a Belgian woodworker, Charles J. Van Depoele, conducted experiments in or near his works in Chicago with a small car, the current being taken from a wire laid in a trough. This was exhibited at the Chicago Industrial Exhibition. He is also reported to have tried an experiment in which he used an overhead wire with an under-running contact wheel, and this formed the basis of a hard-fought interference between him and myself.

Among the active workers of this period was Leo Daft, who made his first experiments at his company's works in Greenville, N. J., in 1883. In November of that year, he ran a locomotive, the "Ampere," on the Saratoga & Mount McGregor Railway, where it pulled a full-sized car. There was considerable activity during the following two years in Great Britain and in this country. For example, in August, 1885, Messrs. Bentley and Knight, who had conducted some experiments in the yards of the Brush Electric Company at Cleveland in the previous autumn, installed a conduit system on the tracks of the East Cleveland Railway. This was operated at intervals during the winter and then abandoned. John C. Henry also installed and operated in Kansas City a railway supplied with two overhead conductors on each of which traveled a small trolley. He later, elsewhere, used the rail return.

In the early part of 1885 Prof. Sydney Short of Denver began a series of experiments on a series system, a constant current being sent through all the motors of the line, but later adopted the multiple distribution. He also attempted the use of gearless motors, but soon reverted to the geared type. In August of this year Daft began his work on the Hampden branch of the Baltimore Union Passenger Railway, which, I believe, was the first regularly operated electric road in this country. Encouraged by his success, he undertook the equipment of a 2-mile section on the Ninth Avenue Elevated Railroad in New York. Here, during the latter part of 1885 he operated a locomotive called the "Benjamin Franklin," which, pulling a train of cars, made several trips. A speed of 25 m.p.h. was sometimes obtained, and on one test an 8-car train was pulled up a grade of nearly 2 per cent at a 7-mile gait. During this and the following year Van Depoele installed a number of small roads.

#### THE RICHMOND ROAD AND PRECEDING EXPERIMENTS

After separating from Mr. Edison in 1884 I formed the company already mentioned, which had a nominal capital of \$100,000, and from which I received a salary of \$2,500. At first the stationary motor business was developed, but my mind soon reverted to railway problems.

In a paper read before the Society of Arts in Boston in 1885 a novel scheme of operation for the Manhattan system was outlined involving the now universally used "wheelbarrow" system of motor suspension. The opportunity later arose to try the experiment in which at first Jay Gould, one of the principal owners of the

Manhattan Elevated, was interested. The experiments, which were first made on a short track between the walls of a sugar refinery, were later transferred to the Thirty-fourth Street branch of the railway. They were witnessed in May, 1886, by a large number of officials of the Elevated and other enterprises, among these officials being Cyrus W. Field and the Duke of Sutherland.

After this test I disposed of a sixth of my interest in the company for \$50,000, a very acceptable help in a time of need. The experiments were continued, but the stockholders and directors of the road took no further interest in them, and I turned my attention to trolley problems.

A New York politician, who had secured a franchise for an electric railway in Richmond, Va., had associated with him in the enterprise a banker and a merchant in railway materials. A short time before my company had taken a small contract for the Union Passenger Railway at St. Joseph, Mo., and secured the one for the Richmond Union Passenger Railway in May, 1887. The latter called for the completion in ninety days of the equipment of a road having about twelve miles of track, at that time unlaidd, and with the route only provisionally determined, the construction of a 375 hp. power plant, and the furnishing of forty cars with eighty motors and all appurtenances necessary for their operation. Thirty cars were to be operated at one time, and grades up to 8 per cent were to be mounted. Finally the payment was to be \$110,000 if satisfactory.

My immediate assistants on the Richmond work were Lieut. Oscar T. Crosby, a West Point graduate, and Ensign S. Dana Greene, from the Naval Academy. On account of an attack of typhoid fever I was, at a critical period, absent from work nine weeks, being almost the entire burden on my associates. When the contract was undertaken we had only a blueprint of a machine and some rough experimental apparatus.

After overcoming difficulties one by one, we began experimental runs in November, 1887, but various troubles had brought us to the end of the following January when it had become vital to begin regular operation. At this time we prepared to open the line with about ten cars. As a preliminary to regular operation we spent a day carrying loads of children, and about February 2, 1888, in a drizzling rain, we opened the line for regular service. The day was one of disappointments, as difficulties in operating the equipment developed. Troubles with gears, commutators, brushes, etc., had to be overcome. We managed, however, to keep the cars moving and gradually our greater difficulties began to lessen, even if new ones cropped up. By May 4 there were thirty cars in operation, and finally forty cars.

A most important experiment of banking the cars occurred one night on the occasion of the visit of President Henry M. Whitney and a number of directors of the West End Railway of Boston, Mass. General Manager Longstreet of the railway was a strong advocate of cable operation and had doubted the possibility of handling the cars electrically when badly bunched. On this occasion twenty-two motormen started their cars at the extreme end of a section of the line designed for four. This test was conclusive and the fate of the cable in Boston was settled. Richmond's troubles were buried under an immediate financial loss to my company of \$75,000, fully compensated for in the subsequent unparalleled growth of a great industry. Among the characteristic features established by this installation were: the main and working conductors and feeders, with bonded rails and earth return; the universal movement, reversible trolley in the center of a car; double-ended control; axle-suspended motors; series parallel group-

ing; variation of field resistance; fixed end-contact brushes, and lightning arresters.

The final success of the Richmond road, the rapid equipment of a number of others, and especially the adoption of electricity on the West End road of Boston by Mr. Whitney, whose first installation was part conduit and part trolley, and to whom must be awarded the credit for initiating the modern consolidations of street railways, were followed by a period of extraordinary activity in commercial and technical development in which for a time the Sprague and Thomson-Houston companies were principal competitors.

The progress made in the United States soon commanded the attention of the old world, and work was begun along the same lines in Italy, where I installed the first road, the Florence-Fiesole, in 1889. The first road in Germany was installed at Halle, by our agents, the Allgemeine Elektrizitäts Gesellschaft, but it was not until a number of years later that there was any general adoption of the electric railway in the more conservative countries.

Meanwhile the Sprague Electric Railway & Motor Company was absorbed in 1890 by the Edison General Electric Company, and soon after I severed my connection with it and took up the development of high-speed passenger, freight and automatic house electric elevators in opposition to the hydraulic trust. The Edison Company was later combined with the Thomson-Houston Company and others in the General Electric Company. The Westinghouse Company had meanwhile actively entered the field, and for a number of years these great companies have done the larger part of the electric railway work in this country and abroad. The record of the succeeding years is largely that of an extraordinary industrial development, with continuous improvement in the service rendered and increase in the size of apparatus.

#### HEAVIER TRACTION

Soon after the use of electricity for single cars had proved successful, heavier operations were naturally attempted, and as early as November, 1890, a line on the South London Road, which was originally designed for cable, was opened, the trains being pulled by electric locomotives equipped with a pair of gearless motors having armatures mounted on the axles of the drivers. Meanwhile, I was keenly interested in the rapid-transit problem, and urgently advocated a four-track underground electric railway for New York. I also offered, under heavy forfeiture, to install on the elevated road a train to be operated by a locomotive car, also one to be operated by motors under the cars under a pilot control, and to make an express speed of 40 m.p.h.

Two years later the Liverpool overhead railway was put in operation. Here the trains were composed of two-car units, each car having one motor, the two being operated by hand control. In the spring of the same year, 1893, the Intramural Railway was constructed at the World's Fair, Chicago, the equipment being supplied by the General Electric Company. Motor cars with hand control were used to pull trail cars and a third-rail supply with track return was adopted. In 1895 the Metropolitan West Side Elevated Railroad in that city was equipped on the same general plan. In the following year the Nantasket Beach Road, a branch of the New York & New Haven Railroad, was put in operation, and in September the Lake Street Elevated of Chicago followed. Soon afterward electric service was instituted on the Brooklyn Bridge, motor cars being used to handle the trains at first at the terminals, and later across the bridge.

There were few attempts, however, to replace steam operation on regular roads, and only occasionally were

electric locomotives used and then only for some special reason.

These various equipments, all following steam precedents, seemed a pitiful falling short of the possibilities of electric train operation. Upon taking up the development of electric elevators I adopted distant control of the main motor-controller from a master switch. Pondering over the elevated railway train problem one day, the thought suddenly flashed upon me: Why not apply the same principle to train operation? That is, make a train unit by the combination of a number of individual cars, each complete in all respects, and provide for operating all the controllers simultaneously through a train line from the master switch on any car. Here was a way to give a train of any length all the characteristics of a single car, with every facility of operation demanded by the most exacting conditions of service and capacity.

After two abortive attempts to get the privilege to demonstrate the advantages of the system at my own expense on the Manhattan road in New York, an unexpected opportunity suddenly arose in the spring of 1897, when I was requested to act as the consulting engineer of the South Side Elevated Railway at Chicago.

I hastily drew up a report, the main feature of which was an argument in favor of the abandonment of locomotive cars and the adoption of individual equipment under common control—in short, the multiple-unit system. As an earnest of my confidence I supplemented the report by an offer to personally undertake the equipment of the general plan outlined, which set with the indorsement of the engineers. This was followed by a visit to Chicago, but the contract was not concluded until after I left for Europe, and then only after a very bitter fight with various companies and under most onerous conditions, supplemented by a \$100,000 bond for performance.

On July 16, 1897, two cars were put into operation on the tracks of the General Electric Company at Schenectady, and on the 26th, the half-century anniversary of Professor Farmer's test of a model electric railway at Dover, my ten-year-old son operated a six-car train in the presence of the officers and engineers of the South Side Elevated Road at Schenectady. In November a test train of five cars was put in operation in Chicago. Three months later locomotives had been entirely abandoned, and the whole 120 cars were in operation, the local work being largely supervised by my assistant, Frank H. Shepard.

The controllers for the original Chicago equipment were of the ordinary street car type, operated by pilot motors automatically retarded by any excess of current in the motors during acceleration. The train line contained three speed and two direction controlling wires terminating in couplers at each end of the car. The disposition of the control wires and their connection to the master switches was such that whatever the number, sequence or end relation of the cars there was never any change in the connection of the speed circuits, but when the cars were reversed the direction controlling circuits were automatically reversed. So, also, whatever the grouping of cars, like movement of the master switch with reference to the facing of the track produced like relative direction of movement. These principles are fundamental, whatever the changes of physical details.

As an alternative construction the Westinghouse Company first used a step-by-step pneumatic motor to operate the controller, and later, on account of the increase of duty, both the General Electric, which finally absorbed the Sprague Company, and the Westinghouse Company replaced the single cylinder form of controller

by a combination of individual contactors each under a magnetic blowout.

#### STEAM RAILROAD ELECTRIFICATION

Following a serious accident in the yard tunnel of New York Central road some years ago, the first great step in main line electrification was taken when electricity was adopted for operation at and for some distance from the main New York terminal. Up to that time all motors used for railway purposes maintained a fixed relation between the armature and the field, but when this project was finally taken up a plan for a new type of locomotive was adopted by the General Electric Company, originally proposed by Mr. Batchelder. This called for the use of bi-polar motors, in which the fields of the motors were carried in a horizontal plane, were supported by, and made an integral part of, the locomotive frame and were carried above the suspension springs.

The armatures were rigidly secured to the axles and the fields with flattened pole pieces and a comparatively large air gap, and were free to move up and down relative to the armatures. These locomotives were the first to be equipped with the multiple-unit control so that two or more could be operated together. On this equipment was first developed the Wilgus and Sprague standard under-contact third rail.

Even in the early days of electric railroading it soon became apparent that at the prevailing electric pressures commonly used, from 450 to 600 volts, the field of operation would be restricted by the large investment required for copper, not, of course, within ordinary city limits, but as soon as the distance became considerable. I was, therefore, always an advocate of improvements looking to the use of higher potentials, and especially urged the raising of direct current potential to its practical limit. For a long time this seemed to be impracticable.

Meanwhile the system of polyphase alternating current transmission and conversion to direct current at substations through the intermediary of step-down transformers and rotary converters or motor generators had been developed, and many engineers became the ardent advocates of the abandonment of all consideration of the use of direct current for interurban and trunk line operation and urged the adoption for this purpose of single-phase alternating current operated at high potential on the trolley wire, speed control to be attained by the use of a step-down transformer.

The great difference of opinion among engineers and manufacturers early gave rise to bitter controversies. During a long period of doubt among many as to the results of single-phase operation, my attention was called to the developments which were taking place in variable-speed motors for ordinary industrial purposes by making use of my old inter-pole winding, localized to small extra poles carried between the main field of the motors, and in consequence I urged a test of this practice on railway motors. The first results were so remarkable that I instantly saw the possibilities of a great increase in the potential which could be used in direct-current operation. On account of certain inherent defects in the single-phase motor it also seemed likely that it would gradually be abandoned, and since its sole claim for use had been based upon the economy of installation and transmission, direct current would maintain a supremacy not alone on urban and interurban roads, but also in trunk line operation.

The experience of the past few years seems to have demonstrated the soundness of these conclusions, for while the New Haven system has been, necessarily, maintained and extended, most of the other single-phase

installations in the country have been abandoned, while, on the other hand, some of the most difficult and extended freight lines, deemed by many engineers barred to direct-current operation, have now adopted direct current at from 2500 to 3000 volts working potential, as illustrated by the Butte, Anaconda & Pacific Railway and the 440-mile section of the Chicago, Milwaukee & St. Paul Railway.

There are, of course, alternative methods which are still in use, as, for example, the polyphase system used on the Great Northern Railway, important installations of which have been made in Switzerland. One of the most ambitious attempts of this character was that by two German companies, thirteen years ago, on the Zossen military line, where was made the highest record for speed of a car carrying passengers, about 126 m.p.h., the current being collected at 10,000 volts from three overhead wires by sliding contacts. The multiplicity of conductors, however, distinctly militates against this general system as a solution of the larger railway problem, despite the high ratio of motive power to weight and the easy use of the motor for braking by regeneration, quite independently of other limitations affecting trunk line transportation in general.

Additional methods of using single-phase alternating currents on the working conductor have been proposed and put into practice, but these eliminate the single phase motors entirely. Among them is the introduction on a locomotive of apparatus for changing the energy of the single-phase current into two-phase current to be used in a polyphase motor, as on the Norfolk & Western Railway. Conversion into a pulsating direct current by the use of a mercury rectifier carried on the locomotive has been tried out quite extensively in experimental equipments, and also the use of mercury rectifiers operated from polyphase currents at substations, in both cases in connection with direct-current motors.

Following the general plans suggested by me in a study of electrification for the Sacramento Division of the Southern Pacific Company a number of years ago, the Chicago, Milwaukee & St. Paul locomotives use, instead of the ordinary series motors, independent excitation of the field magnets from motor generators, which makes it possible not only to use the motors for brakes in a circuit closed around the armatures when disconnected from the line, but also to regenerate current on down grades while connected to the line.

#### THE FUTURE

Despite the enormous advances made and the results accomplished in electric railway development it would be folly for the electrical engineer to assume that we have arrived at the limit of invention or improvements. The urban and interurban fields, with the constant linking up of smaller systems into more extended systems, goes on apace, but the trunk-line systems are still largely steam operated. It is possible, and quite probable, that irrespective of any improvements which may develop or any new inventions which may appear the financial question will continue, as heretofore, to largely govern the question of change of motive power in the more extended fields.

It is certain that there must be co-operation in the important matter of power supply, and it is probable that the whole trunk line problem will appear less formidable with the elimination of the requirements of the installation of individual power houses with their necessary reserves, and the use of current from great power houses properly linked together which in addition to their reliability can make full use of the diversity factor in a multiplicity of demand.

# Accounting Inconsistencies and Fallacies\*

*Author uses projective test to show up fallacies in so-called principles. Criticizes commission provisions for appropriation accounts, sinking fund reserves, amortization of debt discount and expense, and other points*

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**I**NCONSISTENCIES and fallacies in accounting are the results of indifference, vacillation, ignorance, expediency, casuistry or dishonesty of purpose. Indifference, vacillation or ignorance may produce either or both, but where expediency, casuistry or dishonesty of purpose govern, principle does not abide in accounting or other human activity, and the inevitable result is fallacy.

Inasmuch as comparison is the measure of efficiency in human endeavor, conclusions drawn from comparisons will be fallacious if consistency is not maintained even to the highest refinements. Consistency cannot be maintained where indifference or ignorance prevail. Vacillation in regard to the maintenance policy may produce inconsistencies unless there be accounting provisions against them. Such vacillation may run back and forth between two extremes, but, while it may not change the total maintenance expenditure in a given period of time, alert, competent and scientific accounting may so keep the accounts in adjustment as to prevent distortion in graphic chart expression of their relations, if only it is given authority approximating that of the actuarial function in life insurance.

## INCONSISTENCIES INVOLVING MATERIALS AND SUPPLIES

Inaccuracy or unreliability in accounting for the use or consumption of operating materials and supplies is not an unusual source of inconsistencies. Many who are charged with the function of management lay great stress upon integrity and accuracy in the handling of and accounting for cash, but fail to realize that consistent comparisons of operating costs are dependent upon the application of the same qualities to the handling of and accounting for materials and supplies. It seems never to occur to them to place the accounting for materials and supplies under the jurisdiction of the officer charged with the general accounting function, even to the extent of supervision over the inventory tests of the accounts.

As bearing upon the need for such supervision, I once came in contact with a very unusual situation—unusual because the developments were quite the opposite of the ordinary. Inconsistencies in comparisons brought about investigation, and the development was that, because the company was enjoying some unusual revenue prosperity, an operating officer whose range of control was sufficient for the purpose conceived the idea of charging out more operating materials and supplies than were being used. He did this not with dishonest intent but with the end in view of accumulating a secret reserve for use without effect on expenses when a recession in revenue might be experienced and when there might be greater watchfulness over the relation of the operating costs thereto.

The "principle" in accounting to which I made reference in the opening paragraph is the one defined in the Century Dictionary as: "A truth which is evident and general; a truth comprehending many subordinate truths; a law on which others are founded, or from which others are derived; as, the principles of morality, of equity, of government, etc. \* \* \*" Lexicons give the application of definitions to law, to engineering, to architecture, to chemistry, to medicine, to mathematics and to society, but not to accounting. Some day, perhaps, a practical man will be drawn upon a lexicon review board, and recognition then will be given to accounting as one of the sciences. An accounting application of this definition would add to the first clause "or which will stand the test of logic, as in accounting."

This would give rise to the question as to how to make the test. The best method I have found is to widen projectively the relations between quantities or factors and consider the result. A notable situation for illustrative purposes is the requirement in an accounting order of the Interstate Commerce Commission directed against steam roads that the balance of the "Hire of Freight Cars" account, arising solely from debits and credits for the interchange use of such equipment, shall not enter into the operating results of the respondent carrier but shall be treated as income derived from sources other than operations—in other words, shall not be included in or be set off against the operating revenue, according as the balance may run; and the further requirement that the respondent's entire cost of maintaining its freight cars (repairs, depreciation and retirements), shall be charged to operating expenses.

For a projective widening of relations, assume that a connecting railroad 100 miles in length, which has been operated under the ownership of 600 freight cars with a need for twice that number, and under the condition of charging the hire of other carriers' freight cars to non-operating income, has been producing net operating revenue at the rate of \$600,000 per annum; and that this railroad, discovering a large shortage of freight cars throughout the country and finding itself in an exceptional position thereby, acquires and places in service 10,000 additional freight cars. Inasmuch as the hire derived from these additional freight cars is required to be credited to non-operating income, and inasmuch as the normal cost of owners' repairs (distinguished from users' repairs under interchange rules), depreciation and retirement are required to be charged to operating expenses and would amount to more than \$600,000 per annum, the result would be to convert the previous net operating revenue into a net operating loss.

Such a change would be wholly illogical in the light

\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Accountants' Association on Oct. 10, 1916.

of the cause and conditions. If the "Hire of Freight Cars" account as set up were charged and credited *per contra* with the amounts necessary to make the operating expenses represent the true costs of operating maintenance for both the other carriers' freight cars and the respondent's own freight cars, there would be no difference in the net operating revenue, whether the respondent owned 600 freight cars or 10,000 freight cars. Furthermore, the "Hire of Freight Cars" account would reflect a true non-operating income. It is by such projections that tests of principle may be made and fallacies be avoided.

#### THE FALLACY OF APPROPRIATION ACCOUNTS

I have wondered why the Interstate Commerce Commission, in its 1914 accounting classification for electric railways, substituted "Corporate Surplus" for "Profit and Loss Surplus," and made a subdivision into five primary accounts, viz.: No. 447, "Additions to Property Through Surplus;" No. 448, "Funded Debt Retired Through Surplus;" No. 449, "Sinking Fund Reserves;" No. 450, "Miscellaneous Fund Reserves," and No. 451, "Profit and Loss—Balance"—unless it was to lead the electric railway companies into the trap of definite appropriations to accounts 447 to 450, to be later closed by legislative prohibition against any use of the credit balances therein for dividend purposes, or to be held subject to the commission's permission of transfers back to the "Profit and Loss" account. Whether or not a profit and loss surplus is available for distribution depends upon the cash position, certainly not upon acts of appropriation. The fact that these appropriation accounts were not made mandatory stands as evidence that the Interstate Commerce Commission did not believe that it could enforce them.

Let us apply the projective test for the purpose of ascertaining whether or not there is anything fallacious in this plan of appropriation accounts with apparent intent to limit dividend distributions to the resultant profit and loss balance. Inasmuch as it appears that the "Sinking Fund Reserves" account is but intermediary to the "Funded Debt Retired Through Surplus" account, we may assume for the purpose that the entire funded debt has been retired and that the sinking fund reserves have been closed. Assume also that the original issue of the funded debt exceeded the tangible value of the property, *i. e.*, covered a part of its franchise value, and that upon the last redemption and retirement of the funded debt the franchise value had been entirely amortized. Assume also that throughout the period of the redemption and retirement of the funded debt and the amortization of the franchise value, large expenditures were made for additions to property and that amounts equal to those expenditures were transferred by appropriation from the "Profit and Loss" account to "Additions to Property Through Surplus" account. Assume further that as a result of these appropriation transfers and amortization charges there is a debit balance or deficit in the "Profit and Loss" account. It is too obvious to be gainsaid that since the amortization of the franchise value took nothing from the company's treasury, there should be a substantial amount available for dividend distribution. The fact that, in the face of such a condition, there is a debit balance, or deficit, in the "Profit and Loss" account exposes the fallacy of this appropriation scheme.

Apparently there did not occur to the Interstate Commerce Commission the practical proposition of setting up a group of accounts, as "Common Shareholders' Accounts," consisting of "Common Capital Stock Outstanding," "Common Capital Stock Conversion Obligation," "Common Capital Stock Premium or Discount," "Governmental Grants in Aid of Construction," and

"Profit and Loss Surplus" the total of which would represent the capital interest of such shareholders in the business as though collectively they were an individual and sole proprietor.

In the interest of the shareholders of the companies affected by the Interstate Commerce Commission classification, and of the other companies whom you represent, I send by the members of this association a message to executives and directors to beware of appropriation accounts and acts of appropriation. They should be shunned as fallacious and dangerous. That the surplus of a corporation is the excess of its assets over the sum of its liabilities and capitalization has been accepted and recognized as a fact for as long as corporate organization and accounting have existed. It is immaterial whether the account representing this excess is entitled "Profit and Loss" or "Surplus." Whichever it may be, it needs no subdivision in its finality. The only purpose of preceding either with the primary accounts of revenue, expense and income is to have ready at hand, in accounts, the data necessary for determining the causes of gains or losses, thereby avoiding for such purpose recourse to analysis of a single account, the former method being more accurate and economical than the latter.

#### COMMISSION RULES SHOW LACK OF HARMONY

As illustrating the lack of harmony as between the Interstate Commerce Commission and the state public service commissions, and as between many of the latter, the full correction of which never will be realized excepting through a greater nationalism in our political organization, it is noticeable that in the accounting order of the Ohio Public Utilities Commission directed to electric utilities, there is a grouping of accounts under the general title "Proprietary Interests, Reserves and Profit and Loss." This accounting order does not require or make provision for appropriation accounts other than one for miscellaneous appropriations, which are specified as optional appropriations from surplus for gratuities, gifts and reserves. While this order provides an "Income and Profit and Loss" account for the current period, it is further noticeable, however, that this is a temporary account to be closed into the final "balance sheet account" designated as "Surplus" or "Deficit," according as the balance may run. The Wisconsin Railroad Commission saves itself from like criticisms by the omission of the "Profit and Loss" account from its accounting orders.

#### SINKING FUND RESERVES ARE VIOLATIVE OF PRINCIPLE

There is similarity between the federal commission and the Ohio commission and several others in regard to sinking fund reserves, and this is one of the greatest fallacies to be found in commission accounting orders. This occasion does not warrant the time necessary to an adequate discussion of the subject. Instead, I will call your attention to an article by my esteemed partner, Charles S. Ludlam, which appeared in the March, 1914, issue of the *Journal of Accountancy*, under the title "Treatment of Sinking Funds," and in which he makes very clear the fallacy of the sinking fund reserve. Obviously if a sinking fund reserve is fallacious, the accounting orders of some of the commissions which provide that the increment to the sinking fund shall not go into the corporation's income account are equally fallacious and violative of principle.

#### AMORTIZATION OF DEBT DISCOUNT AND EXPENSE

I cannot leave the Interstate Commerce Commission without calling attention to an absurd inconsistency

which has been copied by some state commissions in regard to the amortization of funded debt discount and expense. The requirement is that the income account for this amortization shall be charged during each fiscal period with the proportion of the unextinguished discount and expense on funded debt obligations applicable to that period and that this proportion shall be determined according to a rule, the uniform application of which throughout the interval between the date of sale and the date of maturity will extinguish the discount and expense on funded debt; that the charge to this account for any period shall not be either greater or less than the proportion applicable to that period, so long as any portion of the discount and expense remains unextinguished; and that the accounting company may, at its option, charge to "Profit and Loss" account all or any portion of the discount and expense on funded debt remaining at any time unextinguished.

Can one conceive of anything more illogical than that the income account may be wholly relieved of charges for the amortization of funded debt discount and expense but may not be partially relieved therefrom through a write-off to "Profit and Loss" of a portion of the total discount and expense and amortization of the remainder throughout the interval between such write-off and the maturity of the debt? I do not believe in the write-off to "Profit and Loss" of any part of funded debt discount and expense, because I cannot clear from my mind the fact that it is just as much a part of the cost of using borrowed money as contractual interest, and because it should not be omitted from the net income to be considered in rate cases, or from the net income subject to the federal income tax.

In sustaining an application for validation of bonds to be issued and sold under a mortgage the counsel for a company included, in addition to property expendi-

tures, a considerable amount of discount on bonds previously validated under the same mortgage. The commission accepted the explanation of reimbursement for such discount which was presented and validated bonds to the amount of the application. Awakening later to the fact that they had validated an over-issue of bonds by reason of the inclusion and their acceptance of the item of discount, an order was issued requiring that, pro-rated over a period of six years, the company should write out of its "Road and Equipment" account and charge "Profit and Loss" account the amount of the discount item. This was done in total disregard of the fact that the discount in question had not been charged to the "Road and Equipment" account but, on the contrary, had been written off against "Profit and Loss" account prior to the application for validation. Apparently it did not occur to the commission that it was improper so to write down the "Road and Equipment" account, and that the proper remedy would have been to reduce correspondingly the validation of bonds upon the occasion of another application which the conditions made altogether probable.

In another case a ruling was made to sustain the text of the commission's accounting order and was to the effect that while interest maturing on the day next succeeding the date of the balance sheet should be included in current liabilities as interest matured and unpaid, the amount of bonds maturing on the same date, and to which the interest attached, should not be included in current liabilities but should be included in funded debt unmatured.

Lest one form the impression that I am opposed to commission accounting orders from all angles, let me say that such is not the case and that I believe they contain much that is good. I do not disagree with commission orders, but I do disagree with their inconsistencies or fallacies.

## The Work of the Statistician\*

*Separate branch to handle electric railway statistical work is a step in the right direction, owing to commission requirements and the need of comparative data and exact costs. Examples of work of a statistician*

By W. E. JONES

Statistician The Connecticut Company, New Haven, Conn.

ACCORDING to the Century Dictionary the definition of a statistician is "one who is versed in or collects statistics."

The officers of the Connecticut Company reached a conclusion that it would be a most excellent idea to have a man of this type to collect and compile statistics in order to assist the officers and fortify them with knowledge so they could plan to meet the high operating expenses of present day operations and have something left for the stockholders of the company. They realized that it would be necessary to have not only the ordinary results of operations from the accounting department, but also many detailed statements and statistics, going back over a number of years.

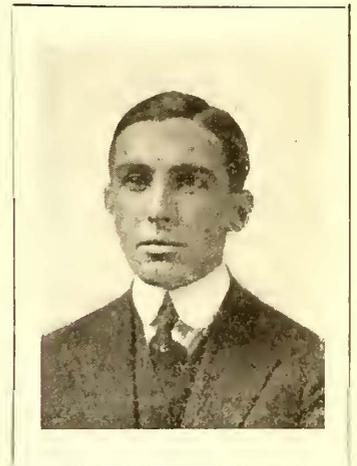
### METHODS FOR PRESENTING STATISTICS

In the presentation of statistics, there are generally two common methods employed: (1) By adhering strictly

to a plain display of facts, classified under proper headings in condensed form and showing such continuity or sequence in time

and incident as to show clearly a result, the source and genuineness of which is not subject to doubt or surmise. (2) A second method is frequently adopted by speculative statisticians who use as a basis the accounts of a fiscal period, and by process of extreme analysis, endeavor to build a statistical fabric with the object of proving or disproving certain theories.

A plain relation and classified presentation of principal facts, as portrayed in the first mentioned plan, is immeasurably preferable, inasmuch as the plain truth thereof is sufficient for the mind of any average street railway man to grasp, and adequate for the purposes of mental comparison and conclusion. The second method, while based upon a foundation of facts, is, as a rule, so colored or accentuated in many ways, and so burdened



\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Accountants' Association on Oct. 9, 1916.

with unnecessary detail and obtruse analysis, as to tend to mislead the open-minded railway official who is seeking facts only, and induce him to accept what may be erroneous or biased conclusions, thereby falling short of a comprehensive grasp of prominent facts and truths. Needless to say, the first method is followed in all of our work.

#### MORE MINUTE STATISTICS NEEDED

Street railway officials all over the country have found that the cost of labor, material and everything pertaining to the production of transportation has increased, while the fares have remained the same. Therefore, it is necessary under present operating conditions to have information showing unit costs of power production, maintenance of track and roadway, maintenance of buildings, upkeep of rolling stock, and this does not mean merely the figures which are ordinarily compiled in the accounting departments of street railways, but further unit costs so as to enable the officers to know the relative efficiency of various types of equipment. Moreover, a great many times it is necessary to know the cost of operating one particular line, or even a single car on a line. This information is not necessary in the ordinary sense, in order to compile information for the state commissions, or for the Interstate Commerce Commission. Competition has also developed in the form of motor transportation, and this has added to the necessity of compiling more minute statistics.

#### EXAMPLE OF STATISTICIAN'S WORK— MILEAGE RECORDS

In most street railway companies the statistical information is compiled under the jurisdiction of the general accounting official. Such information was formerly compiled by some of the clerks in the comptroller's office of the Connecticut company. It seemed desirable, however, to have it compiled by an accountant who made it his entire business to look after statistics, and a new branch was established in charge of a statistician, under the jurisdiction of the comptroller. In order to show more clearly the work of the statistician, I will outline briefly a few methods followed and refer to a number of subjects that have been analyzed where the statistics have brought to our attention valuable information.

In most street railway statistics the unit of cost is the car-mile, and the question of single or individual car mileage is one of the first steps taken after opening the statistician's department. A great many companies merely compile car mileage from the regular running schedule, plus or minus interruptions and extra cars run, but there are a number of companies which compile mileage on the single or individual car basis and for the benefit of some of the accountants, the method followed is briefly outlined. The mileage is figured from the conductors' day cards from day to day, and the day card compared with the schedule running time of that day and such adjustments made as may be necessary due to loss of time on a given route in that day's operations. If more than one car has been used by a crew on a certain route, the exact mileage is figured for each car and recorded on a form provided for that purpose under route heading. This mileage is then transcribed on to a form which is sent to the statistician's office, and recorded on one of two different colored cards as a permanent record for the various equipment. A white card is used for the passenger car mileage. A salmon colored card is used for express, freight, work cars, snow plows, sand cars and other miscellaneous equipment.

The mileage is posted daily and a running total is kept in order that a report may be made from time to time for the inspection of the equipment. The chief

engineer of power and equipment designates the number of car-miles that each type of equipment should be operated before being reported for inspection. Some of the cars are reported on an 800-car-mile basis and others on a 1000-car-mile basis, while there are a few cars on interurban lines that are inspected on a 1500-car mileage basis. Most of the cars, however, are inspected on a 1000-car-mile basis. A daily report is prepared in the statistician's office covering the cars to be reported for inspection. The form is made up in quadruplicate copies. The original is sent to the manager or superintendent, the duplicate to the master mechanic and the triplicate to the barn superintendent or foreman, while the quadruplicate is retained in the general office files. This report is prepared to show the various cars that have run approximately the number of miles allotted to their type of equipment, and to have the operating department arrange for the proper inspection. The report is sent out one day in advance of the inspection to enable the operating departments to line up the cars for inspection the following day. This inspection system has shown that there is a saving in the inspection department, and our equipment is kept in much better condition than it was under the old system of inspection.

#### WHEEL, AXLE AND SIMILAR RECORDS

Another branch of statistics or cost accounting which is under the jurisdiction of the statistician covers the wheel, axle, gear and similar records. This information is compiled so as to give complete information as to when car wheels are pressed on the axles and when the axles are placed under certain cars. A form is filled out by the foreman in the wheel department and sent to the master mechanic, showing the wheel numbers, axle number, date, number of tons pressure, number of the mate of wheel, type, size, etc. This report is recorded on a car wheel and axle record. When the wheels and axles are placed under the cars a report is sent by the truck foreman to the master mechanic, and a record is then made on the car wheel record and axle record, showing the date and number of car wheels that are placed under the equipment. These records are then put into the operating equipment file and remain there until these wheels or axles are removed. Then the same forms are used again by the foreman, and their record is transcribed onto the car wheel records and axle records in such a manner that the master mechanic is able to determine how long the wheels or axles have run.

At the end of each month a report is made by the master mechanic to the statistician, advising him as to the date when the car wheels and axles were removed from service during the month. The statistician then prepares a statement for the supervisor of equipment, showing the car wheels and axles that have been removed from cars on all divisions, giving the mileage made, and he (the supervisor of equipment) can then judge what make or type of wheel is best for service on each division.

#### STATEMENTS CONTAINING USEFUL STATISTICS

The statistical department also prepares monthly statements which contain useful statistics for the operating officials. A few of these statements are as follows:

(1) A comparative income statement. This shows increases or decreases in the revenue and operating expenses for the month and period to date, as well as a number of statistics, these being the percentage of operating expenses to earnings, daily average receipts, daily average expenses, revenue per car-mile, operating expenses per car-mile, total car mileage, revenue passen-

gers and transfer passengers carried. This statement (which is in addition to the regular income statement made out in accordance with the Interstate Commerce Commission classification of accounts) is used for the convenience of the officers to pass information to bankers or others interested. (2) Earnings and statistics by lines. This gives earnings per car-mile and per car-hour and density of riding, etc. (3) Detailed power station expenses and costs.

Further light on the work of the statistician may be given by enumerating a number of special statements prepared, such as charts showing high points in operating expenses of certain power stations; a statement of lay-overs on some of the divisions, showing the per cent of time lost on account of the layover, the total hours lost and the total hours that would be lost, if certain schedules were to be continued for one year; statements compiling statistics of other companies for comparative purposes, and statements of expenditures on account of municipal requirements for a period of years.

It is to be noted that substantially all of the above statements are merely along the line of statistics and not what, in the ordinary sense of the word, could be

called bookkeeping work, or general office work which all street railways are obliged to have done in order to comply with state or commission requirements. As stated in the first part of this paper, competition is keen, costs are high and no portion of a street railway can be operated profitably under the present conditions unless the officials know absolutely just what every operation costs.

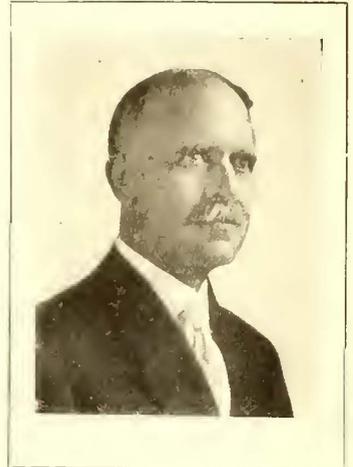
In addition to the minute statistics required by the officers of the companies, the commissions have in some instances extended their requirements, and this has put a further burden upon the accounting department which brings out the fact that the establishment of a statistical branch in connection with the accounting work of street railway companies is a step in the right direction, and a number of accounting officials have recognized this and are establishing such departments. Officers are realizing more and more the value of statistics, and as the demand for this sort of information increases, it would seem that the presidents and operating officials, as well as the accounting heads, will realize the necessity of the statistician. It is predicted that more appointments to such offices will undoubtedly be made in the near future.

## The Census of Electrical Industries\*

*Census Bureau has unique record of United States electrical development. Gross value of products and income amount to \$1,201,000,000 annually. No other industry changed so rapidly or completely in one generation as electric railways*

By WILLIAM M. STEUART

Chief Statistician for Manufactures, Bureau of the Census, Department of Commerce, Washington, D. C.



THE United States, the British Empire, Germany and France are by far the most important industrial nations. In magnitude and diversity of industry, the United States ranks first. While the multiplicity of inventions, the closer commercial relations of nations, the more general and thorough education of the masses, the utilization of natural resources and other conditions have aided in this general advancement, we believe that electricity has been the most important single factor. Those of us who are fifty years of age can remember when the telephone was coming into commercial use, and the small experimental central stations were being installed in the most favored localities. Less than thirty years ago practically all of the street cars were drawn by horses. With the exception of the telegraph, all the industries depending upon the commercial use of electricity have come into existence and been developed during the present generation.

The development of the telephone has been the wonder of the age. Equally astonishing has been the expansion of other industries in the electrical field. There are now about 1,500,000 automobiles registered in the United States, and the reports of manufacturers indicate that the annual production will amount to 1,500,000. The increased popularity of the automobile is due largely to the application of electricity. Practically every car now produced is equipped with an electric self-starter and lighting system. The hand crank and oil acetylene lamps are rapidly disappearing. The United States easily takes first place in the production

and utilization of electric current for commercial and industrial purposes. Our central stations, electric roads, telephone and telegraphs now give direct employment to approximately 1,000,000 people, and the industrial, commercial and social well-being of the country is dependent on them. We can conceive the conditions that would exist if electricity should suddenly lose its power.

### IMPORTANT TO HAVE STATISTICS

It is contended by some that these conditions are well known, and it is not necessary—in fact, serves no useful purpose—to compile statistics in regard to them. Fortunately, we are not all of this opinion. It is important to the nation as a whole to know the amount of capital invested in electric railways, the miles of track, number of cars, persons employed, etc. Each company has these facts for its own properties and cannot do business without them, and the nation is very much in the same position. We cannot know what our combined efforts amount to, whether the net result of successes and failures in business is a gain or a loss, unless the government compile statistics to show the magnitude of operations for representative periods. Certainly we would not be an up-to-date people unless we knew to a reasonable degree of certainty the extent of our various industries.

With but few exceptions, the companies now appreciate this and furnish the data without question. A few years ago there was an entirely different feeling,

\*Abstract of paper delivered before the Atlantic City convention of the American Electric Railway Accountants' Association on Oct. 10, 1916.

and the majority of the companies contended that statistics concerning their operations were of such a personal nature that they would not furnish them to the government. The first complete census of the electric industries covered 1902, and I remember that many companies were not inclined to make reports. Some were very disagreeable about it and made it as difficult as possible for the agents to secure the data. The bureau sought the advice and assistance of the Accountants' Association and others who appreciated the value of statistics. A spirit of co-operation was finally established, but after trying for somewhat more than a year to secure satisfactory returns for all companies, the census was finally printed without the data for some important companies.

#### MULTIPLICITY OF STATISTICS DEPLORED

The absence of statistics for the early periods of our history makes it impossible to show the actual conditions existing at that time, but we are now in danger of giving too much attention to statistics. We are often met with the assertion that reports are required by government agencies that answer no useful purpose, and that some arrangement should be made to standardize the reports required by the various governmental bureaus, so one report would answer for all. It does seem unnecessary for the United States, the states, and in some instances cities and counties, to secure reports containing, in part, the same information. The Census Bureau appreciates this and is constantly working for co-ordination in the compilation of statistics. We hope that before long some scheme will be devised to avoid the multiplicity of reports.

#### UNIQUE RECORD OF ELECTRICAL DEVELOPMENT

The Census Bureau has made a complete record of the development of the electric industries in the United States from their incipency. It is a record that can be referred to with pride, because it is based entirely on American ingenuity and enterprise. No corresponding record has been made by any other nation, or for any other industry in this nation. These records contain separate totals for the manufacture of electrical machinery and apparatus, the telephone and telegraph industry, the central electric stations and the electric railways.

#### THE ELECTRICAL MANUFACTURING INDUSTRY

These industries all depend upon the manufacture of electrical machinery and apparatus. The number, variety and scientific accuracy of these machines has increased enormously during the last twenty years. In no other branch of manufactures has there been such rapid increase in the number of different kinds of machines, and at the same time such a standardization of products. The scientific precision required has tended to specialization, and it is now one of the most highly specialized industries of the country. Most of the products are made in a few perfectly equipped factories. While there are more than 1000 establishments manufacturing these products, the majority of them are small and make a specialty of a particular machine or part of a machine. The capital invested in the industry exceeds \$360,000,000, it gives employment to about 150,000 people, and the annual production is valued at approximately \$400,000,000. It covers the entire field, from the smallest piece of the most delicate measuring instrument to the complete locomotive and the equipment required for a modern central station.

#### 5221 CENTRAL STATIONS IN 1912

The last census, that of 1912, enumerated 5221 central stations which furnished electrical energy for light, power and heat; for manufacturing, mining, and other

commercial enterprises; for private dwellings, and for public use in lighting streets and parks. In addition to these there are many thousands of stations, some think as many as 75,000, operated by mining companies, factories, hotels, large stores and other enterprises. There are also a few stations in governmental institutions established for the exclusive use of the institutions that are not covered by the census. While the number of electric railways doing central station work has increased, there has been a still greater increase in the magnitude of such work, and the annual income from the sale of current by the electric railways in 1912 was nearly \$36,500,000. The total annual income of central stations from electric service and that of electric railways from the sale of current amounted to \$323,480,000.

Central stations are operated under such a variety of conditions that it is necessary to make some grouping of the plants in order to bring together the statistics for those engaged in the same class of work. The primary grouping shows separate totals for plants operated under private and government ownership. The government plants are operated largely by municipalities. They frequently extend their operations into the commercial field and sell electricity to the general consumer, but they are conducted under conditions radically different from those of the privately owned plants. There were 1562 municipal stations enumerated at the census of 1912, and their prime movers were reported as having 559,000 hp. During the five years from 1907 to 1912 there was a net gain of 310 in the number of these stations. Of this number 301 were new. There was an increase of nine brought about by the difference between the number whose ownership had changed from commercial to municipal and those that had changed in the opposite direction, from municipal to commercial, and seventeen then went out of business. Thus far the municipal stations have been successfully conducted in the smaller cities and towns where the methods of doing business are the topic of general discussion, and the transactions are on a limited scale. We, therefore, find that the majority of these stations are small, and while they form about 30 per cent of the total number of all stations, the horsepower of their prime movers forms only 7.4 per cent of the total power. The municipal stations have, during the past decade, increased more rapidly than the commercial stations, but relatively, in the magnitude of work done, they have been stationary, and in some respects have retrograded. In 1902 the kilowatt capacity of their dynamos formed 9.4 per cent of the total from all stations. By 1912 this proportion had been reduced to 7.7 per cent. These stations are well distributed throughout the country—they were found in every state, but the largest numbers are in Michigan, Minnesota and Ohio. While the competition with commercial stations is pronounced in some localities, it is of minor importance in the country as a whole.

Considering the private and government owned stations, we are surprised to find how completely the map of the United States is covered with them. With the exception of the remote sections of the country, where there is no industry, wiring for some electric purposes, telephone, telegraph, railway or central station work is found in practically every township. The advances made in long-distance transmission of electricity and its application to industrial processes in rural districts has greatly extended the central station field of activity. The prime movers in the central stations in 1902 had only 23 hp. to every 1000 of the population. In ten years this ratio increased to 79. The ratio of horsepower to population is highest in the Western states, where it is about 200, and smallest in the South Central, where it is about 25.

In investment, equipment and work done during the year, the electric railways are of far greater importance than the 5112 central stations. To begin with, the electric railways had a great advantage over other branches of electric industries. They took over plants already in existence and more or less adapted to their work. With them it has been a remodeling and extending process. For the central stations, telephones and telegraphs, entirely new plants had to be installed, new fields of work developed and new methods of business devised. The census, therefore, found the railways more perfectly organized and in better position to furnish statistics of their operations than the others. This condition was due largely to the efforts of the Accountants' Association. It quickly appreciated the value of census statistics and appointed a committee to co-operate with the bureau.

#### HOW THE ELECTRIC RAILWAYS HAVE GROWN

The reports for the last four censuses contain a very interesting detail history of the electric railways. They show the conditions of operation during each census year, the investment, equipment, work done, receipts, expenditures and the improvements in machinery and methods perfected during the period between the censuses. In 1890 animals, cables, and steam were used as motive power. Horse roads operated 5660 miles of track. These have now virtually passed out of existence; the gasoline motor has come into operation, and various other kinds of motive power have been tried. They have practically all been superseded by electricity. In 1912 there were 943 companies operated by electricity, twenty-one by cable, thirteen by animals, nine by gasoline motors and nine by steam. The use of electricity has so extended the field of operations and made such radical changes in the methods of business, that the roads of to-day serve an entirely different purpose from the street railways of twenty-five years ago. They are no longer confined to cities, but are fast absorbing the interurban and rural traffic. There were 16,365 miles of interurban and 24,966 miles of city and suburban track at the last census. As a considerable portion of the city and suburban track is located outside the corporate limits of cities, it is probable that half the trackage is operated in rural sections, but handling a class of traffic that could not be handled by the steam roads and meeting requirements of construction and operation that could not be complied with by any other class of roads.

The capitalization of electric railways is now \$5,000,000,000; it was more than \$4,700,000,000 in 1912; in 1890 it was \$450,000,000. The increase in capitalization is hardly a true indication of the increase in the industry. The number of revenue passengers carried increased from 2,000,000,000 to 9,500,000,000, and the income from operations from \$91,700,000 to \$585,900,000. The number of passengers carried on these roads in 1890 was sufficient to give thirty-two rides to each inhabitant of the United States. The number carried in 1912 was sufficient to give 100 rides to each inhabitant. It is safe to say that no other industry has increased so rapidly and undergone such a complete change within a generation.

Just half (50.8 per cent) of the railways produce their own power. The census shows that there is a tendency, more marked in some localities, to purchase power from central stations. The rapid increase in this practice is evidently based on economics not possible by roads that operate their own power plant.

#### OPERATING RATIOS AND INCOME DEDUCTIONS

In presenting the financial statistics the bureau adopted the grouping according to size of companies

that is used by the Interstate Commerce Commission. In addition, separate totals are shown for (1) companies that do not operate commercial lighting plants; (2) those that do operate such plants; (3) those operated only a part of the year, and (4) horse railroads. The grouping of the companies according to size enables a definite statement of relative importance of the large and small companies. It appears that only 9 per cent of the operating companies had an annual income from railway operations of \$1,000,000 or more, but they operate 51.9 per cent of the track of the entire country, and their gross income forms 75 per cent of the income of all companies. This group includes the companies operating in urban districts of highest density, and their track mileage, passengers carried, income and expenses have increased more rapidly than those of any other group. It is instructive to compare the different items of income and expenses for the companies in the several groups. These items are shown in detail for each group and then summarized in convenient form. For example, the operating ratio for all companies is given as 58.7, for the large companies 56.7, for the medium size companies 61.7, and for the small companies 68.3.

The separate showing for companies doing exclusively railway work, those doing central station work, and those operated only a part of the year or under abnormal conditions assists in an exact analysis of the returns for legitimate railway business. The operating ratio of the companies in the first of these groups was 59.2, of those in the second group 56.0, and those in the third group 73.4. These percentages differ very much from those shown for the companies grouped according to size.

Considerable interest has recently been attached to the statistics for deductions from income. The census includes in these items taxes, interest, rent of leased lines and terminals, charges for sinking funds and various miscellaneous deductions. During the ten years from 1902 to 1912 these items increased by 146 per cent. The three largest items are interest, \$98,000,000; rent, \$45,000,000, and taxes, \$35,000,000. The largest amount of increase is shown for interest while the highest rate of increase (168 per cent) is shown for taxes.

The census has made a very careful analysis of the financial statistics of electric railways. Probably it is more elaborate than is necessary for practical purposes, although the committee that was appointed by the Accountants' Association to make recommendations for the improvement of the report would not give any suggestions other than those for the modification of the schedules. The bureau desires to publish these statistics in a manner that will be of greatest interest, and we hope you are considering the report of 1912 with the intention of making some recommendations for 1917.

#### TELEPHONE AND TELEGRAPH DEVELOPMENT

The other two branches of electric industries, the telephone and the telegraph, are unique. The country is full of small telephone companies. Many of them are small farmer lines, operated under a co-operative arrangement or mutual understanding. They have no regular employees or no income, but are maintained by assessments. It is impossible to collect statistics concerning the financial operations of these small systems. The bureau succeeded in collecting statistics of wire and number of instruments for 32,233 systems. More detailed statistics were collected for about 2000 of the larger companies. There were more than 20,000,000 miles of wire and about 9,000,000 telephones in use in 1912. At the beginning of the census year 1880 the industry was of little importance, but at the end of 1912 it represented one of the greatest interests of the coun-

try. It has continued to develop probably more rapidly than any other industry in the country, and the statistics for 1912 are no indication of its present magnitude.

The telegraph is the oldest of the four industries devoted to the commercial use of electricity. There were twenty-seven commercial land and ocean telegraph systems in operation in 1912. There were 1,800,000 miles of wire in use, and about 110,000,000 messages transmitted during the year. The total annual income amounted to \$64,762,843. The telephone has long since outdistanced, and in some respects superseded, the telegraph.

The census includes the fire alarm and police patrol

signaling systems of the cities, but these are not operated commercially and the statistics relating thereto have little in common with the other electrical industries. There were 1397 signaling systems in 1912 operating 90,000 miles of wire and more than 80,000 boxes or signaling stations.

Aggregating the four commercial branches of electric industries, we have 8424 establishments, companies or systems in operation; they give employment to 582,000 salaried officials, clerks, and wage earners; pay out annually in salaries and wages \$383,000,000, and the gross value of products and income amounts to \$1,201,000,000.

## Commission Valuation for Rate Purposes\*

*Author discusses origin of fair-value rule. Cites cases allowing going value when actual costs are proved. Makes plea for free presentation of facts by companies*

By JOHN E. BENTON

Former Member New Hampshire Public Service Commission, Keene, N. H.

SO well understood now is the constitutional principle that no state through legislature or commission may reduce rates to a point where a fair return on the fair value of property cannot be earned, that it may surprise some to be reminded that such was not always the law. The fourteenth amendment was ratified by the requisite number of states in 1868, but in 1877, almost a decade later, the United States Supreme Court, in *Munn vs. Illinois* (94 U. S. 113), held that a state might regulate rates exacted for the use of any property devoted to public service, and that what was reasonable compensation for the owner was a question for the legislature to determine and not for the courts. Neither the majority nor the minority opinion then grasped the idea of a legislative power to regulate curbed by a judicial power to protect against confiscation. That idea was developed gradually.

Finally, in 1894, *Reagan vs. Farmers' Loan & Trust Company* (154 U. S. 362), the United States Supreme Court reviewed the facts, found that the railroad concerned had \$15,000,000 of bonds and \$9,755,000 of stock outstanding; that both represented actual investment; that the stock had never paid any dividend; that the rates before in effect had been insufficient to enable the company to pay all the interest on the bonds; that the stockholders had been obliged to pay an assessment to avoid foreclosure, and that the commission rates had operated to reduce the revenues so substantially that the company could not pay more than one-half the interest on its bonds. "Can it be," said the court, "that a tariff which under these circumstances has worked such results to the parties whose money built this road is other than unjust and unreasonable?" The rates were unanimously held invalid as in violation of the fourteenth amendment.

Thus did the United States Supreme Court, almost thirty years after the amendment was adopted, for the first time hold rates invalid as confiscatory within the meaning of the amendment. This first case is interesting because the facts emphasized by the court were the facts shown by the accountant's records—the amount invested and represented by stock and bonds;

the interest and dividend record, and the financial history of the corporation. The court was acting, and made that fact clear, to safeguard the investment. But as yet no rule was laid down for application in future cases.

### ORIGIN OF THE FAIR VALUE RULE

It was in 1898 that *Smyth vs. Ames* (169 U. S. 125) was decided. In that case the Union Pacific Railroad was contesting rates prescribed by a statute of the State of Nebraska. Oddly enough, the State, represented by William Jennings Bryan, was contending that any return to which the company might be entitled must be computed upon the reproduction cost of the property, while the company was contending that it should be computed upon the original cost, which it claimed to be shown by the amount of its stock and bonds outstanding. The road had been constructed in war times, when everything was high. The court seems to have been unwilling to accept capitalization or original cost as the base upon which to compute the ratio, because it might be unfair to the public. It was also unwilling to accept the cost of reproduction because it might be unfair to the owners of the property. The result was the fair value rule which was laid down by the court as follows:

We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And, in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted



\*Abstract of paper delivered before the Atlantic City convention of the American Electric Railway Accountants' Association on Oct. 9, 1916.

from it for the use of a public highway than the services rendered by it are reasonably worth.

These cases show that no one can afford to be dogmatic about what the law is. Law is not immutable but is constantly being molded by the courts to meet the needs of society as those needs are conceived by the judges. The "fair-return-on-fair-value" rule was devised by the court with the intent to compel the legislative branch of the government, in the exercise of the rate-making power, to avoid confiscating investments made in property devoted to public use. The rule does not purport to be a formula which can be applied mathematically to all cases. Original investment, as a base upon which to compute the return, might be fair in some cases and not fair in others; so also might the reproduction cost, or the amount or the value of the securities outstanding. Accordingly, the court followed the more cautious course of saying that all of those factors ought to be taken into account and given such consideration as was just and right in each case. This left the ultimate value to be determined as a question of fact upon considerations of justice in view of all relevant evidence.

#### TERM "VALUE" HAS LED TO UNCERTAINTY

The use of the term "value" has undoubtedly been the cause of much uncertainty as to the real intent and meaning of the rule. The owners of public service properties and their representatives immediately perceived that if the term were to be taken in the sense of exchange value, not much latitude for the regulation of rates was left. This would necessarily be true because the earning capacity of a property at such rates as could be collected from the public would determine its exchange value. If these rates could not be so reduced as to prevent the earning of a return upon that value, no legislative reduction of rates would be possible. Naturally such owners and representatives have earnestly contended for that construction, while those who desired the legislative power of regulation to be unimpaired have argued for some other construction.

#### EXCHANGE VALUE NOT DETERMINING FACTOR

Candid consideration of the entire opinion will, however, satisfy most persons that the court intended to use the term "value" in a somewhat special sense. To begin with, it is not to be supposed that the court intended practically to take away from the states the power of rate regulation—a power which in the *Munn vs. Illinois* case the court had said the legislature in common law countries had exercised from time immemorial. Nor can it any more be supposed that the court intended to declare a rule which would prevent the reduction of exorbitant charges, if made, merely because the return from those charges had been enjoyed long enough to give the property a greatly enhanced exchange value. The language of the opinion is inconsistent with the idea that the court intended that exchange value should be accepted as the determining factor. The market value of all the stock and bonds which represent a given property show the market value or exchange value of that property. The court said that this was to be considered, but that the weight to be given it was only such as was just and right in each case.

One reason why exchange value cannot be safely accepted as a controlling factor in fixing the base amount upon which to compute a return has just been indicated. If the charges have been excessive, they tend to give an excessive exchange value. On the other hand, unforeseen difficulties of construction may be encountered and unavoidable losses incurred, so that the prop-

erty, when completed, may represent twice the actual investment of another property serving some other community of equal size. The earning capacity, and therefore the exchange value, of those properties will be approximately the same, but it would be a hard rule of law that the more expensive property might not, if it could, earn a return on its full cost to the owners, even though such cost greatly exceeded what the property could be sold for.

It is not market or exchange value any more than the original cost, or the reproduction cost, or the capitalization of the property that is to be taken as a measure for earnings. All are to be considered, and a base value adopted that shall be fair alike to the owners of the property and to the public. There can be no mathematical formula to govern. The fixing of such fair value is, and must always be, an act of judgment to be exercised by the officials intrusted with the powers of government to that end. But the exercise of that judgment is subject to judicial review, and the value fixed in any case may be set aside if it appears that due weight has not been attached to those evidences of value which justly ought to be considered.

#### MOST WEIGHT HAS BEEN GIVEN TO REPRODUCTION COST

In attempting to follow the law laid down by the court in *Smyth vs. Ames*, commissions appear to have given most weight to evidence of the cost of reproduction. The reason for this may lie partially in the fact that such evidence can always be secured, whereas evidence as to original cost is often difficult to produce. I believe, however, that the reason lies principally in the fact that it has accorded with our generally accepted notions of justice to say that the owner of a property devoted to public use should be permitted to receive a return upon an amount equal to what it would cost to reproduce that property if it should be withdrawn from public service.

Along with this idea another has been almost universally held. It is that the owner ought at least to be allowed a return upon the full amount of his investment. It is questioned by some who would establish the cost of reproduction of physical properties as the sole measure of value for rate purposes, upon the ground that if the owner is to gain through the increase in unit costs and land values he should bear the risk of loss through decrease in such costs and values. And, of course, that is logical.

In *Smyth vs. Ames* there is no suggestion of the consideration of preliminary and development costs incurred by the owners in establishing and developing the business connected with the property to be valued. In condemnation cases, however, the courts have made it clear that, in valuing a property taken, allowance must be made for the element of value inhering in the property by reason of the established business which it is doing. For a long time it was urgently insisted by the owners and representatives of public service properties that the same rule applied in the valuation of such properties for rate purposes. The commissions seem to have been impressed with this contention, and, in one way and another, to have endeavored to make their decisions in valuation cases conform to the rule as laid down in the *National Water Works* case (62 Fed. 853) and the *Omaha* case (218 U. S. 180). Still several commissions frankly refused to make any allowance for going value, and others made wholly inadequate allowances, assuming the same to have been intended to cover the substantial expenditures ordinarily represented by the cost of establishing the business on a paying basis. This attitude on the part of commissions was due probably to the facts that the costs of establishing a business have not been well understood, and

that it consequently has seemed to the commissions not just that substantial allowances should be made on account of business which appeared to be the result merely of a public demand for service.

#### COMMISSIONERS AND PUBLIC OPINION

It must always be remembered that public service commissioners are very human folk. They know that the offices they hold were created to protect the public from the supposed danger of overcharges or of neglect of duty on the part of public service corporations. They naturally have no desire to be considered conspicuously unfit to occupy those offices. They do not desire to be considered by the public either as biased in favor of the corporations, or as well intentioned persons whom it is very easy to impose upon. This is as it should be. If they were indifferent to public opinion they would be unfit for their offices, for they can be useful only so long as the public has confidence in them. They probably do more good in the line of promoting an understanding upon the part of the public of what it is reasonable to expect from the corporations, and on the part of the corporations of what it is reasonable for the public to expect, than by the exercise of their powers to make regulatory orders. It is, therefore, in the highest degree to be desired that the decisions which they may make should be based upon evidence which the public can understand.

Few commissions care to issue a report in substance like the following:

We have spent many months investigating the proposed rate increase. We have inspected all the physical property of the company which we can find, and have carefully estimated the cost of reproducing the same; we have made due allowance for omissions which may have occurred, for overhead costs and for working capital. We have determined the net income and have allowed a deduction for depreciation greater than the company has itself ever seen fit to set aside for that purpose, and still we find the balance of income remaining sufficient to pay a fair rate of return upon the value of all the property we could find, with the allowances we have made. This would lead us to forbid the proposed increase, but for the fact that the company at the hearing produced the evidence of an engineer of very high standing, who testified that it was his opinion that the fact that the railroad is a going concern, having an established business, with patrons who ride, gives it an intangible element of value, commonly called going value, which is equal to one-third of the value of the physical property. He also testified that in his opinion the company must have incurred a cost in securing the business equal to his estimate of its value. Upon consideration of this evidence we have added to the value of physical property one-third of its amount. This gives us a total value so large that we find the existing rates to be insufficient to yield a fair return. The proposed increase must, accordingly, be allowed.

The commissioners know that the public, if no costs are shown, will not easily understand why the fact that they ride upon the street railway should be treated as a reason for increasing the fares they are called upon to pay, if the company is already earning enough to make a reasonable return upon the value of all the property the commission can find. It is in accordance with commonly accepted ideas of justice that the company should have a return upon what it contributes to the service of the public, and it is contrary to those ideas that a company enjoying a monopoly should be allowed a return upon the capitalized value of the demand of the public service. It is to be expected that commissioners, being no different than other people, will be affected by these ideas commonly held by the communities in which they serve, and will feel little disposed to make much allowance for going value when nothing except opinion evidence is offered in support of the claims therefor. They do not question that established business adds very materially to the exchange value of any property,

but they are not satisfied that considerations of justice require that such increased exchange value should be taken as the measure of the company's rates.

#### BASING GOING VALUE ON THE COST OF BUSINESS

Now, if instead of basing the demand for an allowance for going value upon the fact that established business is worth money to the corporation, the demand for such allowance is based upon the fact that the business has cost money to the corporation, the result will be very different. If it can be shown by proof of actual costs that the business represents investment by the owners, just as truly as the physical property does, the commissioners and the public will concede that considerations of justice require an allowance therefor.

Proof of this sort must be given by the accountants. It requires careful and laborious work. But, if it is necessary as a part of any rate case to establish a substantial going value, a thorough review of the entire financial history of the corporation should be made. Exhibits should be prepared and presented showing: (1) All expenditures made for the purpose of building up the business of the company, and not paid as operating expenses out of revenues. (2) All expenditures or losses made during the history of the property, not paid out of earnings, and not reflected in the reproduction cost of physical properties covered by the inventory. Losses resulting from washouts, floods or other acts of God, or from sudden changes in the equipment demanded by the public, are a part of these expenditures. When they have occurred, are not attributable to the fault of the company and have not been recouped, they ought to be considered as expenditures made on behalf of the community, and given due weight, the same as existing property. Otherwise such losses, more or less of which are certain to occur in the history of any large property, could never be recouped. (3) Such deficiency of dividends below a fair return as the company appears to have suffered during its history, together with interest thereon to the date of the hearing. The amounts shown by these exhibits may not be accepted by the commission as the measure of the going value. They will, however, inevitably receive substantial weight, so generally conceded is it that actual sacrifices made in supplying public service ought to be required.

If there has been no deficiency of dividends, but there is accrued depreciation unprovided for by any depreciation reserve, an exhibit should also be made showing that the dividends paid during the history of the company have not exceeded a fair average return for the whole period, if such be the fact. If this is demonstrated to the satisfaction of the commission, then, in justice to the company, no account ought to be taken of accrued depreciation—or more accurately speaking, the accrued depreciation ought to be regarded as a part of the cost of establishing the business of the company, and a weight attributed to the intangibles on that account sufficient to offset the accrued depreciation. This principle was very clearly recognized by the Massachusetts commission in the Middlesex & Boston case (Mass. P. S. C. Reports, 1914, page 99), and by the New Hampshire commission in the Manchester case (N. H. P. S. C. Reports, Vol. V.).

If instead of depending upon opinion evidence to secure adequate allowance for going value, the companies will present to the commissions proof from their own accounts of the actual investment which such going value represents to their stockholders, I believe that instead of either being denied any allowance, or of receiving allowances which are merely nominal, they will generally receive allowances which will be full and ade-

quate. The public service commissioners throughout the country, speaking generally, are a body of men of substantial ability, who are very earnestly endeavoring to work out the problems of public regulation in a way that will result in full justice to the public and to those who have invested their money in the service of the public. The utilities will ordinarily get just treatment at their hands if evidence is presented which gives them a full knowledge of all the facts. This knowledge with regard to the so-called going value element can only be given by the accountants.

#### GOING VALUE NOT GRANTED WITHOUT PROOF

If the investments represented by the intangible elements of value before referred to are placed before the commissions, and proper allowances are not made, the record will then be in such shape that the courts can correct any failure of the commissions to do justice. This is not true where the going value claim is rested upon opinion evidence instead of upon proved facts. To illustrate this I want to refer to three court decisions.

The first was the last decided, *Des Moines Gas Company vs. Des Moines* (238 U. S. 153). In that case Judge Sloan, who sat as master, in the first draft of his report to the court valued the physical property at the cost of reproduction less depreciation, and added an item of \$300,000, as "its worth over and above its physical value, and more than a plant would be worth that had to develop its business." In this item, it was said, "no interest during construction is allowed, nor anything which is included in the 'overhead charges,' which are part of the physical value."

Before the final report was filed, the United States Supreme Court handed down the decision in the Cedar Rapids case, and this caused Judge Sloan to eliminate the item of going value, leaving his report as it otherwise stood, with the plant appraised merely at the amount of its reproduction cost less depreciation. "This value," the master said, "is reckoned upon the fact that the plant was in 'successful operation'—otherwise its value would be much less. The 'going value' is that enhancement which results from a well-developed and paying business." With the "going value" item eliminated the income was found to be sufficient so that the rates prescribed by the ordinance, which were under consideration, were not confiscatory. If the going value item had been included, the rates would have been found confiscatory. The case was taken to the United States Supreme Court, and that court sustained Judge Sloan's valuation.

Until this decision was made, there was a confident expectation upon the part of many able attorneys that when the question involved came squarely before the court it would hold that attached business must be appraised at its financial worth or value, using value in the sense of "exchange value." But in the *Des Moines* case the question was squarely before the court, and an entire disallowance of going value was sustained. The decision, however, went upon the ground that the proofs did not show unrequited losses, rather than upon the ground that unrequited losses might be disregarded. The court said:

That there is an element of value in an assembled and established plant doing business and earning money over one not thus advanced is self-evident. This element is a property right, and should be considered in determining the value of the property upon which the owner has a right to make a fair return. \* \* \* Included in going value \* \* \* is the investment necessary to \* \* \* establishing the business. \* \* \* In this case \* \* \* the inception cost of establishing \* \* \* a going concern has long since been incurred. \* \* \* For aught that appears in this record, these expenses may have been already compensated in rates charged and collected under former ordinances. It is not to be presumed, without proof, that a

company is under the necessity of making up losses and expenditures incident to the experimental stage of its business.

#### COSTS PROVED—GOING VALUE ALLOWED

I will now refer to two cases where proofs of these costs were supplied, and where the commissions were reversed for a failure to make allowance for going value. One of those decisions was rendered in the new and supposedly somewhat radical state of Oklahoma; the other in the citadel of conservatism, New York.

In *Pioneer Telephone & Telegraph Company vs. Westenhaver* (29 Oklahoma 429, 30 L. R. A. [N. S.] 1209) decided Jan. 10, 1911, it appeared from the evidence produced before the commission that for several years the earnings of the company were insufficient to provide for depreciation, or to pay dividends. The commission, however, had made no going value allowance. The court said:

Few industries \* \* \* can be made self-sustaining from the first day of their operation. \* \* \* During the time of development there is a loss of money actually expended and of dividends upon the property invested. How shall this be taken care of? \* \* \* The public cannot expect as a business proposition, or demand as a legal right, that this loss shall be borne by him who furnishes the service.

The court held, therefore, that the use of the property and the expenditures made during the non-expense-paying and non-dividend-paying period should be treated as an element of value of the property upon which fair returns should be allowed.

The next case is *People vs. Wilcox* (210 N. Y., 479, 51 L. R. A. [N. S.] 1) decided March 24, 1914. This was a rate case before the New York Public Service Commission for the First District. The commission fixed the value of the property by ascertaining the cost of reproduction less accrued depreciation. Preliminary and development expenses prior to operation were included, but no allowance was made for the cost of developing the business. The books covering much of the history of the company were not available, but it was shown that from the beginning of the business in 1839 until 1907 no dividends were paid. Opinion evidence was also offered as to the cost of building up the business.

The Supreme Court and the Court of Appeals held that allowance for going value, in addition to the physical value, must be made. The following is from the opinion of the Court of Appeals:

It takes time to put a new enterprise of any magnitude on its feet, after the construction work has been finished. Mistakes of construction have to be corrected. Substitutions have to be made. Economies have to be studied. Experiments have to be made, which sometimes turn out to be useless. An organization has to be perfected. Business has to be solicited and advertised for. In the case of a gas company, gratuitous work has to be done, such as selling appliances at less than fair profit, and demonstrating new devices, to induce consumption of gas and to educate the public up to the maximum point of consumption. None of those things is reflected in the value of the physical property, unless, of course, exchange value to be taken, which is not admissible in a rate case. The company starts out with the "bare bones" of the plant. \* \* \* By the expenditure of time, labor and money, it coordinates those bones into an efficient working organism, and acquires a paying business. The proper and reasonable cost of doing that, whether included in operating expenses or not, is as much a part of the investment of the company as the cost of the physical property.

The investors in a new enterprise have to be satisfied as a rule with meager or no returns while the business is being built up. In a business subject only to the natural laws of trade, they expect to make up for the early lean years by large profits later. In a business classified among public callings the rate-making power must allow for the losses during the lean years, or their rate will be confiscatory, and, of course, will drive investors from the field.

If a deficiency in the fair return in the early years was due to losses or expenditures which were reasonably neces-

sary and proper in developing efficiency and economy of operation, and in establishing a business, it should be made up by the returns in later years. If there was a fair return from the start, the corporation has received all it was entitled to, irrespective of how much of the earnings may have been diverted to the building up of the business.

\* \* \* If the shareholders have been deprived of a fair return on their investment because of the time and expense reasonably and properly required to build up the business, they have, to the extent of that deprivation, added to their original investment, and are entitled to a return upon it. If, however, a fair return in addition to the expense of building up the business has been earned from the start, the public, not the shareholders, have paid the development expenses. We are dealing, not with exchange values, but with the value upon which the company is entitled to earn a return. \* \* \* The term is not important. The point is that in some manner and under some appropriate heading a due allowance must be made for the investment in those elements. No inflexible rule will in the long run be just both to the public and the corporation. The right to limit the corporation to a fair return fixed by public authority necessarily involves the correlative right in the corporation to be assured of that fair return during all the time that its capital is employed in the public service.

#### ACCEPT THE SITUATION AND GET THE FACTS

This is one of the best discussions of going value to be found in the books. While opinion evidence was offered, and the court held that the same was proper, it clearly rested its decision on the fact that early unrecovered losses were shown. This case was decided March 24, 1914, and was cited upon the briefs of counsel in the Des Moines case, which was decided June 14, 1915. The Des Moines case is not in conflict with the Oklahoma and New York cases. In these cases, the fact that there were early unrecovered losses appears to have been shown by evidence introduced. In the Des Moines case it appears that the gas company depended not upon evidence of facts, but upon opinion evidence alone. The holding of the court was that because it was not shown in the record that the inevitable costs of developing the business had not been recouped, the failure to make allowance for going value could not be held confiscatory.

The refusal of the United States Supreme Court to give to the term "value," as used in rate cases, the same meaning as "exchange value," may or may not be regrettable. As to that I express no opinion now, because that is beside the point of my present remarks. Some companies may have been so fortunate that no unrecovered losses or expenditures can be shown. To them the present state of the law may seem to be unfortunate. So substantial, however, are the usual costs of establishing a business, especially when dividends foregone are included in those costs, as they properly should be, that I believe most companies, if their accounts are properly studied and analyzed, will be able to show with certainty that they are entitled to receive substantial allowances for going value.

Whether we approve or not of the present state of the law upon this subject is really of little consequence. The law, for all practical purposes, is what the courts say it is. It is never wise to refuse to adapt ourselves to any situation which we find actually existing. In the preparation and presentation of rate cases, we must adapt our proofs to the requirements of the courts, if we expect the companies we represent to receive the protection of the courts in the enjoyment of their constitutional rights, we may believe that the courts ought to base their allowance for going value on the increased worth in money which attached business gives to plant. This would obviate the necessity for an analysis of the early accounts of the company. But in the face of the decision in the Des Moines case, to the effect that the going value element may be wholly disregarded in a rate case when it is not proved that, in the actual experience of the property valued, the cost of establishing

the business has not been recouped, it requires optimism in the highest degree to expect that public service commissions will generally make such allowance when such proofs are lacking.

#### TRANSFERRING GOING VALUE BY SALE

There is much that remains to be made clear by the courts concerning this subject. For example, there are decisions of commissions and courts which hold, or indicate, that no weight should be attributed to losses and costs during the development period, provided the property in the meantime has changed hands, and provided it is not necessary to consider such losses and costs in order to establish a value equal to the full investment of the present owners. But I do not think this can be the law. If a property has been established as a going concern at an unexpectedly large but necessary expense to the owners, so that a reasonable return cannot possibly be earned upon the full investment, but there is a possibility that business may some time increase to a point where such return can be earned, it does not seem just to say to the owner: "You may yourself have a return upon your full investment, but you may not convey the right to receive that return to any purchaser unless he will pay as a purchase price the full investment."

It is self-evident that a property with the right, if possible, to earn a return on \$400,000 is worth more than the same property with the right to earn a return on only \$350,000. If the physical value of the property is \$300,000, and the intangible value is \$100,000, but \$300,000 is all the property can earn a return upon, a purchaser may be willing to pay \$350,000, provided he can acquire the right to receive a return on the full \$400,000, when the business becomes sufficient to enable him to earn such return. It is certain, however, that he will not pay \$350,000 if he can not now earn a return upon that amount, and will never in any event be permitted to earn on more than that amount.

To say that a man may not transfer his property to another for such price as is satisfactory to him, with all of the attributes of value which it has in his possession, is partially to confiscate the property. That the courts will ultimately so recognize, I believe. Of course the price paid for the property by the present owner is entitled to consideration in determining the value for rate purposes, but it ought to be considered in connection with the entire investment represented by the enterprise by whomsoever that investment was made.

#### DUTIES OF PARTIES IN RATE CASES

The problem always before the commission in a rate case is to determine what is just to the company and to the public in view of the investments in the enterprise, and of all the relevant facts affecting the particular case. If it is just that substantial allowances shall be made on account of intangible elements of value, it is the duty of the company to aid the commission by a showing of facts which will enable the commission intelligently to determine what that allowance ought to be. In *Knoxville vs. Knoxville Water Company* (212 U. S. 1) the United States Supreme Court stated the duty resting upon the commission and upon the company as follows:

Regulation of public service corporations \* \* \* is a delicate and dangerous function, and ought to be exercised with a keen sense of justice on the part of the regulating body, met by a frank disclosure on the part of the company to be regulated. The courts ought not to bear the whole burden of saving property from confiscation, though they will not be found wanting where the proof is clear. The legislatures and subordinate bodies, to whom the legislative power has been delegated, ought to do their part. \* \* \* On the other hand, the companies to be regulated will find it to their lasting interest to furnish freely the information upon which a just regulation can be based.



F. W. HILD



T. S. WHEELWRIGHT

## Symposium on Company Publications

The Authors Discuss the Value of the Company Publication as a Medium for Improving Public Relations and for Creating Initiative Among Employees—Suggestions for Standardization Under a General Editor.

At the Transportation & Traffic Association session on Thursday, Oct. 12, F. W. Hild, T. S. Wheelwright, Leake Carraway and James H. Braden delivered papers on the general subject of "Company Publications" in which they outlined the editorial policy essential for the success of such publications, their value as a means of creating better public relations and the opportunity they afford employees for suggesting improvements in service. The interest of the public, too, is evidenced by the fact that the papers placed in cars and waiting rooms for general distribution are quickly disposed of.



LEAKE CARRAWAY



J. H. BRADEN

### Use and Value of Company Publications\*

By F. W. HILD

General Manager Denver (Col.) Tramway

**I**N the electric railway field company publications may be divided into three classes: (1) "Good-will" periodicals, intended primarily to promote among the public good relations and better understanding of the utility problems, and, secondarily, to advertise the company's business. (2) House organs, intended for the employees and the investors of the company. (3) Traffic and safety promotion publications, such as booklets, folders, leaflets, time cards, dash signs and car posters.

As between the first and second the writer is inclined to give preference to the "good-will" periodical, as that will circulate among the employees as well as the public. If the publicity appropriation will permit a house organ, however, its publication is strongly urged as a means of greatly improving and promoting beneficial relations between the company and the employees, and also of interesting the more prominent stockholders.

#### POWER OF PUBLIC OPINION SHOULD BE MORE APPRECIATED

Many of the difficulties which confront utilities would be much less if those who direct and control the larger business interests appreciated more keenly the tremendous power and value of public opinion, and would keep more clearly in mind two fundamental facts: First, that the legislator, whether municipal, county, state or national, is elected to execute the will of the people and not merely his own individual ideas, and, second, that the press rarely if ever initiated any great movement.

It has been and is what it should be, a mirror reflecting and developing public opinion.

Just consider for a moment what might be taken as the typical procedure of the average leader in corporate endeavor as it has come to pass in recent years. Let us assume that a movement of some kind adversely affecting the interests of a public utility corporation has begun to gather headway. The leader of this company, let us call him the executive, calls in his staff, presents to them the problem, and thereby brings trained minds to bear upon its analysis. In due time a solution is suggested to the executive—nine times out of ten the correct solution, and often meaning that some legislation may be necessary or must be opposed. The executive then goes to the legislator, discusses the situation quite fully and explains the proposed solution of the problem, and nine times out of ten the legislator will agree as to the correctness of the proposed remedy. The executive, knowing that legislation is a matter of routine and might be helped along if the newspapers would take hold as he wished, then proceeds to visit the editor, who also nine times out of ten agrees with him. But, contrary to the executive's hopes, nothing happens, or when it does happen, the legislation is usually adverse and the press comment is non-committal or adverse. The executive then takes his case to the court, and is sustained eight times out of ten, or was until recently. Hence the executive has got into the attitude of saying, when anything of this sort occurs nowadays: "Oh, what's the use? We will have to settle it in the courts anyway." But even the courts in these days are becoming more responsive to public opinion than to strict and legal interpretation of the facts and justice.

The executive himself is primarily at fault for this situation. He has lost sight of the fact that in the last analysis the public finally decides all the important questions, and if the decision be wrong it is because the

\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Transportation & Traffic Association on Oct. 12, 1916.

public is acting upon misinformation or insufficient information, for the writer is firmly convinced of the absolute and fundamental fair-mindedness of the American people. The executive has failed to appreciate that it is necessary to acquaint the public as well as the individual legislator and the journalist with most if not all of the facts pertaining to the utility's problem.

#### PROPER AND INTELLIGENT PUBLICITY IS NEEDED

The remedy is unquestionably proper and intelligent publicity, and this resolves itself into the question of ways and means. Proper and intelligent publicity as a means of thoroughly informing the public of the problems and difficulties of the executive's business is just as necessary as the careful planning of power-house construction, the operation and schedules of cars, the analysis and study of electric rates, gas rates, services, and so on.

The writer's study of this problem has led him to the conclusion that the transportation companies have available to them the most superior and effective means for reaching the public with their arguments that exist—namely, the cars, depots, waiting-rooms, etc.—and that a small pamphlet distributed periodically on the cars will be read by the public and have a splendid circulation. Such a pamphlet should not exceed four pages, and the size should be small in order that the subject matter may be perused within the duration of a street car ride. Furthermore, the public will more readily absorb and digest the rather dry and heavy matter which must necessarily form a presentation of the facts relating to utility economics, provided it be brightened and accompanied by semi-humorous matter. The "good-will" periodical should carry no paid advertisements whatsoever.

#### HOUSE ORGANS AND OTHER PUBLICATIONS

The purposes of the house organ are as follows:

1. To weld together the work and interests of employees.
2. To increase their ambition and improve the efficiency and spirit with which they do their work.
3. To better the relationship between the company and the employees by telling them about little known and imperfectly understood departments of the company and conditions that confront it.
4. To introduce employees to one another and to the management.
5. To prevent misunderstandings by explaining beforehand.
6. To carry public praise for employees and practical instruction for men in operating, selling and shop departments.
7. To give employees personal and company news.

This is a field in which the American Electric Railway Association, by co-operation among its members, can bring about quick, tangible and quite substantial benefits, not the least of which would be distinct monetary savings, not very large, to be sure, but in many cases enough to pay the cost of membership dues in the association.

Observation of about twenty house organs shows a great variety in size, appearance, subject matter and type. Only six are snappily illustrated. The covers of only three are attractive and changed monthly, among the best of which is the *B. R. T. Monthly*. The typographical make-up and appearance of all excepting this one, the *Railwayman* of Kansas City and the *Interborough Bulletin* and the *New York Railways Employees' Maga-*

*zine*, are between "just fair" and "very poor." Only four contain inspirational articles. Only nine contain educational matter, and but four of the nine lay appreciable stress on this.

In general the house organ should be made attractive in order to appeal to employees. It should have the attention of a trained editor or writer, who has both the time and enthusiasm to make the magazine worth the full cost to the company.

Of the third class of company publications, that is, those booklets, folders, pamphlets, time cards, dash signs, posters, etc., intended to promote traffic and safety-first, there are some splendid examples of the advertising man's technique and the printer's art, but in the majority of cases this class of electric railway printed matter reflects conscientious though obviously painful effort of men who clearly know a whole lot more about schedules, cars, transfers and other important features of operation than about salesmanship or the art of creating in the mind of the patron the desire to utilize the service offered by the company.

The possibilities which are to be found in the proper development of company publications have led me to request J. C. Davidson, publicity agent of the Denver Tramway, to prepare the following remarks setting forth some definite suggestions on syndicating material for company house organs. At the same time I would suggest that the possibility of syndicating the claim department and safety-first printed matter be carefully studied and investigated.

Mr. Davidson tells me that there are two reasons for standardizing certain features of electric railway house organs. The first is one of economy, and the second is one of more efficiency in the use of such publications. This conclusion that standardization is desirable and possible has been reached through recent efforts to improve our own house organ, the *Tramway Bulletin*, and to make the money spent on it secure the fullest possible benefit. We first studied, month after month, all the house organs we could find that were published by electric railways. From that we progressed to a thorough study of what could be done with the *Tramway Bulletin*, and the many economies and improvements which we found to be practicable led us to suggest that the association appoint a committee on standardization of company publications, which could, through similar studies, recommend standardization for house organs alone that would result in considerable savings and betterments for every individual company which co-operated in the plan.

#### POSSIBLE LINES OF STANDARDIZATION

For example, such a committee could study and recommend a standard for: (1) Page size for company publications; (2) style of make-up for standard publications; (3) standard series of cover designs for all; (4) typographical style and arrangement, and (5) ideal contents, so balanced that proper space will be allotted to inspirational, educational and news stories.

The committee might work out a plan for drawing, from the best sources among the companies, good inspirational and educational articles that would apply in all electric railway companies. These should go, perhaps, to a central editor. This central editor should have charge of the work of syndicating the cover designs and special articles. These would be set up in the standard style recommended by the committee, and proofs of the matter would be sent to all company publications participating in the standardized plan. Editors of company publications would go over the proofs, select the articles that they wished to run in the next issue of their magazine, and order electrotypes of those articles and of the cover. Because of the standard page size,

standard make-ups and standard typographical style and arrangement, this "boiler plate" from the central editor would fit in and harmonize exactly with the remainder of the pages in the magazine.

#### PLAN WOULD FACILITATE LAYING OUT AN ISSUE

This would immediately have the effect of raising the quality of the contents of every company publication and of making possible a full realization of everything which a company magazine can be made to do. Instead of being hard pressed for material and clipping and pasting haphazardly anything that "looks good," the editor of each company publication would be able to sit down the first of the month and plan his coming magazine something after this fashion, which is given for a twenty-page publication (9 in. x 12 in.) merely to illustrate roughly the ideas offered:

Inspirational story in semi-fiction form. Furnished by central editor in plate form with illustrations included. ....	2 pages
Leading local articles of month, educational in nature and pertaining to work, rules, selling plans or departmental activity. ....	2 pages
A full-page, large-type talk to the company's employees by the president, general manager or sales manager, to promote good-will. ....	1 page
Inspirational article or description of how some top-notch street railway does the things every company's employees do. Furnished by central editor, illustrated. ....	1 page
Explanation and reiteration of rules or of forthcoming changes by superintendent of transportation or heads of other departments handling large number of men. ....	1 page
Notes of new ideas, methods of progress in electric railway world which would be of general interest among all companies and which would be calculated to make employees think. Furnished by central editor, illustrated. ....	1 page
"Question Box" regarding the various phases of work of the transportation department or shops or some other group large enough to justify publication. Many of these questions may be general enough to be furnished from the central editor, but this matter will be furnished in script and not in plates, so that the local editor can add manufactured questions to suit local conditions. All these questions and answers will have to be created entirely by the editors for probably a year before the employees get the habit of sending in their own questions. ....	1 page
Courtesy, safety, transfer, shop or other general articles. Furnished by central editor. ....	4 pages
News notes, articles by local company's men, personal notes, athletic notes, association or club notes, advertising, etc., plus index and cover. ....	6 pages
Inspirational article or story. Furnished by central editor. ....	1 page

This plan will apply as well and as economically to a magazine of eight pages as to one of forty. The central editor should find it necessary to devote but very little time each day to his end of the job. In other words, it is not necessary to have a high-priced man devoting all his time to this work. He should be reimbursed for stenographic time used in corresponding with contributors and with company editors, and for his own time in editing contributions according to the needs of his clients and in overseeing the setting up, illustrating and ordering of material. The printing of any magazine, naturally, will be done in the local company's city.

The practical value of these suggestions can be better appreciated when the actual facts, figures and present publications as issued are studied. Details have been left out of this brief paper because the purpose of the writer is to suggest only the opportunity offered by the idea and to outline a small and undeveloped field in which the American Electric Railway Association might make itself very helpful to its members.

## Worth of Company Publications\*

By T. S. WHEELWRIGHT

President Virginia Railway & Power Company  
Richmond, Va.

**M**ORE than ten years ago there was published and distributed on the cars in Norfolk, Va., a small bulletin resembling in its essential features the street railway publications of to-day. While hardly more than a simple folder, it was the prototype of the numerous public utility periodicals now published in this country and Canada. The Norfolk publication was short-lived, and nothing further in this direction was attempted by the Virginia Railway & Power Company until early in 1915, when it began the simultaneous publication in Norfolk and Richmond, respectively, of *Public Service Chat* and *Public Service News*. Both of these papers are published bi-weekly and have appeared continuously since March, 1915.

#### PAPERS ARE ADDRESSED TO PUBLIC

It is from our experience with these two publications that I base my observations on the use and value of company periodicals. *Public Service Chat* and *Public Service News* are eight-page papers bound in magazine form. They are distributed on the cars through metal holders placed immediately above the push-buttons at alternate seats.

These papers are addressed primarily to the traveling public. Indirectly only do they reach the employees. Other companies make use of publications addressed directly to their employees and dealing with subjects immediately related to their work and welfare. There is, however, a fairly well-defined distinction between the two classes of company publications. They require different treatment and different subject matter. Material that would be entirely appropriate for publication within the family would in many cases be undesirable for general distribution among the public. This company has not so far undertaken the publication of an employees' paper, although it has already felt the need of some such medium. A beginning has been made recently by the formation of a general safety committee and sub-committees in the several departments throughout the system, and the installation of a safety-bulletin service in which bulletin boards located at the shops, carhouses, terminals, etc., are used for the display of posters illustrating typical accidents and methods of prevention.

The street car papers, however, are used for the publication of news matter dealing with the activities of the employees' relief association, Y. M. C. A., picnic and sports. In the Richmond paper, *Public Service News*, a regular department is devoted to communications from patrons commending individual employees for praiseworthy conduct in connection with the railway service. To this extent the street car papers are also employee periodicals.

#### MAKE-UP IS BASED ON CERTAIN PRINCIPLES

In the make-up of the paper we follow certain well-defined lines. We carry no advertising. To do so, we believe, would divide the interest. It might needlessly antagonize private enterprises engaged in the various branches of the advertising business who would resent the intrusion of a new advertising medium controlling a "closed" advertising field, and might be construed to be in violation of our car advertising contracts. We religiously avoid recrimination of any kind, believing that sharp attacks on governmental bodies or individ-

\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Transportation & Traffic Association on Oct. 12, 1916.

uals are productive of more harm than good, and that a continuous setting forth of our argument in dispassionate, unoffending language will in the end prove the wisest policy.

In every issue we carry a reasonable amount of light material—jokes, anecdotes, photographs, illustrations and epigrams. Our aim is to make the paper readable. The most common mistake of company periodicals designed for public reading, in my opinion, is the cramming of the publications with heavy statistical matter which the car-rider finds it difficult to digest. Since a printed message is valueless unless it is read, too much care cannot be taken to make the paper attractive and interesting. Once the passenger is attracted enough by the "light" features to look for recurring issues; once he contracts the habit of reaching up to the metal holder for the new numbers as fast as they make their appearance on the cars, the battle is won. It will be only a matter of time before he will read also the prepared articles and the arguments which the company is interested in setting before the public. It is the well-established newspaper policy of placing advertising next to reading matter applied to street car papers.

#### PUBLICATION PERFORMS VALUABLE FUNCTION

Edited along these lines, the company publication performs a valuable function. It is the natural vehicle for special articles and arguments which can find admittance to newspaper columns only as paid advertising. It brings the message to the reader's notice when his attention is not distracted by competitive advertisements and news matter, as is the case when he is reading the daily paper. In offering a forum for the discussion of grievances, it advertises effectively the company's disposition to deal squarely and openly with its customers—an impression that cannot be fostered too assiduously. Properly edited, it personifies the company and accents its human and responsive character in a way that is not possible through the employment of any other means.

#### COST OF PUBLISHING PERIODICALS IS AN INVESTMENT IN GOOD-WILL

From the beginning we looked upon the cost of publishing our street railway periodicals as an investment in good-will. We expected no immediate, direct returns. The value of the public's good-will lies in the fact that it is a plant of slow growth and slow death. Years of persistent publicity backed up by years of square-dealing are required to bring it to maturity. Once attained, the public's confidence is not easily shaken and stands as a bulwark between the company and malicious efforts to misrepresent it in its relations with the public.

Have the publications paid as an investment in good-will? Are company publications on firm ground as fosterers of a better understanding between the corporation and its patrons? Do they justify their cost? To these questions, looking at the matter in the light of our own experience, I answer in the affirmative. Many signs strengthen me in this belief. The publications are readily absorbed by the traveling public. In Richmond we distribute 25,000 copies of each issue of *Public Service News*, and the edition is exhausted three or four days before the following issue appears. Observation has shown that the papers are eagerly read. They enjoy the rare advantage of finding the passenger in a receptive mood—in a ten or twenty-minute period when he has nothing to do and is willing to be instructed and amused.

Copies of each issue are mailed to the councilmen,

city officers, clubs, lodges and associations maintaining reading rooms, and to the managing editors of the local newspapers. Frequently the newspapers make use of the material in the preparation of news stories, and occasionally the subject matter of the street car periodicals has supplied editorial writers of the local daily papers with material or inspiration for commendatory editorials.

#### COMMUNICATIONS FROM PATRONS SHOW THAT PAPERS ARE ATTRACTING NOTICE

That the material carried by the street car papers is attracting notice is evidenced by the increasing number of communications received from patrons. Allowing for "crank" letters, communications from persons who make a practice of "writing to the editor," and notes commending individual trainmen, written by "inspired" personal friends, there is a growing number of serious communications from persons really interested in some phase of the service problem, who are encouraged through the street car publication to establish a valuable personal relationship with the company. Voluntary expressions of approval from experienced business and advertising men strengthen us in the belief that the street car publications are performing a useful service. Invariably, these make the statement that the little street car paper is a "friend-maker," that it establishes a genuine personal link between the company and the patron.

Most of the street railway publications are still less than three years old. A few are in their third volumes and not more than two or three are veterans of four years' standing. It is too early, therefore, to pass final judgment on their efficacy. No one who is familiar with the years of relentless repetition that are necessary for the popularizing of a trade-mark, for the upsetting of a deep-rooted conception, for the dissipation of long-entertained prejudices, would expect a modest street car periodical to bring about over night the era of broad tolerance and sympathetic co-operation for which all public utility companies in this modern day are striving. The street car paper is only one of the several agencies upon which we must rely for this achievement.

#### FACTS WELL SERVED, TO APPEAL TO VARIED TASTES, ARE NEEDED

For publicity of any kind to accomplish any results it is essential that we have a genuine desire to state the facts, and that the information be so served as to appeal to the varied tastes of the readers. We must remember that the minds of our patrons are the products of a great variety of environments and there must be considerable and continual variety in the mental menu.

We must be careful to launch our subject in such manner and form as not to arouse that spirit of perversity or prejudice which might cause it to be rejected or opposed without consideration, thus rendering our further efforts of no avail. We must be careful always to avoid any suggestion of grouch or threat. These are the weapons of the weak and are only resorted to where the cause that is being upheld lacks both reason and justice.

Let us just tell the truth cheerfully and persistently, according willingly to the other fellow his right to pass judgment, and trust to the justice of our cause for the desired result. To the extent that we are prompted by a genuine desire to serve, just to this extent will our success in gaining public favor and confidence be measured. In short, we are at all times the masters of our own fate.

## Getting Out a Company Publication\*

By JAMES H. BRADEN

General Agent Northern Ohio Traction & Light Company,  
Akron, Ohio

**C**HIEFLY in the interest of improved public relations, the Northern Ohio Traction & Light Company issues twice each month its company publication, *The Traction Bulletin*. I say "chiefly" in the interest of better public relations, for there are other interests which we try faithfully to serve. These are the promotion of our safety-first work and the advancement of business through advertising.

### HOW THE PAPER WAS STARTED

It was only after a long period of doubt and hesitation that we launched *The Traction Bulletin* nearly three years ago. The chief motive back of the paper's beginning was the hope of correcting some impressions which were both false and unjust, and overcoming, if possible, some of the prejudice that had largely resulted from misinformation which had come to pass current without discount because the truth had never been presented. We chose to make our paper one of four pages because in the space so afforded we believed we could cover all the subjects it might be desirable to present in any one issue and not burden the reader. Moreover, we have aimed to keep our cost well within limits, and a four-page paper costs 30 per cent less than one of eight pages. For similar reasons we adopted a size of page which permits the paper to cut out of regular 28-in. x 42-in. stock with very little waste. This paper stock is known as "machine-finished book," and runs 50 lb. to the standard ream. It will take halftones nicely, and, of course, costs less than a finer grade, though at the same time it costs more than some goods which we might use but which are too cheap for the purpose. Our paper will always be taken as representative of the company, and we try to bear this in mind both as to the physical appearance of our printed messenger and as to its contents.

### CIRCULATION AND COST FIGURES

Our paper is issued twice each month only, instead of weekly. This was decided upon, in the first place, because the publication was somewhat of an experiment. We have continued on a bi-monthly basis not because we believe this to be equal to a weekly issue, but for the reason that the bi-monthly is all we have time to issue and do it well in our present organization. Our first issues were of 15,000 to 20,000 copies each, but before the first year was over we were printing 25,000 of each issue, and this year our editions are usually 30,000 copies—never less and sometimes more. We could distribute a greater number if we kept the little boxes or pockets in the cars filled for the entire two weeks or more between publication dates, but we would rather have the boxes empty at least a part of the time. It helps to maintain interest in the paper and leads patrons to notice the appearance of a new number.

Our original price for printing was \$2 per 1000. We agreed to furnish and do furnish two sets of cuts for each edition in which illustrations are used, as the printers run two-on in their press work. Time does not permit the electrotyping the forms, and two sets of type are obtained by casting each line twice on the type setting machine. Originally the paper stock, which our printers purchased in 2-ton or 3-ton lots, cost them 3.8

cents a pound, but now the price is 10.75 cents. We consented to meet the advance at the rate of actual increase to the printers.

The first boxes or pockets placed in our cars for the distribution of the bulletin, and bearing the invitation "Take One," were of cast aluminum. They cost 25 cents each in quantities of 200 at a time. Later we obtained and now use altogether a box of pressed sheet metal neatly painted in aluminum, and the words "Take One" lettered upon them in black. These cost us from 8 to 10 cents each. The painting and lettering is extra and is done in our own shops.

To sum up the cost question—we printed last year approximately 720,000 copies at a total cost of a little less than \$3,200—including a part of the salary of the general agent, who is the editor; a portion of his stenographer's salary, cuts, and the posters used in the car windows to call attention to each new issue. On the basis of 2 or 3 per cent for waste—that is, for copies left over in cars or for other reasons not reaching the hands of patrons—we placed in the hands of actual readers 700,000 papers at a cost of about \$4.50 per 1000.

### COMPARATIVELY LOW ADVERTISING COST

The cost of this work is extremely low as compared to the price paid by other advertisers. The big problem of every advertiser is to get his message to the possible customer. He uses the newspapers for general work but for concentrated effort he circularizes. And he must pay, on top of his cost for preparation and printing, \$12 per 1000 at the very least for stamps, envelopes, addressing and mailing. Furthermore, a large part of his expense is lost. The mails are so full of circular matter that even the best things often go to the waste basket unopened. For *The Traction Bulletin*, however, we are at practically no expense for distribution, and we know our message reaches our audience, because that audience takes the papers out of the little pockets in the cars without urging.

We have our say to our customers at the moment when they are ready or willing to hear us, while the general advertiser must hope to be heard when a score of other advertisers are at the same moment clamoring for attention. In the 700,000 copies of the bulletin we carried light, power and railway advertising worth a great deal to us—advertising which if done in the newspapers would have cost at least \$100 per month. Moreover, we were able to place announcements of new schedules, changes, etc., before our patrons in a way and place in which they could not miss them even though they did fail to see the newspaper announcements, which not infrequently is the case.

### HOW TO EDIT A COMPANY PAPER

A company publication is of little account unless we have something of interest to say. Moreover, we must be very careful and thoughtful as to what not to say. We are dealing with one of the most subtle and most tremendous powers known to mankind—the power of suggestion. If not properly handled, it may easily do more harm than good. A substantial citizen criticised *The Traction Bulletin* because we did not put enough red pepper and ginger in it. His remark emphasizes my point, for in most things we write about we must take great care to keep the pepper out, though there are times when we hit and hit hard. In the main our tone is that of good nature, kindness and sincerity—always that. We do not try to "put things over," as the street phrase goes. We do boost our good works with emphasis but never in a spirit of self-complacency. We aim for the truth always. We try to have a preponderance of new local matter in every issue. On matters

\*Abstract of a paper delivered before the American Electric Railway Transportation & Traffic Association on Oct. 12, 1916.

of real news importance we never try to beat the newspapers. If we have something we know they want, we send them advance proofs.

Simply talking with the general manager, the superintendent and department heads about work that is going forward and other matters that will make good material for the company paper, is a job which any reasonably bright reporter can handle. To know what not to print, however, and how to present the things which are printed, requires a greater training. In our own experience we have consigned to the grave yard more than one piece of careful composition which on first thought appeared decidedly worth while. We aim not to be clever but persuasive, not argumentative but true, admitting faults when we must present them as freely as we chronicle our virtues, mindful ever that under the best of circumstances, out of the cars and right in our offices, we may have done those things which we ought not to have done and have left undone those things which we ought to have done. We try to be instructive without being pedantic, and above all things and at all times we realize that a touch of human nature makes the whole world kin.

## Preparing and Publishing Company Publications\*

By LEAKE CARRAWAY

Director of Publicity Southern Pacific Company  
Charlotte, N.C.

THE subject of preparing and publishing company periodicals divides itself naturally into two general sections, the first concerning the actual gathering and writing of the data which goes into the publication, and the second, the printing and circulating of the finished product. It would be difficult to determine exactly which of these factors is of the more consequence and exerts the greater influence upon the employees of the company and the public at large.

### HANDLING DIVISION NEWS THROUGH REPORTERS

The first division of the subject may, in turn, be subdivided into sections dealing with the various interests to be served. For instance, there are in our company a number of interests involved, electric lighting, electric power, gas for illumination and power, street railways and a water system. To attempt to gather data covering these interests in the same way and manner and from the same people would, manifestly, be little short of foolishness. Therefore it is necessary to secure the co-operation of the employees in the various lines, to the end that they will assist in gathering the data which interests that particular department.

As a rule, however, the employees of a public utility company are not newspaper men by training or nature, and the data secured by them are, in the main, only the elemental facts upon which may be built an interesting "story." While the plan of appointing reporters on the various properties has not been abandoned, it is found to operate, in some instances, against full and free access to the editor on the part of the great mass of the employees. For this reason we visit each city and town operated by the Southern Public Utilities Company at least once each month, and more often when special occasions arise. On these visits we come in contact with a large percentage of the men in all the departments. We discuss with them not only matters of interest to the company and to themselves as employees but also matters of more personal import, and often the

most interesting articles of the month are developed in this manner.

### REPORTING MONTHLY RAILWAY MEETINGS

In each of the cities in which street railways are operated we attend a meeting in the form of a smoker or dinner, held on an average of once each month. At these meetings a program, arranged by the employees with the approval of the management, is put on; platform men discuss their troubles on the line, the car-house men discuss their problems and the men from other departments bring to this round-table all manner of subjects for discussion, with the result that discoveries of value to the street railways in the other three cities are made and passed along through the pages of the magazine. While these meetings are called for the primary purpose of getting the street railway men together, the employees of all other departments are invited and it is often the case that an employee in the accounting department gives or receives a suggestion that is worth the attention of the officers and employees of the entire system. The vehicle through which this goes to the employee-body is the magazine.

### OTHER TOPICS COVERED BY MAGAZINE

In addition to the foregoing sources of news the employees are invited and urged to write articles of interest for publication in the magazine. Some of these articles do not deal with the questions which confront public utilities in their primary form, but in every instance there is an indirect, and in some instances, a more effective appeal to the men for closer co-operation, greater loyalty, better living conditions and cleaner moral relations, which as a general rule are read with interest by the majority of the employees.

From time to time the pages of the magazine are thrown open to the operating officers for the discussion of matters in which both the employees and the public at large are interested. It is found that these communications or signed articles from officers are read carefully by the employees, and the public comes to a more nearly accurate estimate of the efforts of the company toward the ideal efficient service.

Official orders governing any feature of operation are given place in the magazine, and reports of new construction with drawings, photographs, maps or other illustrations are shown from time to time. New equipment is reproduced for the information of the public when it is put into service, and developments along any line are given all the space they will legitimately fill.

Employees who, by their unusual efficiency, come into notice are given public commendation, and wherever it is possible photographs of such employees are used. For example, in the case of a motorman who by co-ordinated head and hand work avoids what would doubtless have been a most serious accident, his photograph is reproduced to illustrate an article describing just how he was able to avoid this particular accident. This, read by the other employees of the company and by the public, results in every other employee keeping a watchful eye to windward in an effort to duplicate this act or to perform some other which will bring to him the commendation which has just been accorded his associate.

In addition to these intra-company data we invite communications from the public in the cities in which we operate, giving the boards of trade or chambers of commerce space to lay before the public matters of especial import. Ministers of the gospel occasionally prepare a sermon for public utility employees to be preached from their pulpit and later to be reproduced in the pages of the magazine. Public-spirited citizens

\*Abstract of a paper delivered before the American Electric Railway Transportation & Traffic Association on Oct. 12, 1916.

who desire to discuss any matter of general interest are invited to use the magazine, and in this manner the publication comes to be much more interesting and more generally read.

#### PRINTING AND CIRCULATING POINTS

Second not even to the type of matter used and the method of its preparation, is the printing of the publication. The best printer is the cheapest, when a publication for the employees of a public utilities company is to be published. There are those who hold that a printing department within the company is the proper method of handling the work, but it is our opinion, based upon long experience both in corporation and fraternal publicity, that a contract let to a reliable printer is far more satisfactory from every possible viewpoint. Better work for less money may be had by contracting with a printer whose equipment is capable of handling the job than in any other way.

Our "copy" goes to the printer in job lots, beginning soon after the issuing of the last magazine. By the thirtieth of the month 99 per cent of the copy for the following month's issue is in the hands of the printer and galley proofs have been taken. On the morning of the third of the month the conductors' efficiency reports, as shown by the Ohmer fare registers on each car, are received, together with the report of the efficiency in car operation shown by the records of the Sangamo meters, and these percentages go to the printer the same afternoon. Page proof is had on the sixth of the month; the printing is done on the seventh and eighth, the binding on the ninth and the mailing on the tenth, the date of issue.

At first our mailing list was made up from the payrolls of the company in the sixteen cities and towns in which we operate. From the beginning we received many requests, from people who were not in any way connected with the company, to be put on the mailing list. In this manner we have built up a list from among

the best citizenship in every city and town. That these citizens read the magazine with at least some interest from month to month is evidenced by the complaints which we receive when, for any reason, a month's issue fails to reach them.

Public libraries all over the country are also on our mailing list at their own solicitation. Early this year Harvard University was added to the list in order that the magazine might be used in the courses on public utilities in the Graduate School of Business Administration. To the management of similar companies throughout the country, the magazine is sent whenever request is made for it.

#### EXECUTIVE SHOULD BE RESPONSIBLE FOR PUBLICITY

As to the management of a publicity department we are firmly of the opinion that in every instance the company should employ a practical, trained newspaper man of wide experience rather than endeavor to use "a bright young man" already in the service, who is said to have inclinations toward journalism. And not even to a trained publicist should the policy of the publication be intrusted. The manager of the department, editor or special agent, whatever he is called, should be located near to and within easy reach of the highest executive of the company, and he should be under the direct orders and instructions of this officer at all times.

Through this officer all announcements concerning the activities of the company should be made, and all advertising agreements with newspapers should either be made by him or with his knowledge and approval. The preparation and publication of company periodicals means much more than the mere writing of the matter and supervising its printing. It means, or should mean, the maintaining of the proper relations between the company and the newspapers, to the end that the newspapers may be furnished with legitimate news and not publish unfounded rumors which might easily give rise to trouble of a most serious nature.

## Accounting and Modern Industry\*

*Accounting has played and is playing an important part in industrial development. Business without knowledge of financial transactions means failure. How accounting can serve administration*

By JOHN R. WILDMAN

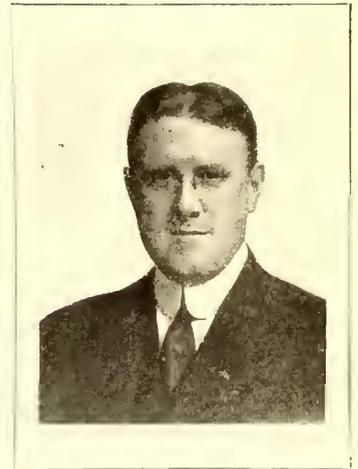
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**H**ISTORIANS say that no nation has ever become highly civilized without having developed commercially. It is suggested by Woolf in his "History of Accountants and Accounting" that "the higher the stage of culture and development attained by a community the more elaborate are its methods of account. Accounting is the mirror of the age, and in it is reflected much of a nation's commercial history and social conditions." While there is doubtless something in this contention, I am not sure but that Woolf is over-enthusiastic even though honest in his conviction as to the important part which accounting has played in the world's history. There is, however, reason to believe that accounting has played and is playing a somewhat important part in the development of modern industry, especially in the United States.

As a country develops commercially and industrially, so apparently does accounting, in its application especially, make progress.

Germany, slow to develop industrially, has never been noted for prominence in accounting. England, on the contrary, has long been an industrial and commercial leader. It is in Great Britain that, until recently, accounting and accountancy have taken the greatest strides. The United States as a commercial and industrial country is comparatively new; consequently accounting is relatively speaking in an undeveloped stage.

Modern accounting of a constructive character may almost be said to date from the beginning of the trust movement. Brown in his "History of Accounting" speaks of some of the so-called ledgers preserved from



\*Abstract of a paper delivered before the Atlantic City Convention of the American Electric Railway Accountants' Association on Oct. 12, 1916.

the period 1300 to 1400 as being "obviously intended to serve only as aids to the memory in retaining the details of numerous transactions." So doubtless will future historians speak of some of the financial statements of the period from 1492 to 1898 in the United States. With the exception of the steam railroads, which must be given credit for the pioneer work which they did, very few concerns prior to 1898 used their financial data, granting that they recorded and compiled it, as a basis for solving the various problems of administration.

The trust movement in the United States began in 1898. During the three years which followed 149 large combinations with a total capitalization of \$3,578,650,000 were formed. Many writers and some fairly prominent authorities predicted failure. It was agreed that no one man or board of directors could successfully administer such huge organizations. The United States Steel Corporation and the United States Rubber Company could scarcely be called failures. Accounting made it possible for the executives who were placed at the heads of these giant corporations with their many constituent companies to have laid before them information as to what was being done. Accounting made it possible to run a huge business as intelligently as a small business had previously been run.

#### FORWARD MOVEMENT IN LAST FIFTEEN YEARS

The last fifteen years in the United States have seen a tremendous forward movement in accounting. The Interstate Commerce Commission as well as public service commissions throughout the country have adopted systems of accounting as a means of obtaining information as a basis for control of public utility companies. No longer is the detection of fraud and error the chief aim of an accounting system. It has been discovered that it will gather information which will not only permit comparison of companies of the same class, but also serve the purposes of the company manager and the investor, present or prospective, not to mention the taxpayer. A. W. Dimock in his book, "Wall Street and the Wilds," relates how he traveled about from Chicago in 1873, when "conductors owned the railroads and the thought of friends of theirs paying toll on their lines would have sounded the depth of inhospitality." It is doubtful if the accounting system of to-day permits hospitality to such an extent.

In other lines the progress had been equally marked. The street railway industry was among the first to recognize the need for and to work out a uniform accounting system. The National Retail Dry Goods Association has heard the call and answered with a system for its members. The Harvard School of Business Administration through its research laboratory has provided a system for the shoe industry, and is now at work on one for the drug trade. The American Telephone & Telegraph Company, with its lines and property spread over the entire United States, has a most comprehensive accounting system, without which the administration of such an organization would be impossible.

Everywhere is manifested interest in accounting. The economic cause of the interest is undoubtedly competition. Except in undeveloped or unexploited fields or industries where large profits come through force of circumstances and not good management based on facts, accurate information must be had. An instance came to my attention four or five years ago where a picture postcard concern continued in business for two years without any books. Such cases, however, are rare. One of the first steps in the organization of any concern is

to organize the accounting department. The American International Corporation, recently organized but destined probably to be a force in the world's commerce of the future, gave attention among the very first things to the organization of the accounting and auditing department.

The federal government by passing the federal income tax law served to draw the attention not only of the corporation but the individual to the necessity of keeping better financial records. Moreover, with the prosperity of the country after the present war in question, the Federal Trade Commission is urging upon business men the importance of enlarging their knowledge of accounting and improving their accounting methods. With this end in view the commission has recently issued two notable pamphlets. One is entitled "A System of Accounts for Retail Merchants"; the other, "Fundamentals of a Cost System for Manufacturers."

#### WHAT ACCOUNTING DOES TO SERVE ADMINISTRATION

As a concrete illustration of what accounting has done to serve administration, it may be interesting to note what Henry P. Schuit, a factory cost expert, wrote the author concerning some of his work in a plant out in Pennsylvania. Mr. Schuit says:

"On my present engagement I have had an interesting experience in the handling of stores and in the establishment of a control of them. This company has been manufacturing a line of goods on which they owned all patents and therefore had a monopoly. As the patents ran out, however, competition entered the field with a consequent reduction in prices. During the period that the company enjoyed the monopoly, the profits were large and no attention was paid to quantities of goods manufactured or to the wastage.

"This loose habit of management had become so fixed upon the executives that they were not handling the operating end of their business properly. It took me a long time to convince them of the necessity of the establishment of stock rooms, for they offered such excuses as that it was cheaper to have the material near the machines, that it would be an unnecessary expense to have a stockman, that it was too much trouble to keep a stock record, and many other similar ones.

"I finally got the stock-room started. There are now three, the first one having proved their necessity. After accumulating all of the product of one line of goods, we found to the surprise and consternation of all that there were more than 160,000 pieces of this one line alone, when 10,000 pieces would have been an ample working stock. This material was found in every conceivable place, around machines, under benches, in gangways, in out of the way nooks, and even in scrap piles in the blacksmith shop. The stock, of course, was the accumulation of years, manufactured in advance during their period of prosperity and then stored away and forgotten. No accounting was made of it excepting at inventory time, when it was merely lumped.

"This product was in every imaginable condition, some of it just started, and from that stage to every degree of completion up to the finished article. It took several months to gather this product and even roughly classify it. I had it classified sufficiently merely to serve the present practical purposes. It will take a year or more to sort it into the classification in which it will be ultimately required.

"As soon as we got the product together and began drawing on it, there was a difference immediately. It had been the custom, before I came here, to take an order and make it from raw material, an attempt rarely

being made to find it in stock. From 85 per cent to 90 per cent of the orders were manufactured from raw material; now the amount seldom exceeds 3 per cent. The department that has been working on raw material is now devoted to other purposes. Not a bit of raw material has been purchased since the new system was started, and it will not be necessary for a long time to come. In fact, the unfilled orders have been canceled.

"Another result that has been effected through this control is the cheapening of the cost of manufacture. As soon as the stockrooms were established and the controlling stock ledgers started, all orders were sent to the stockkeeper for him to fill and deliver to the department that was to work upon them. To the surprise of all we began to discover the great amount of spoilage, and by the very employees that were supposed to be the best men. Nothing was said to them, in the belief that the moral effect would change them. It did; these men, realizing that the automatic working out of the system would show up the results of their work, became more careful workmen. By the end of two months the percentage of spoilage became a figure hardly worth mentioning.

"Another saving that has been made is in the time of the employee. All material is now delivered to him, and he loses no time looking for his material or going to the first department which formed the raw material for him. In fact, the men have no business away from their machines or benches. Formerly the men reported time working on stock, which they frequently did when

work was slack. Now this is a thing of the past. Every bit of work goes through on order. Raw material or partly finished product brought to a greater degree of completion receives the same attention as the customer's order.

"This control of labor and materials has brought about most surprising results. The profits are hardly believable. Before I came here the management was considering the advisability of discontinuing this line of business. It has turned out the most profitable. I am writing you this letter to give you an illustration of the results that can be obtained by establishing an effective and simple control of stock, and to show that a stock record does not mean a mere record of the stock on hand, but as well one of the mediums for controlling the operations of a factory. In this case it even made better workmen of the employees."

#### KNOWLEDGE WITHOUT ACCOUNTING IMPOSSIBLE

Industry everywhere in the United States seems to be awakening to the need for accounting. The possibilities of accounting, which the big combinations were quick to see and make profitable use of, are now being realized by the rank and file of industrial organizations. The experience of the concern related by Mr. Schuit is rapidly becoming the experience of many concerns. Good accounting with intelligent use of the information presented increases profits and stimulates industry. Business is a mass of financial transactions. Business without knowledge concerning these transactions means failure. Knowledge without accounting is impossible.

## The Development of Schedule Makers\*

*Proper schedule making is the foundation of efficient operation and maintenance and of low capital charges, yet the science is of recent growth. The author urges the training of young men for this work*

By H. C. DONECKER

Assistant General Manager Public Service Railway, Newark, N. J.



IN ordinary commercial enterprises, there is a recognized ratio between the selling price and the manufacturing cost, with an attendant fluctuation in the price of commodities. Our business thus far has allowed of no such adjustment of selling price to cost of production. Our price, which is our rate of fare, is stationary regardless of production expense. Thus there remains for an electric railway operator but one course and that is to offset the high price of labor and materials by the inauguration of the most rigid economies and the avoidance of waste.

This brings us to the theme of the paper, and we will discuss briefly what an important part the development of capable schedule makers plays in bringing about efficient operation, remembering that efficient operation demands not alone that a good standard of car service be given, but also that such service be provided at a cost which will assure a fair margin of profit, if such a thing be possible.

Personal observations and experience satisfy me that up to comparatively recent years the time-table or schedule was perhaps the most neglected single unit of

cost in our classification. There is still, I believe, a tendency rather to under-rate its

importance with the result, so far as investigations show, on relatively few properties have really energetic endeavors been made to train what we might describe as traffic engineers. Let us look at the history of our own electric railway association. It was only in 1910, I think, that the question of schedules and time-tables had any place in our annual programs. Perhaps consideration of it would have been still further delayed had it not been for the suggestion of Mr. Sergeant, of the Boston Elevated Railway, that the matter be taken up. Even then it was with rather hazy ideas of just what the committee had to consider that the matter received a definite place in the activities of the association. Does all of this not indicate that we railway men may have been somewhat lax in our analysis of such a serious phase of our work?

In just what ways does this question of schedules merit the importance we are now giving to it? Let us see. We have in our classification some eighty-eight accounts. Which is the one which calls for the greatest outlay in cash? Is it not account No. 60, wages of

\*Abstract of a paper delivered before the Atlantic City convention of the American Electric Railway Transportation and Traffic Association on Oct. 9, 1916.

trainmen, which represents some one-third of our total operating cost, and all of it is billed out through our schedules and time-tables department.

What is the second item of substantial size? The power bill. Can there be any question of the influence of schedule on power consumption? Power will perhaps account for from 10 to 15 per cent of the operating costs. Next, perhaps, in importance is the question of accident cost which may run anywhere from 7 to 10 per cent of operating cost.

I think that we all agree that time-tables prepared without due regard to those elements which determine the reasonably safe speed of our cars make for results in damage claims that elicit many wild howls from the president down. We thus see that in these three items alone the schedule affects more than 50 per cent of the outlay in expenses. This is not the end, however. The ramifications of the time-table extend into practically every element of cost.

A proper schedule provides: First, a distribution of labor that provides the best possible working conditions for trainmen; second, a speed that touches the maximum consistent with safe operation and demands a reasonable minimum of power use; and third, a headway and capacity that brings about reasonable waits for passengers and a consistent maximum of comfort.

These appear to be simple elements, but think of how far-reaching they become. They embrace the maintenance accounts because a poorly constructed schedule will call for a greater number of cars than is necessary and brings with it comparable increases in attendant facilities, such as power house, carhouse and repair shops and thus automatically produces higher maintenance charges in such cars and equipment, including power stations.

Track maintenance will, perhaps, not be affected to the same extent but will undoubtedly be increased because of the greater number of cars operated or at an unduly high speed, particularly over special work. More than this, cars operated in excess of what an efficient schedule would provide requires, as stated above, added carhouse and shop capacity, thus bringing about additional maintenance and operating cost in such departments and, of course, as the property facilities grow, so does the outlay for insurance and taxes, to say nothing of the added fixed charges which the company has to assume. In the final analysis, therefore, it is safe to say that no other one department exerts such an influence for good or evil upon the welfare of our properties.

The influence of schedules does not end with the matter of direct expenses, however. Think of its power in molding that intangible but much to be reckoned-with public sentiment. Then, in addition, much as the administrators of the street railway and of the public as well are concerned in this schedule, there is one other great class which it vitally affects in both a financial and physical sense. I refer to our great army of trainmen who are not alone personally affected but whose families are in a great measure seriously concerned in the good working conditions of the wage earners. All of the above are accentuated by the tremendous problem of the rush hour. But that is another story.

#### THE WORK REQUIRED OF THE SCHEDULE MAKER

So much for the rôle of the time-table in making for the success or otherwise of a street railway company. Now for the work required of the schedule makers. The schedule is no longer the simple setting down of columns of figures indicating a certain number of trips to be made by given crews and providing a capacity which is estimated to be equivalent to a demand based upon a more or less cursory observation of traffic and not the result of any special study of the real requirements of

the line. What are the exactions placed upon the schedule maker of the present day? He must first make close observation of the residential and business characteristics of the district through which the line runs. He obtains data showing the passenger demand throughout the full period of operation each day, securing at the same time a record of the riding habits of the people which brings out the origin of the business and its destination points. An analysis of the possibilities of the line in the way of speed must be determined, this work involving an accurate account of the number and time of stops, the physical characteristics of the route as to grades, etc., the records of congestion, consideration of the cars and equipment available, possibilities in the way of coasting and by no means last in importance, the requirements of safety first. Having such material in hand, most of it probably obtained by subordinates but carefully checked by the personal observations of the man in authority, all must be properly co-ordinated and at last the preparation of the basic time-table, itself, is under way. This completed, patches are made for use as the exigencies of weather or other conditions require diminished or increased service. Then commences perhaps the most difficult task of all which is the nice allotment of the capacity provided to take care of the patrons into periods of work for the men which will be as satisfying as possible from the two standpoints of wages and comfort.

After the table is in effect we have its periodical checking to determine its success in actual operation, this requiring the development of traffic counts, observations of running time, etc. Running time becomes a variable factor largely contingent upon the amount of congestion in the streets at different periods of the day and necessitating different sets of running times as the difficulties of operation increase or recede. Our schedule department is also charged with other duties including the preparation of charts and tabulations of conditions to meet complaints, the preparation of data for use in cases before utility commissions, the development of subordinates along the line of ability to appear as witnesses before commissions or other regulatory bodies and as our cities grow and districts change in character come studies of the movement of passengers particularly transfer movements to form the basis for the possible re-routing of cars.

#### WHERE CAN SCHEDULE-MAKERS BE OBTAINED?

It will be seen from the above how varied are the duties of a really efficient schedule making force, and we are thus faced with the problem of the character of the men to assign to such work. Under present conditions it is probably true that most of the recognized expert time-table men are recruited from the ranks of the platform or street supervisory forces, men who by their personal knowledge of conditions of traffic, their ability in knowing how to meet sudden changes in demands, their knowledge of the psychology of the traveling public and the energy which has made it possible for them to advance in life, provide us with schedule makers who have "just growed up." We might likewise apply this same phrase to some of the schedules that are operated. Is this field still available? Or because of certain enlarged technical knowledge demand must we penetrate into other fields to obtain the men who will best prepare the diversified data now required from our transportation department? Lately, there have entered many young engineers who, taking what is styled a cadet course, passing through the various departments of electric railways have finally been established in the transportation department specifically assigned to the department of schedules and time-tables, placed under

men who for years have observed the grinding demands of passenger transportation. These men are taught the mechanics of schedule making in so far as such instruction may be obtained within the confines of an office. Combined with this training has been their assignment to work directly on the streets and on the cars. All of the phases which we have indicated hereinbefore as necessary in present day schedule-makers are brought to the attention of these young men whose work is checked or rather corroborated by other men working independently along parallel lines. The instruction given by their superior officers, the conferences carried on almost continuously to discuss ways of meeting new conditions constantly arising, the time spent directly on the ground along the various lines of the company, the energy that they are required to expend because of having to meet assignments at all hours of the day, the experience derived from attendance at public utility commission hearings at which the public sets forth its criticisms together with the enthusiasm that the study of transportation problems inevitably develops if a man is temperamentally suited to such work, the application of his engineering knowledge in the preparation of charts and the development of formulas of travel, and the knowledge of the different departments of the property acquired through the cadet course—all these factors have produced for one company a set of young men whose worth has definitely fixed the status of the traffic engineer.

Hampered though such an engineer is with the absence of long years of experience in actual transportation work, there is no question that the success of the plan I have herein somewhat generally described would not have been accomplished or at least would have required a very extended period of time without the assistance of the wise old heads whose direct experience with the problems right out on the ground enable them not alone to produce efficient time-tables themselves, but to impart their knowledge to the young men and this they have done unselfishly and well. The answer would appear to be that a company, and perhaps this is more applicable to companies of the larger size and especially those with high rush-hour peak demands in order to secure maximum efficiency, would do well to consider the acceptance into their service of technically trained young men loyal and energetic who are temperamentally suited to fit into the transportation field. The qualifications for such work include first, good judgment and ability to be a mixer, and to work without friction under or with all other men in our car service departments, ability to observe just how the old man on the street handles his job, sufficient initiative successfully to meet critical conditions quickly and with judgment, horse sense and an unbounded energy and ambition which makes it a pleasure to get away from the idea that a man should work only regular hours say from nine to five, and have his Saturday half holidays and his Sunday to himself.

## National Issues in Local Franchises\*

*Pessimistic views of regulation, protection of investment and rate of return are ill-founded. Future franchise protecting investment will be well received. Utilities quasi-public as to privileges, performances and risks*

By PROF. CLYDE L. KING

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FRANCHISE policies must necessarily be based on judgments as to future conditions. This is just as true of the restricted franchise as the unrestricted, the term franchise as the indeterminate. In some fields there are sound facts or known traditions on which judgments can be based; in other fields judgments must necessarily be little more than guesses. Hence the element of speculation in past franchises, as the financial histories of utilities show. Anyone securing or accepting a franchise of any kind where a permanent investment is to be made must necessarily ask certain questions as to future conditions. Among these questions at this time these three are paramount: what has the next twenty-five years in store as to (1) regulation, (2) protection of investments and (3) rate of return? As will be the answer to these questions so must be the policy toward franchises.

The answers to all of these questions are determined largely by national and, indeed, to an extent, by international conditions. For not only are there national issues in every local street railway franchise but there are international issues as well. The one big factor in future utility policies is the coming internationalism. Just as plant or animal species have survived because protected by natural barriers, and are destroyed when new means of transit overcome those barriers, so not only local but national economic

peculiarities due to isolation will vanish with increasing rapidity before the present and future worldwide economic internationalism.

It is easy to take a pessimistic view of the future in the street railway world as to regulation, protection of investment and rate of return. It can be held that regulation will be by the politicians for the politicians, or by the corporations for the corporations, or by the rate-payer for the rate-payer—in any such case to be discredited and finally abandoned, not for non-regulation, for no one would now expect that, but for public ownership as the only way for all the parties having real interests to safeguard those interests. The pessimist can prophesy at least a partial destruction of street railway values by competition of the flying machine, the trackless trolley, the motor bus; or by the automobile alone, giving especially to the lower price of automobiles, the increased purchasing power of the public and the rapid increase in good roads. Or the pessimist can hold that the suburbanizing of cities and the growth of manufacturing in the small towns will tend to make the average street railway haul in excess of a profitable haul for 5 cents, and that the 5-cent fare is such a deep-seated American tradition that intense public antagonism will be aroused against street railways which



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seek to increase the fares, abolish transfers, adopt the zone system or shorten the haul. And as to the rate of return, the pessimist may urge that, after the European war is over, America will be a creditor country, with plenty of money to invest at low rates of interest in domestic affairs, a more promising return on money to be secured only through investments in foreign countries, and that this situation will tend to force by public opinion a relatively low rate of return on public utilities. If such conditions are to prevail in one or more of these fields, then to be sure street railway franchises must be framed accordingly and perhaps with a view to public ownership.

#### VITAL FACTS, HOWEVER, ARE OVERLOOKED

But these pessimistic views leave out of consideration some very vital facts. Certainly with the growing increase in efficiency in government and in the rapidly rising standards of governmental conduct, both the public and the corporations can be relied upon to see that regulation is not in the interest of the politician. With the dissemination of information as to unit costs in utilities, it certainly can be expected that selfish regulation, whether for the corporation or for the rate-payer, cannot persist. Only if facts shape the regulative judgment will regulation continue. In the announced policy of the American Electric Railway Association to give out all the facts lie the hope and the promise of sane regulation. For in this matter the taxpayer and the utility must make common cause. Rights are derivative, not innate. They are derived from government and expand to higher planes only as government is efficient, and are protected only in so far as government is competent—a fact that business men sometimes forget.

Government cannot be partisan where one wants it to be partisan and non-partisan when administrative competency is desired. Government cannot be "political" in local matters and non-political in State or national regulation. The taxpayers, the business man, the utility manager must unite to place and keep government on a plane of non-partisan competence in administrative and executive matters. For unless regulative bodies have the independence and the poise of administrative courts, all who put their trust in regulation must suffer none so much as the companies, for in politics in this issue the larger number of voters are on "the other side." And, it must be repeated, competence in regulation is secured only through competence in every phase of government. He who pulls down city or local government imperils state and national regulation. He who pushes forward competency in government in any one field pushes it forward in another. It's the salients that count. One can safely assume, therefore, in drafting franchise policies, that the present-day plan of regulation, while still on trial to be sure, will persist in a way acceptable to the parties at interest only because all men in business will increasingly unite with one another to make all government competent.

A study of motor costs will indicate that the motor buses cannot haul passengers at a profit for the distance that street cars can haul them. This fact alone will prevent any devastating competition from motor buses. Certainly the very immobility of capital itself will prevent any devastating competition from motor petitor in the next two decades, even assuming that the experiences of the present war put the flying machine on a commercial basis. Inasmuch as the expenditure of more than three-fourths of American families for recreation and amusement cannot be in excess of \$100 per year, the competition from the privately

owned automobile can be disregarded. At least it will be counteracted by the natural growth of the riding habit.

These pessimistic views not only leave out of consideration certain very vital facts, but they also leave out of consideration what is still more important, certain deep-seated American traditions and attitudes. One of these traditions is a wholesome respect for property and property rights. In no country on earth is there such a wholesome respect for property as in the United States. This tradition finds its basis in that American belief that all who now are not may become property owners. It is a safe prediction that the increasing wages of American earners will tend for some time to keep up this tradition and to prevent the organization of large numbers of voters entirely antagonistic to capital, such as is the rule in continental countries. More abiding because more fundamental than any law or set of laws or any court decision or set of court decisions, this American tradition will compel a continuing respect for properties that represent actual money investments. Such wholesome traditions, molded as they will be by the increasing stability of protected utility investments, can be counted on as continuing, and these traditions, it can be confidently expected, public service commissions and other public service and regulative bodies will reflect.

The rate of interest will be determined very largely not only by national but by international conditions. It will, no doubt, be true that the impatience of Europe to restore normal industrial conditions will tend to raise the rate of interest after the European war. It is probable, also, that the rate of interest in foreign investments will tend to be much higher than the rate of interest in domestic investments, and this for the very simple reason that the American nation will probably be increasingly a creditor nation with the same laws as to a relatively lower rate of interest on investments in the home country than in foreign countries, as has been true in the European creditor nations in the past generation. But that the domestic rate of interest will become unenticing to investors (as distinct from speculators) in American public utilities does not seem at all probable. It is a conservative statement that efficiency in management alike in all public and private industry is in its infancy. The pick-up through efficiency in organization is to be the great industrial gift of the next quarter of a century. This competency in management the war-ridden countries and those blessed with peace will, no doubt, reward amply.

#### PROTECTION OF INVESTMENT IMPLIES HIGH STANDARDS FOR ALL

On the other hand, just because we shall have passed the unsettled conditions of a debtor country, and just because we shall have come into the more stable views of a creditor country, the American people, if they have a modicum of the Yankee shrewdness with which they are credited, will insist that their recognition and protection of property rights, which they yield so generously, be on the basis of actual investment as far as their serving utilities are concerned. Respect for utility property by the public implies a mutual respect on the part of utility owners for the public and the rate-payer. Instead of accrediting the successful "anti-Wall Street" or "anti-corporation" campaign solely to the cussedness of the propertyless, it might be now and then worth while and infinitely more wholesome to think of these campaigns as due in a measure to the determination of one Yankee not to fall too easily for the tricks of another. If the corporation is asked to file a report open to public inspection and then it is found that these

reports have been cunningly "doctored," what will the average American decide other than that such doctoring impugns the integrity of the investment? And will he not tend to conclude that the more astute the cunning, the less his obligation to protect the investment? What will the average American—if he has any of the tendency to look to his pocketbook with which foreign critics credit him—what will any average American decide if he should find that what he has been respecting as property represents but little actual investment or but the re-investments of moneys received from rate-payers? Protection of investments implies high standards on the part of all. Integrity inspires confidence; sharp practices undermine it.

"I am a believer," wrote Thomas A. Edison to William D. Marks in a utility matter about fifteen years ago, "in insuring the permanency of an investment by keeping prices so low that there is no inducement to others to come in and ruin it. There seems to be a law in commercial things as in nature. If one attempts to obtain more profit than the general average, he is immediately punished by competition." This law will remain in operation, even though the company has a complete monopoly. To force the rate of agreed return to a point beyond what the public will regard as fair is to invite contrasts between the interest on public bonds and the return to privately owned utilities. Comparison with other countries or with other industries—is a deed, the very existence of technical knowledge—is a competitor. And this knowledge is to become not only international but easily mobilized. Technical knowledge is to be the fair yet positive arbitrator of the future. Successful experiments in other countries, whether of public or of private ownership, whether in management or in economics in generation or distribution of current, will flow as swiftly from continent to continent as formerly from county to county. Future policies must be shaped in the light of mobile and accurate technical information which will be as accessible to the public as to the corporation.

The American spirit toward capital is wholesome, genuine and generous. But a stable social and industrial life simply will not sanction the large returns and the capital inflations that the risks of a frontier life gladly sanctioned. The American's views toward property, while generous, are slowly but surely shaped by his environment and business interests. These views, therefore, even more in the future than in the past, for the middle class income of the future will be more stable and more thriftily guarded, will probably hold that those in the public service shall write down squarely what their money investments are and ask for a rate of return comparable to the risk in the enterprises, and in related private businesses as modified by the protection to the capital invested in the public utilities guaranteed by the laws and by public service commissions. This, so far as I can read the attitude of the next generation, will be the only limitations, if limitations they be, upon the American tradition of absolute and complete respect for property. It cannot be expected that the rate-payer of a stable creditor country will give through the state a guarantee to utility investments such as he gives to no private industrial investment and then also give to the utility investor all of the increments or advantages that necessarily flow to competitive businesses where such protection is unknown.

#### PUBLIC OWNERSHIP WITHOUT ITS RISKS

The question has not been asked as to the future in public ownership. If the public can fix a rate value at less or even the same as a condemnation value, if the

public can regulate the rate of profit, the amount of capitalization, the ratio of stocks to bonds, the exact time and charge for the haul, the character of service, the politeness of the platform men—is this not public ownership in essence? Public ownership in the sense of public control is not a force to be feared; it is a force already here. It is not public ownership, to be sure, in the sense that properties may be confiscated, or in the sense that service can be compelled at a loss, though in legal theory this can be done. Nor, and this is more to the point here, is it public ownership in the sense that the public must necessarily assume all the risks of ownership.

What this country has under regulation is in fact at least quasi-public ownership that makes all street railway operators in a sense public officials. If the public wants to be selfish about it, regulation has in it possibilities for the public not possible in public ownership. That is, the public may have its cake and eat it, too; the advantages of ownership without its risks. The public and the operator will both be the better off the sooner the public character of street railway service and operation is completely recognized. The real question is not as to the future of public ownership. The real question is whether under regulation there will be public ownership without the responsibility of ownership or, on the other hand, a regulation that does not regulate. Under conservative franchise policies one can rely on American traditions, business sentiment and sense of fair play to see that neither extreme is followed.

#### SOME M. O. PROPAGANDA ERRONEOUS AND FUTILE

In view of this situation, however, it may well be questioned whether the payment of money to magazines for fallacious propagandic work against public ownership, such as certain utilities, more especially utilities other than street railways, have been and are doing, as far as I know, is that type of stupidity for which one should apologize as my cook did when she poured milk into a sieve, and she had the good conscience to know that her stupidity was all the more culpable because some one else paid for the milk. In the first place, utilities are in law quasi-public. Just to the extent that they are in law or in fact quasi-public, their operators and managers are quasi-public officials. And the extent to which these properties are quasi-public and the extent to which services can be compelled measure the extent to which the properties are already in fact though not in fee public properties. Government is a partner in all twentieth century business, and in quasi-public businesses particularly it is far from being a silent partner. And does it come with good grace for one in one kind of public service to complain of some other kind of public service, by "news" that is erroneous? The erroneous statement in the magazine supported in whole or in part by assessments on utility companies reflects on the sworn statement. This may be an unhappy fact, but it is nevertheless the sort of social fact that those in public businesses must recognize.

Moreover, is it at all unlikely that America may become as England, France and Germany had become, a creditor nation, with opportunities for lucrative investments abroad? And is not possible, as has been the rule with creditor nations in the past, that the rate of return in foreign investments will be more enticing than the rate of return on domestic investments? The wide extent of public ownership in Great Britain, France and Germany is to be accredited in part, and to a larger part than is usually conceded, to the fact that investors found larger returns in other fields and pre-

ferred to sell their utilities to the public in order to release their money for more profitable investments elsewhere. That is, public ownership did not come with the opposition of the owners of utilities but with their sanction, the real question being as to what the sale value should be. Can anyone say that these nations are not the stronger because public credit was used (where it could be used) for quasi-public ventures, and private credit (where private credit only could be used) for commercial and industrial development? Can anyone say with finality that American investors may not find more profitable fields for their money than stable and regulated domestic utilities with their competition from a low interest rate on public bonds? Is it, therefore, unthinkable that the investors themselves may within the next generation find it to their interest to sell to the public? And should they want to sell, may not this very propagandic literature rise to plague them? Or at least rise to insist that, since public operation is less competent than private operation, the selling price to the public must be, therefore, considerably lower?

Or let us assume that this kind of propaganda is in good taste and is good business. For, of course, it is sound business to combat public ownership that destroys properties by competition with the money furnished by the taxpayer. But is it effective and worth while for the utility company to do this? Can opposition to public ownership be measured by the number of clippings needful editors take from a gratuitous news service? May not that very kind of activity lead the public to ask questions as to the private profits of concerns that needs must spend so much money to oppose by erroneous statements another kind of ownership and operation? And may it not give to the friends of public ownership popular support on the stump-worn doctrine that such activities are a sort of poisoning of the wells of public information?

From any point of view it seems to me that this sort of propaganda is not to be expected of the type of clear-visioned able utility operator which the next generation will need and is going to have and which this generation already has in such growing abundance, in no utility so much as in the street railways. These queries are not put out as an argument for public ownership but as queries as to the conservative attitude toward public ownership under conditions where public ownership in possible results exists anyhow. Of course, the citizen in any business will proclaim facts where public interests are involved—proclaim them from the house tops if need be. But why impugn righteous activities with an erroneous, needless and futile propaganda?

#### FRANCHISES TO PROTECT ACTUAL INVESTMENT

If these views as to what the next twenty-five years have in store as to regulation, utility investments and rate of return are sound, what do they indicate as to franchise policies? Is it not this in substance—that franchise privileges should be so drawn or interpreted as to safeguard actual money investment with a sufficient rate of return to keep and attract capital? With franchise policies along these lines, public utility managers and operators will unquestionably find adequate support alike from investors and public. With franchise policies along the lines of justifying speculative elements past or future, however, utility managers and operators can expect from both the investor and the public an attitude of increasing criticism and suspicion.

#### THE INDETERMINATE FRANCHISE OF THE FUTURE

In the main there are two kinds of franchises, the term and the indeterminate. What do these influences

and traditions mean when applied to each? With the indeterminate franchise, where public ownership is possible only through purchase of the existing utility, they mean particularly stability in valuations. If the foregoing represents at all the views of the next generation, the advice of those engineers who have helped to boost valuations through imaginary reproduction will be looked upon in its after effects as short-sighted.

A Chinese student has recounted to me the cordial public approbation bestowed on the noted Chinese statesman when he framed and secured the passage of the American-Chinese exclusion treaty, and the contempt and indignation at the treaty and its author at the present time. Why? There was an honorable and ancient Chinese tradition that he who gave up his country for another was guilty of the gravest act against his government, an act that was not merely unpatriotic but treasonable. But that tradition, even before this treaty was signed, was crumbling away before the advancing opportunities afforded by western industrialism. Within an incredibly short time, China awoke to the fact that this treaty, howsoever sanctioned by tradition and precedent, was subvertive of her industrial future and opportunities. The Chinese statesman who framed the act was, no doubt, acting on what he regarded as immemorial precedent. He did not realize that what was most acceptable in the present might be most harmful within even a decade. Or possibly he knew the tendencies but did not believe that China would yield so soon or so readily to the push of western progressivism.

The valuation theories and methods that go out to make valuations far in excess of cost can but breed suspicion, not confidence. Already their day has passed. It may be questioned whether even now the engineers advocating them are called on for other important engineering duties. Not long ago I read this advice to a western utility of an engineering firm that looks to the morrow as well as the day: "Be conservative. Have not an item, a unit cost or value that can be successfully combatted. Don't build up more than you expect in the hope of having something to bargain with. Put values where values actually are and stand by them." Thus runs the tenor of the advice and, viewing the future as I do, I regard it as most wholesome. It must be said, however, that not all the blame of excessive claims for valuation should be placed upon the engineer. Part of this policy is due to the more or less flamboyant methods of the lawyer, methods that may work before a jury but soon end before specialized tribunals.

For what can be expected in the long run of the confidence of the investing as distinct from the speculating world if the fair values fixed by public service commissions continue to run far below the values claimed by the companies or far below the capitalization placed on the properties by the companies? And how can the suspicions of the public that have been admittedly justified by past instances be allayed when rate cases become merely struggles for the recognition of inflated values by the reproduction route? Moreover, and this is the crux of the whole matter, can anyone look into the future and assert with confidence that over a twenty-five or thirty-year period reproduction values will continue to be in excess of original cost values? In the long run, all precedents to the contrary notwithstanding, will not cash investments prove the standard to which values most nearly approach? At least is this not sufficiently probable that utility policies can most safely be based upon it? If such is the case, then, under indeterminate franchises, future franchise policies will be based on stable values, shorn of their speculative

elements and hewed closed to actual costs. With such a situation, one could certainly expect an enthusiastic reception by investors and also a wholesome co-operative spirit on the part of rate-payers and the general American public.

#### THE COMING TERM FRANCHISE

As to term franchises it would seem that the contract stating and protecting the sum invested and limiting the power of the public to purchase at an agreed price, would be preferred by the investor. The vital protection to the utility owner in both the term and the indeterminate franchise is the alternative of public ownership to public competition. If the public is to give up the safeguard that lies in the actual or potential competition through public ownership, it can reasonably expect in return the stabilizing of values in its contract agreement. I can see that the lawyer for the public may urge that it is not to public interest to enter into such a contract on the ground that rate value will be less than condemnation value. I can understand many situations where the company would not want to enter into such a contract. On the whole, however, I believe that investors particularly will increasingly recommend this type of contract.

This procedure for absolute guarantee of the actual investments in both term and indeterminate franchises leaves the public to bear the risk. This the public can well afford to do, for if it does not squarely assume these risks and if utility investments are not guaranteed, then the risk must be expressed in higher capitalization and in a higher rate of return, to be paid for in both ways by the rate-payer. His share in the risk of these industries the average American city resident will be glad to take in order to insure stability and development in his public utilities and particularly his transit facilities.

#### MUTUAL DUTIES OF UTILITIES AND PUBLIC

These policies in franchises require a corresponding attitude on the part of the public on the one side and the managers and operators of street railways on the other. These utilities are quasi-public, say the courts. This must not mean that they are quasi-public as to privileges and private as to performances, or quasi-public as to public services and private as to risks. It must mean that these utilities are quasi-public alike as to privileges, performances and risks. It does mean,

or if not it must come to mean, that the manager or operator of these utilities is in spirit and in truth a public official who goes to his work with the spirit and with the zest of a competent public official under all the advantages belonging to a public business privately owned.

Of the duties of the public utility we have heard much; we have also heard much of the duties of the public and the rate-payer. But we have not learned that these duties are mutual, and we are not awake to the fact that fundamentally they may not be antagonistic. It is the duty of the citizen to know facts as to his utilities; it is the duty of the utility to furnish those facts rock-ribbed and unassailable. It is the public duty to protect money investment; it is the corporate duty to ask that money investment only be protected. It is the utility's duty to serve all who come at just prices without discrimination; it is the rate-payer's duty to learn from the sources enough facts as to rates, operating difficulties and labor costs to have a fair judgment as to what a "just" rate and "adequate" service are. It is the new corporate duty to give publicity to facts and facts alone; it is the new public duty to base judgments on facts and facts alone. Herein lies the hope of urban development and the stability of utility investments. When the public sees the utility as a public asset and the operator and financier does his work on the high plane of a public privilege well performed, the seeming obstacles to security investments will vanish and these vital public services will be put on a plane of permanency and highest efficiency. This may sound idealistic, but policies must be shaped in the shadow of ideals. Otherwise they are not policies; they are schemes.

I have but expressed what I know to be the spirit of a large and rapidly growing number of street railway investors, managers and operators. I have had in mind throughout the investor, not the speculator, for the law of speculation will remain unwritten. I believe that conservative franchise policies that protect investments with the alternative to public ownership and operation will tend to preserve the best in regulation, will give such a stable and adequate return to street railway investments as to make them enticing, and will place the business of owning and operating street railways on a plane of dignity and stability that will invite a mutually cordial attitude between the public and the operator.

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“IT is the public duty to protect money investment; it is the corporate duty to ask that money investment only be protected. It is the new corporate duty to give publicity to facts and facts alone; it is the new public duty to base judgments on facts and facts alone. Herein lies the hope of urban development and the stability of utility investments. When the public sees the utility as a public asset and the operator and financier does his work on the high plane of a public privilege well performed, the seeming obstacles to security investments will vanish and these vital public services will be put on a plane of permanency and highest efficiency.”—*Prof. Clyde L. King.*

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# Proceedings of the American Association



PRESIDENT CHARLES L. HENRY

The Atlantic City Meeting Was Characterized by Several Speakers as the Best in the History of the Association. Representatives of the United States Army Spoke on Preparedness, the Technical and Financial Development of the Electric Railway was Considered, and Publicity Was Not Neglected.

**T**HE thirty-fifth annual convention of the American Electric Railway Association, held in Atlantic City, N. J., from Oct. 9 to 13, 1916, was called to order by President Chas. L. Henry at 9.30 a. m., on Tuesday, Oct. 10. Mr. Henry first read his presidential address, an abstract of which forms the leading article in this issue. This was followed by the reports of the executive committee and the secretary-treasurer, which were read by E. B. Burritt. The report of the executive committee, which consisted of the minutes of the meetings held during the year, was read by title.

## REPORT OF THE SECRETARY-TREASURER

Following the amendment to the Constitution and By-laws at the Chicago meeting which permitted the entry into full membership of manufacturing companies, President Henry extended a cordial invitation to the manufacturers to enroll their companies. The response to this invitation was most gratifying and a large number of companies promptly forwarded their applications for membership. Subsequently, the committee on company membership was increased by the addition of seven manufacturers, one of whom was designated a co-chairman and this branch of the committee took charge of the membership work in connection with the manufacturing companies.

The manufacturers generally have appreciated the opportunity to co-operate in the service which the association is performing for the industry. Already they have given practical evidence of the value of that co-operation in connection with the successful efforts of the association in bringing about the exclusion of the electric lines from the operation of the eight-hour law recently enacted. Their response to the association's call was prompt and effective.

To date we have 208 manufacturing companies enrolled in and working with the association.

With the taking into membership of the manufacturing companies, there devolved upon the association the management of the exhibit and matters in connection therewith. To assure the faithful performance of this duty, the president appointed a general convention committee with a manufacturer as its chairman. Subcommittees of this general committee, each with a manufacturer as chairman, were placed in charge of the exhibit, entertainment and the exhibit finances and worked out the details of these matters. To handle the details of the exhibit, Fred C. J. Dell was employed and has been engaged on this work since May 1.

The convention opens with an exhibit occupying 55-

## PROGRAM

### TUESDAY

Annual Address of the President.  
Annual Report of Executive Committee.  
Annual Report of the Secretary-Treasurer.  
Report of committees:  
Convention—Thomas Finigan, chairman.  
Education—H. H. Norris, chairman.  
ADDRESSES—Coast Defences—Capt. Walter King Wilson, U. S. A.  
Employment of Trolley and Electric Transportation in Military Service—Col. Chauncey B. Baker, U. S. A.  
Report of committees:  
Federal Relations—Arthur W. Brady, chairman.

### WEDNESDAY

Reports of committees:  
Representing Association at American Good Roads Congress—Gordon Campbell, chairman.  
National Joint Committee on Overhead and Underground Line Construction—W. J. Harvie, chairman.  
Cost of Passenger Transportation Service—J. D. Mortimer, chairman.  
Company Membership—George W. Knox, chairman.  
Electrolysis—Calvert Townley, chairman.  
Award of Company Section Medal—H. R. Fehr, chairman.  
Conditions of Anthony N. Brady Medal Contest—Arthur W. Brady, chairman.  
Valuation—J. N. Shannahan, chairman.  
PAPER—"Overhead Charges in Valuation," P. J. Kealy.  
Report of committees:  
Compensation for Carrying United States Mail—Henry S. Lyons, chairman.  
Company Sections and Individual Membership—Martin Schreiber, chairman.  
Public Relations—C. Loomis Allen, chairman, subcommittee's reports.  
ADDRESS—"Publicity," Ivy L. Lee.  
Report of committees:  
Aera Advisory Board—H. C. Donecker, chairman.  
Changes in Constitution and By-laws—General George H. Harries, chairman.  
Operation of Motor Vehicles—Britton I. Budd, chairman.  
Insurance—A. H. Ford, chairman.  
Standards for Car Loading—S. W. Huff, chairman.  
Street Traffic—J. K. Punderford, chairman.

### THURSDAY

Report of committees:  
To Confer with the United States Bureau of Standards as to Safety Code—W. J. Harvie, chairman.  
Taxation Matters—Henry S. Lyons, chairman.  
ADDRESS—"The Physical Development of Electric Railways," Frank J. Sprague.  
ADDRESS—"The Financial Development of Electric Railways," A. B. Leach.  
Reports of convention committees:  
Unfinished business.  
Election and installation of officers.

694 sq. ft. of space. In size this compares favorably with exhibits of past years, and in the quality of the appliances and equipment displayed and their interest to the railway man, former exhibits are surpassed.

## MEMBERSHIP, COMPANY AND INDIVIDUAL

The work of soliciting the membership of non-member railway companies has been vigorously followed up during the year—principally by means of circular letters. In addition, many special letters have been written from the secretary's office. The result has been the enrollment of nineteen companies—of these the membership of four will date from Nov. 1, the beginning of the association's next fiscal year. Business conditions have been unfavorable with a large number of those companies remaining outside of the association and as conditions improve with them, it is believed that a considerable number will enroll.

The association at the last convention reduced the annual dues of members of company sections from \$5 to \$2. The change was favorably received and has brought good results.

The committee on company sections and individual

membership has been actively at work throughout the year and has been instrumental in organizing four new company sections among the employees of the following companies: these being at New Haven, Conn., Washington, D. C., Portland, Me., and Hampton, Va.

The total enrollment of company section members is now 1473. A number of companies have indicated their interest in this movement and are now considering the organization of sections on their properties.

The committee has also been active in the work of securing additional individual members. Selected lists were prepared and to these lists were addressed a number of letters. Literature in the form of a pamphlet and folder were circulated extensively. The individual membership now stands at 1513. This shows a decrease from last year for two reasons.

Many individuals formerly members are connected with manufacturing companies which have not yet joined the association and as individuals connected with non-member companies are ineligible for membership, it was necessary to drop these from the rolls. In the case of individuals connected with member manufacturing companies a number of these have not renewed their membership because this was only incidental to securing a convention badge, and this year the badges will be issued to railway and manufacturers' delegates alike and without further requirement than that their companies shall have enrolled. In other words, the \$5 payment which carried with it an individual membership, formerly exacted of all manufacturers at conventions, is not required under the present arrangement.

OTHER ACTIVITIES

The bureau of information at association headquarters is steadily widening its scope and increasing in its value to the membership. An important work accomplished during the year was the compilation and issue to member companies of a comprehensive bulletin on wages of motormen and conductors. The information in this bulletin was secured from 756 companies, a large number of non-member companies contributing data. The information is being kept up-to-date, and another edition of the bulletin will be issued early in the coming year. In accordance with instructions from the executive committee, there was also collected information relating to company publications.

We have received during the year 447 requests for information from 168 member companies and from thirty outside sources. In many cases it was necessary to undertake special investigations to secure the data. In all cases the requests were promptly met. In connection with the bureau is maintained a file of commission decisions which is kept up to date. This information has proved of considerable value and is frequently called for by member companies. The bureau is also continuing a part of the work formerly carried on by the Bureau of Fare Research in collecting operating statistics of member companies.

During the year the revisions of the Engineering Manual were published and issued free to member companies and at cost to those individual members requesting them.

The committees appointed during the year by the five associations and numbering sixty-four, have been at work on a great number of important subjects. The results of their labors are embodied in their reports to be presented to this convention and the industry will find them to be of the greatest interest and value.

At its meeting of Feb. 3, the executive committee authorized the president to appoint a committee to cooperate with the War Department, the purpose of this committee being to collect such data regarding the electric lines of the country as would be of service to the

	Company		Total	Individual
	Railway	Mfg.		
Number of members Nov. 1, 1915	349	...	349	2,682
Number of members reinstated	4	...	4	33
Number of new members	19	208	227	41
Total	372	...	580	2,756
Resignations	11	...	11	629
Changes to company sections	...	...	...	614
Grand total	361	208	569	1,513

FINANCIAL STATEMENT	
For Ten Months Ending Aug. 31, 1916	
Cash balance, Nov. 1, 1915	\$11,055
Revenue to Aug. 31, 1916	97,598
Expenses to August 31, 1916	\$72,902
Other disbursements for items now shown as inventories:	
Badges purchased	\$443
Less badges sold	57 \$386
Furniture and equipment	633
Paper	138
Petty cash	500
Cash in bank September 1, 1916	\$34,092

INCOME STATEMENT	
Ten Months Ending Aug. 31, 1916	
Revenues	
Admission fees:	
Railway companies	\$110
Manufacturing companies	1,820
Annual dues:*	
Railway companies	\$49,493
Manufacturing companies	5,835
Individual dues (\$5.00)	6,121
Company section members (\$2.00)	2,274
Miscellaneous income:	
Rent of convention exhibit space	\$13,197
Convention donation	375
Interest on deposits	488
Sale of advance papers, annual reports and year book	475
Sale of "Engineering Manual"	251
Sale of "Cost of Transportation Service"	522
Sale of "Bibliography on Valuation"	130
Sale of other pamphlets	307
Public relations fund	3,200
Aera:	
Advertising	\$12,525
Subscriptions	152
Sale of extra copies	10
Sale of binder	6
Other pamphlets	...
	12,695
	\$97,598

\*Includes \$9,109 received as Aera subscriptions.

EXPENSES	
Ten Months Ending Aug. 31, 1916	
American Association:	
Salaries of general office staff	\$13,258
Salary and expenses of Washington representative	416
Rent of office and store room	3,381
Stationery and printing	2,222
Postage	2,363
Repairs to furniture and equipment	46
Office supplies and expenses	893
Telephone, telegraph and messenger service	503
Express, freight and cartage	192
Exchange	90
Traveling expenses of secretary	14
Miscellaneous general expenses	1,010
Advance papers, annual report and year book	1,745
Committee expenses	4,545
Mid-year meeting	1,203
Annual dinner	506
Bureau of fare research	870
Engineering manual	814
Publication of "Cost of Urban Transportation Service"	1,132
Bibliography on valuation	675
Printing miscellaneous pamphlets	18
Accountants course	1,256
Annual convention	1,873
Exhibit expenses	1,668
Accountants Association:	
Advance papers and annual report	\$526
Committee expense	365
Miscellaneous expenses of secretary	1
Engineering Association:	
Advance papers and annual report	\$3,162
Committee expenses	3,267
Claims Association:	
Claims advance papers and annual report	\$556
Committee expenses	362
Miscellaneous expenses of secretary	124
Hooper-Holmes Index Bureau	563
Transportation and Traffic Association:	
Advance papers and annual report	\$902
Committee expenses	1,426
Aera	20,637
Total	\$72,902

War Department in time of emergency. This committee will shortly undertake its work.

The association has continued as its Washington representative, the firm of Clark, Prentiss & Clark, who have kept in touch with the progress of matters affecting electric railways before Congress and the Interstate Commerce Commission.

The association's subscription to the Hooper-Holmes Bureau was continued for 1916. Fifty-six companies made 18,062 reports, the bureau returning reports on 1578 names.

Acting under instructions of the executive committee, your secretary has co-operated with the Utilities Publication Committee in the endeavor to secure a wider circulation of the Public Utilities Reports Annotated. The membership was advised by letter of a special subscription offer made by the company and mention was made of this in *Aera*. The magazine also called attention at various times to the value of the reports.

On May 1 the association headquarters was enlarged by the addition of two office rooms. This provided much needed space for the offices, which were overcrowded.

President Henry next called for the report of the general convention committee of which Thomas Finigan is chairman and in his absence Secretary Burritt abstracted the report. This was largely a statement of the meetings and transactions of the committee. The sum of \$2,500 was appropriated for the expenses of the exhibit committee and \$5,500 for the use of the entertainment committee. The report contained an itemized account of how most of this money was expended. The report also stated that 57,392 sq. ft. of space had been sold for exhibit purposes to 142 manufacturing companies. Also as a result of the work of the membership committee 218 manufacturing companies were enrolled as members. This report was accepted and approved.

H. H. Norris, associate editor *ELECTRIC RAILWAY JOURNAL*, chairman of the education committee, then briefed the printed report of his committee which was largely presented as information.

#### EDUCATION

The committee on education reported progress with the correspondence courses which have been in use since last year and gave statistics as to the number of students who had completed the several sections of each course. The courses, in which no material changes have been made since last year, comprise the electrical shop course, the mechanical shop course, the combination of these two courses, the line and track work course, the power-house and substation course, and the combination of the last-named two. The power-house and substation course is the most popular, with seventy-five students enrolled, and the electrical shop course is next with fifty-two students.

The committee reported the results of a canvass of students and employers to learn as to the practical results of the courses from the points of view of both. Both employers and students believed that the courses should be continued. A number of interesting comments on the courses were secured from students and in the report the committee took up in some detail some of the more important of these. In view of the year's experience it was recommended that the courses be continued for another year, that an effort be made to enlist the co-operation of employers in supervising the work of students as suggested by several managers, and that the committee work out some plan for familiarizing the students with appropriate parts of the *Engineering Manual*. The report was signed by H. H. Norris, chairman; H. A. Bullock, Martin Schreiber, W. L. Robb, A. M. Buck and V. Karapetoff.

At this point in the program President Henry read a telegram from Major-General Leonard A. Wood, New York City, expressing regret because he could not attend the convention. In his stead Walter King Wilson, captain of the coast artillery corps, read a paper on coast defenses. An abstract follows.

#### COAST DEFENSES

The first purpose of coast fortifications is to free the navy, which should be able to go out on the high seas to meet the enemy's fleet and destroy it. The second purpose is to protect naval bases and anchorages where the battleships can be under the protection of the coast guns. A third purpose is to prevent the bombardment of important seacoast cities. The fourth purpose is to protect the harbors which otherwise might be used by the enemy as a base of operation. To prevent a landing at unfortified places along the coast, sea-coast guns mounted on railroad cars would have to be used to be run from point to point along the coast line to be used against ships covering such a landing. For this service all existing railways which are available would no doubt be needed. Many large electric railways connect many of the fortifications with nearby cities, and the co-operation of the management of these railways with the military authorities would be essential for the efficiency of the sea-coast armament. Moreover, in time of war, when our harbor boats are being used for planting mines and for other purposes which are strictly military, the electric railways which connect our fortifications with nearby cities would be of vital importance in transporting supplies. Captain King then showed a series of stereoptican views and pictures to illustrate modern coast defenses and the actual firing of guns, mortars and mines.

At the conclusion of Captain Wilson's address, Lieut.-Col. Chauncey B. Baker of the Quartermaster's Corps read a paper on the "Employment of Trolley and Electric Transportation in Military Service."

In this paper, Colonel Baker first described the importance of sufficient means of transportation in military movements, as shown not only in this country but in Europe. During the recent movement of troops to the border a system was employed arranged between the office of the quartermaster general and the officers of the American Railway Association, the latter working through a committee known as the Special Committee on Co-operation with the Military Authorities. This committee established its headquarters in Washington where it was in constant consultation and communication with the military authorities. The results were very satisfactory.

The steam railroads are at an advantage, however, for military purposes over the electric roads inasmuch as their business makes it necessary for them to exchange traffic with one another, and all of the machinery for this purpose is in existence. To utilize the electric roads satisfactorily and effectively in connection with the military movements an advisory body or bodies should be formed from organizations already in existence whose duty it would be to bring to a uniform practice all of the roads at least in what might be called military districts upon the following points, (1) military tariffs, (2) settlement of accounts, (3) operation of the roads, (4) track and yard facilities, (5) collection of data, (6) reserve corps.

The tariffs should cover all classes of military requirements including every class of equipment required in military service. Such tariffs have been arranged between the government and the steam roads during each period when our country has been at war. Similarly, there should be a clear understanding with regard to the settlement of accounts. As regards operation, pro-

vision should be made for operating all of the lines as a single system so that the cars could go wherever it would be found most advantageous to the military service. This work should also include the preparation of schedules and an understanding of the extent to which commercial traffic will be suspended and the military traffic given the right-of-way. Studies should also be made of each district covering all points connected with operation, including trackage, spurs and side-tracks, terminals and grades.

In providing for track and yard facilities, mobilization, concentration and probable embarkation points should be fixed. They should be so located as to have thoroughly satisfactory service by rail and should be owned by the government. Then the necessary facilities at entraining and detraining points can be provided. Another important function of the committee suggested would be to collect all information of military value concerning the railroads, including the preparation of plans for prompt conversion of existing cars into that class of cars that would be most urgently needed at time of mobilization. Finally, there should be a liberal number of electric railway men who would be willing to place their services at the disposition of the war department for joining the reserve corps. Members of this corps would have duties similar to those which they perform in time of peace in commercial traffic. They would receive, however, such military training as would be necessary. It is believed that the nominations for positions in such a corps should be passed upon by a proper body of this organization. The suggestions made require no new and radical legislation.

#### OTHER BUSINESS

At the close of Colonel Baker's paper J. J. Stanley, president of the Cleveland Railway Company, Cleveland, Ohio, moved a rising vote of thanks be presented to these United States army officers for attending the convention and presenting their interesting papers. President Henry then read telegrams from Gen. George H. Harries, expressing regret at his inability to be present and stating that the committee preparing plans for co-operation with the War Department would complete its report in a month. A. W. Brady, president Union Traction Company, Anderson, Ind., chairman of the committee on federal relations, read its report.

#### FEDERAL RELATIONS

According to the report of the committee on federal relations, the session of Congress recently ended was fruitful of legislative measures affecting the electric railways of the country. These measures touched on numerous phases of electric railway affairs, as reviewed in detail in the report. They applied to the cars operated, to the tracks over which those cars are run, and to the signals by which they are protected; to the clearances between cars and other objects; to the hours of service of the motormen and conductors running the cars and of the dispatchers governing their movements; to the wages paid; to the settlement of differences between company and employee, and to the compensation of employees when injured; to the rules of operation; to the rates chargeable, and to the stocks, bonds and other securities which the electric railways might issue. In the case of the street railways of the District of Columbia such measures even provided for the taking over and operation of those properties by the public, a proposition upon which, the report states, there is a possibility of ill-considered action on the part of the House of Representatives. The report also mentions the Newlands resolution for an investigation concerning transportation lines and government ownership, and

court decisions relative to the jurisdiction of the Interstate Commerce Commission over electric lines.

The report emphasizes the point that the influence of every member of the association should be actively exerted whenever opportunity occurs to secure sound and reasonable action touching electric railway affairs by Congress and the Interstate Commerce Commission. It is said that few companies, when they consider the rapidly widening field of federal activities and the expanding views concerning the acts which make a carrier one engaged in interstate commerce, can feel assured that they will not eventually find themselves within the scope of the federal legislation. Congress should adopt the principle of excluding electric railways from the operation of the various measures of railway regulation unless there is an especial reason for inclusion. Every bill applying to common carriers by railroad introduced at the recent session (three only excepted) applied to a 20-mile interurban line engaged in interstate commerce equally with the great trunk line railroad systems of the country. That, the report concludes, is wrong. The early legislation bringing carriers within the jurisdiction of the Interstate Commerce Commission with respect to rates, accounts, accidents and like matters of a general nature, was, properly enough, sufficiently broad to include electric railways. The present legislation, however, relates as a rule to details of construction, operation or management, and the defects aimed at are those claimed to exist in connection with steam railroads. Electric railways differ so greatly and in so many important respects from steam railroads that it is seldom safe and is often grossly unreasonable that an act relating to any of these details should put the two into a single class.

The report was signed by A. W. Brady, chairman; E. G. Connette, Geo. H. Harries, E. C. Foster, L. S. Storrs, F. W. Brooks, H. H. Crowell, F. R. Ford, L. S. Cass, F. T. Griffith and H. E. Chubbuck.

At this point President Henry adjourned the meeting with the statement that the remainder of the program intended for the Tuesday morning session would be taken up Wednesday morning.

## Wednesday's Session

The first part of the Wednesday morning session was taken up with the presentation of reports postponed from Tuesday.

#### GOOD ROADS CONGRESS

Gordon Campbell and J. M. Larned, the committee appointed to attend the Sixth American Good Roads Congress and the thirtieth annual convention of the American Road Builders' Association, held in Pittsburgh on Feb. 25, 1916, reported that the committee attended these gatherings and recommended that the Road Builders' Association continue to receive the attention of the American Association.

The two papers of special interest to members of the association were one on "Railway Track Construction in Paved Streets," by R. Keith Compton, chairman paving commission, Baltimore, Md., and one on "The Control of Openings in Pavements," by N. S. Sprague, chief engineer Bureau of Engineering, Pittsburgh, Pa. The first-named paper was discussed by Messrs. Larned and Campbell as representatives of the association.

#### JOINT COMMITTEE ON OVERHEAD AND UNDERGROUND CONSTRUCTION

The report of the representatives of the association on the national joint committee on overhead and under-

ground line construction consisted simply of a statement, made by the president, to the effect that the national committee is making progress with the work which it has on hand.

#### COST OF PROVIDING PASSENGER TRANSPORTATION SERVICE

The committee on cost of passenger transportation service reported the completion of the book by F. W. Doolittle which formed part of its report last year. Other work accomplished by the Bureau of Fare Research, while it was in existence, was the establishment of a filing system for financial information, now a part of the general files of the association, the collection of information and the supply of data for several committees of the association, and the preparation of a number of signed articles, editorials, reviews and comments for the press. The total expenditures by the Bureau of Fare Research during the twenty months of its existence were \$10,477, of which \$6,802 was contributed by the association and \$3,675 was raised by subscriptions that were received from five electric railway companies.

The report was signed by J. D. Mortimer, chairman of the committee.

#### COMPANY MEMBERSHIP AND ELECTROLYSIS

The report of the committee on company membership was next received by title. This was in the nature of a statistical statement showing that fifteen railway companies and 208 manufacturers had joined during the year, the present membership being 357 railways and 208 manufacturers.

For the committee on electrolysis, President Henry stated that this committee had met during the year and suggested a number of changes in the report of the American electrolysis committee, most of which have been accepted by the latter committee. The report of the American electrolysis committee is now in galley form and will be completed soon.

#### AWARD OF MEDAL FOR BEST PAPER PRESENTED BEFORE A COMPANY SECTION

The committee appointed to select the best paper read before a company section, based on its value to the electric railway industry, reported that it had carefully reviewed the twelve papers submitted, and in the unanimous opinion of the committee the medal for the year 1916 should be awarded to Bert Hall of the Milwaukee Electric Railway & Light Company for his paper, entitled "Employees' Co-operative Activities," presented before Company Section No. 1 on May 26, 1916. This paper was abstracted in the issue of the *ELECTRIC RAILWAY JOURNAL* for Sept. 9, 1916, page 441.

The committee also selected for honorable mention the paper entitled "Snow Fighting," by Harold Bates of the Connecticut Company, and "Construction Accounting and Its Relations to Other Departments," by H. N. Balfour of the Connecticut Company, the papers having been presented before Company Section No. 7 on Jan. 4, 1916, and April 4, 1916, respectively. These papers were abstracted in the issues of the *ELECTRIC RAILWAY JOURNAL* for Jan. 22, page 162, and April 22, 1916, page 770, respectively. The report was signed by H. R. Fehr, chairman; P. S. Arkwright and James H. McGraw.

On behalf of the committee Mr. McGraw said that the committee believes strongly in the possibility of the company section movement and wished to do everything possible to encourage it. In Mr. Hall's absence, the medal was presented by Mr. McGraw on behalf of

the association and the committee and was received by R. B. Stearns, general manager Milwaukee Electric Railway & Light Company. Mr. Stearns accepted it in a short speech, in which he suggested that Mr. Bradley's paper on "Training Men for Supervisory and Executive Positions" furnished excellent material for company section consideration. He suggested that this paper be divided into, say, a dozen sections for consideration at a corresponding number of company section meetings.

#### CONDITIONS OF AWARD OF THE ANTHONY J. BRADY SAFETY MEDAL

The next report received was that of the committee on the conditions of award of the Anthony N. Brady safety medal, and was presented by Arthur W. Brady, Union Traction Company of Indiana, Anderson, Ind. The report stated that the conditions of the competition remained substantially as heretofore but that there has been a change in the forms supplied for filing data by competitors. Formerly booklets and application forms were furnished separately. This caused some confusion, and as the committee wished to get as many data as possible to supplement numeral statistics, the new form was devised. The actual award of the medal was made by the American Museum of Safety on the recommendation of a committee appointed by the Museum.

#### PAPER ON OVERHEAD CHARGES

The report of the committee on valuation was then presented by P. J. Kealy. This report was accepted. Mr. Kealy also presented by title his paper on "Overhead Charges in Valuation," which had been prepared in consultation with the committee on valuation. He stated that he did not read this, as the paper was already in print and the subject is one of limited interest. He said that many seem to want to postpone consideration of the subject until it is absolutely necessary, but all companies should be prepared to have their properties valued. Mr. Kealy's paper is abstracted elsewhere in this issue.

#### VALUATION

During the year the committee on valuation decided to confine its activities to three things, as follows: (1) The production of a bibliography, brought up to Jan. 1, 1916; (2) the preparation of a code of definitions for the terms necessarily used in valuation work, and (3) a paper to be prepared on "Overhead Charges."

The bibliography was prepared by the library of the American Society of Civil Engineers, which had published the most recent and comprehensive one, and was published by the American Electric Railway Association early in this year. A copy was sent to each member company, and additional copies are available at a nominal price in the office of the secretary.

One of the causes contributing to the widely diversified decisions of commissions and courts on the various phases of valuation work has been the great confusion in the use of terms. A list of more than 300 various terms in use was prepared by C. G. Young, and an examination of this list discloses the fact that there are seventy-four kinds of value, and similarly other terms are used in many ways. The committee felt that if a code of definitions, twenty or thirty in number, could be formulated and generally agreed upon, it would be a long step toward the placing of valuation work and literature on a scientific basis. Such a code was therefore prepared by the committee and is attached to its report as Appendix "A."

The twenty-one definitions proposed include the following:

1. *Public Utility*: A business operated under a public grant and performing a stipulated public service for compensation.

2. *Franchise*: The grant by a public authority of the necessary rights to do a specific business, and including the use and occupancy of some portion of the public lands.

3. *Property*: That which is owned by a company or individual by virtue of legal rights through possession, title or lease.

4. *Ownership*: The legal title to, or possession of, property.

5. *Value*: Worth (see definition of worth).

6. *Valuation*: Act of determining worth.

7. *Worth*: Exchangeable value (Webster).

Including every item of value entering into and affecting the value of a property, tangible and intangible, physical and non-physical, also every kind of value from whatsoever sources derived, or by whatsoever means or cause affected, favorable or unfavorable, and as of the present time and including full consideration of past performance and future probability.

NOTES.—(a) It is seen that worth (value) is not constant, but is affected and increased or diminished from time to time by a number of conditions and circumstances.

(b) That worth (value) is dependent, among other things, on earnings and therefore on rates and tariffs charged for the services rendered.

(c) That worth (valuation) thus defined cannot be made the basis of the amount on which a reasonable return is to be allowed by courts.

(d) That an appraisal only shows a part of the worth of a property.

(e) The word "value" should not be used except when worth is intended.

8. *Investment*: The total amount of cash, or its equivalent, that has gone into the creation and development of a property, from whatsoever source derived, including new money used for obsolescence and development.

9. *Capital*: The total number of shares of a company, preferred, ordinary or otherwise.

NOTES.—When these shares have a stipulated par or face amount, the total aggregate sum expresses the capital of the company.

(a) The capital face amount of a company may be more or less than the investment, and is divided into more or less shares for convenience of increasing or decreasing the fractional partnership divisions.

(b) Capital shares have no fixed relation to the investment.

10. *Sinking fund*: An accumulative fund, set aside from earnings from year to year, out of which monies are paid for amortization of investment.

11. *Amortization*: The repayment from time to time of part of the investment by means of a sinking fund.

12. *Obsolescence*: The state of becoming obsolete (Webster). The replacement of property before it has reached its full period of usefulness due to,

(a) The advance of or changes in the art or process in practice, or

(b) Public legislation or demand.

13. *Depreciation*: Is the lessening in worth of physical property due to use or other causes.

14. *Appreciation*: The increased worth of any part of a property not due to additions to investment.

15. *Maintenance*: The cost of repairs and renewals for proper up-keep of a property. Maintenance is of two kinds:

(a) *Ordinary Maintenance*.—Those repairs which are made each year as needed.

(b) *Deferred Maintenance*.—Those repairs which cannot economically be made each year but which are made at frequent intervals.

NOTE.—Maintenance is a part of the cost of operation.

16. *Rate of return*: The percentage rate of return earned and paid on the total investment.

17. *Tariff rates*: The charges made and collected for services rendered.

NOTE.—The theory being that the rates should be sufficient to cover all operating expenses, repairs and maintenance, depreciation, obsolescence, rewards of management, legal expenses, accidents, insurance, taxes, and general overhead and miscellaneous expenses; also a stipulated amount for amortization and sinking fund, interest on bonds and other forms of indebtedness, and dividends to cover the rate of return allowable on the total investment.

18. *Inventory*: The count or measure of all separate items comprised in a property, including physical property as well as certificates or other evidences of ownership.

19. *Appraisal*: A complete study of a property showing the cost to reproduce new, based on inventory, and also showing depreciation.

NOTE.—An appraisal is but one of the factors to be considered in determining worth.

20. *Intangibles*: Such items of value of a non-physical nature which are not represented in the existent property but reasonably constitute a definite part of the assets of a corporate enterprise, such as contractual rights (franchise value), expenses incurred in development of plant or business, damages resulting from condemnation proceedings, etc.

21. *Overhead costs*: Such general and miscellaneous expenditures, forming a portion of the cost of a property, which, because of their nature, are not or cannot be included in the unit prices.

The report also includes a glossary of terms previously used by Bion J. Arnold (Transactions American Society of Civil Engineers, 1915), and definitions used by John W. Alvord (*Ibid.*, Vol. 79, 1915). Appendix "B" of the committee report consists of the paper on "Overhead Charges" prepared by Mr. Kealy and indorsed by the committee.

The report was signed by J. N. Shannahan, chairman; P. J. Kealy, H. H. Crowell, B. E. Tilton, C. S. Sergeant, W. H. Sawyer, C. G. Young and Martin Schriber.

#### COMPENSATION FOR THE CARRYING OF UNITED STATES MAIL

The committee on compensation for carrying United States mail devoted particular attention to the Post-office Department appropriation bill and the reasons for the reduction in the allowance for the carrying of mails by electric and cable cars over that made last year. It seems that the Post-office Department estimated as necessary for its requirements for the fiscal year ending June 30, 1917, an appropriation of \$316,364,879. After the bill had passed the Senate and the House of Representatives and points of disagreement had been eliminated by a committee of conference, it carried a total appropriation of \$322,206,579 or \$5,841,700 in excess of the amount asked for by the Post-office Department.

The committee quoted these matters in detail to show that the department is sufficiently supplied with funds to carry on its affairs, to pay its employees, and also to pay the corporations with which it does business a reasonable amount for services rendered. While it would ordinarily be taken for granted that the electric railways should receive some benefit from the increases allowed in the bill a careful analysis shows quite the contrary.

This year's appropriation for inland transportation of mail by electric and cable cars is \$600,000 as against \$784,000 for last year, and this notwithstanding the fact that there must be a normal increase in the carrying of mails by electric and cable cars over last year. The matter was taken up by the committee with the Senate members of the post-office committee to see if an amendment could not be made to the post-office bill when under consideration in the Senate, at least allowing electric railway and cable car companies the same amount of compensation for the fiscal year ending June 30, 1917, as was allowed for the fiscal year ending June 30, 1916, but this result could not be accomplished by the committee.

The committee particularly emphasized the difference in the situation between electric railway and cable companies and the railroad companies. The latter are represented by a very efficient committee headed by Ralph Peters, president of the Long Island Railroad. In spite of discouragement and opposition, this committee persisted in its efforts, and the bill as passed increased by \$3,112,000 the appropriation for inland transportation of mail by railroad companies. The railroad mail service was allowed an increase of \$304,610. The committee in charge of the railroads' interests is, there-

fore, to be congratulated upon the effective campaign which it has carried on.

The reason for the reduction of allowances for carrying mail by electric and cable cars is, apparently, the expectation that automobiles will be increasingly used. Second Assistant Postmaster General Praeger has estimated the cost of carrying mail in automobiles at 15 cents per mile as against 21 cents per mile by electric cars. While assenting to Mr. Praeger's estimate of the cost of transportation by electric cars, the American Association committee disagrees with him as to the cost of automobile service. However, the post-office committees of the House and Senate have apparently followed to the letter the recommendations of the Post-office Department in reference to the carrying of mail by electric and cable railway companies, and these companies must either go out of the business of transporting the United States mail or continue to carry it for less than cost as they are now doing.

The committee calls attention to certain amendments to the post-office bill, particularly that giving the right of appeal to the Interstate Commerce Commission in matters of dispute between the Post-office Department and the railroad companies. The bill further provides for methods for modifications in weights and zones in the parcel post by referring the same to the Interstate Commerce Commission. This commission, therefore, will hereafter enter prominently into disputes as regards rates, space, zones and like matters. It would seem that under such a provision electric railway companies might have a chance for appeal.

In conclusion the committee recommended that a special study be made as to the right of electric railways to appeal as suggested above, and that if necessary the incoming committee be authorized to consult with legal advisors and ascertain what increase from the Post-office Department the electric railway companies can receive for carrying the United States mail by appealing to the Interstate Commerce Commission. It is further recommended that a special study be made of the need of electric railway companies in this respect and that their case be brought before the post-office committee at the next session of Congress. Particularly should the cost of automobile operation for carrying mail be ascertained to see how closely the figures of cost as given by Mr. Praeger have been adhered to.

This report was signed by Henry S. Lyons, chairman; George H. Harries, A. R. Piper, R. S. Goff and S. W. Ladd.

#### COMPANY SECTIONS AND INDIVIDUAL MEMBERSHIP

The committee on company sections and individual membership reported that during the last fiscal years 900 company section and other individual members have been added to the roll. The committee's efforts were directed toward forming new company sections, and four were inaugurated, namely: No. 7, the Connecticut Company at New Haven on Dec. 7, 1915; No. 8, Capital Traction Company at Washington on Jan. 13, 1916; No. 9, Cumberland County Power & Light Company at Portland, Me., Feb. 18, 1916; No. 10, Newport News & Hampton Railway, Gas & Electric Company at Hampton, Va., March 31, 1916. All are in healthy condition and enthusiastic in their work. The committee has planned to have an exhibit at the convention, known as a company section booth, showing the activities of these company sections.

The individual membership in round numbers consists as follows: American, 195; Accountants, 250; Claims, 125; Engineering, 1555; T. & T., 875; making a total of 3000. About half of this membership is made

up from the company sections. The individual members, other than those of the company sections, are more uncertain in their tenure of membership, and the new members scarcely offset the withdrawals for various reasons. The committee believes that the real field for increasing individual membership lies in the formation of new company sections.

The report was signed by Martin Schreiber chairman; F. W. Bacon, J. E. Gibson, E. V. Blair and Henry H. Norris.

In commenting on the total membership, which is stated at 3000 in the report, Mr. Schreiber said that 100 new memberships had been added since the printed report had been prepared. In the discussion which followed, J. D. Mortimer, Milwaukee Railway & Light Company, inquired concerning the effect of the company section movement on the finances of the association. President Henry replied that it had created a net loss of about \$3,000 and that this was largely due to the reduction in the membership fee for company section members from \$5 to \$2.

In reply to a question from Leake Carraway, Southern Public Utilities Company, Charlotte, N. C., asking whether companies owning several properties in a territory several hundred miles wide could establish with profit a single company section, L. S. Storrs, The Connecticut Company, New Haven, Conn., responded that this plan had worked out satisfactorily on his property and that where only a few department heads were members of the association prior to the organization of the company section there were now 230 such members. In response to another inquiry, Mr. Schreiber stated that approximately one-half of the members included in the 72 per cent increase in membership came into the association when the dues were reduced to \$2. This concluded the discussion and the report was received and placed on file.

#### PUBLIC RELATIONS

C. Loomis Allen, Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., then outlined briefly the work of the committee on public relations. Commenting on this, he called particular attention to the marked increase and number of company publications which had been started in the past year.

The committee on public relations reported that it had held several meetings during the year and that at the meeting of Dec. 15, 1915, the following sub-committees were decided upon:

Sub-committee No. 1—Dealing with the dissemination of information or literature on subjects of general interest to public service corporations and sources of public education; members, Guy E. Tripp, chairman; T. S. Williams, E. W. Rice, Jr., and J. D. Mortimer.

Sub-committee No. 2—Dealing with similar committees of other public service associations; members, James H. McGraw, chairman; H. H. Vreeland and J. R. Lovejoy.

Sub-committee No. 3—Dealing with the publication in magazines and periodicals of popular articles on public service questions; members, T. S. Williams, chairman; T. S. Wheelwright and A. W. Brady.

Sub-committee No. 4—Dealing with questions of economic relations between employees, employer and the public; members, James D. Mortimer, chairman; H. G. Bradlee and E. W. Rice, Jr.

Quoting from the 1914 report of the committee on public relations, the following was given as the plan outlined for future work of the committee to be carried out as opportunity offered. Briefly the measures proposed were:

1. The establishment under the auspices of the association of a bureau of public relations.
2. The dissemination of information in literature on subjects of general importance to public service corporations.
3. Co-operation with similar committees of other public service associations.
4. Influencing sources of public education.
5. The publication in magazines and periodicals of signed popular articles upon public service questions, by prominent workers in the electric railway industry.
6. Newspaper advertising when financially possible and advisable.

The committee pointed out that during the year 1915 a director of the bureau of public relations was appointed and syllabi of lecture courses both for technical and for popular uses were drawn up. The committee, however, was without means to pursue this work and no definite steps were taken to carry the recommendation into effect. At its first meeting the present committee raised among its members the sum of \$1,950 for the preliminary work intrusted to it. Later an attempt was made to raise the fund to \$25,000 per year for three years, but without success although pledges amounting to \$14,200 were secured. In view of failure to secure the pledge required, the committee decided not to proceed with the program.

Very careful consideration was given to the proposition of a national campaign of publicity having for its object the presentation of the salient facts in connection with the industry, and the information of the general public as to the conditions which the electric railways of the country confront. There was presented to the committee a carefully considered and worked-out plan for a national campaign of publicity, in which use was to be made of the national advertising mediums, of street car advertisements, and of the facilities that member companies have for the distribution of literature. The committee expressed itself as of the opinion that the plans so outlined were the best that had yet been called to its attention along these lines. The committee concluded, however, that while the problem of public relations has a national aspect, yet in working out improved conditions, the unit is the member company, and that the general advertising or publicity campaign involving the expenditure of a large sum of money (\$500,000 at the least) would not bring results commensurate with the expense. The committee and the association, however, can be of great value to the industry as a whole and to the member companies, in the collection and dissemination of information along certain lines—such, for instance, as that which is being undertaken by subcommittee No. 4, which presented a report of progress, and by supplying member companies with material for their local campaigns. For a comparatively small sum, a bureau could be equipped which will be of great value to the electric railways.

In the report attention was directed to the constantly increasing number of railway companies which are issuing periodicals of one kind or another for the information of the public, and for their employees, and of those companies which, through newspaper advertising, and in other ways, are working to secure the co-operation of the public. There is no organization existing in the country which has such facilities for supplying the material useful in such a campaign as the American Electric Railway Association. To place this information at the disposal of the member companies and to add to the channels by which the information is secured, would be the province of such a bureau.

The committee was, therefore, of the opinion that its

efforts should be directed to the raising of the necessary funds for carrying this project into effect. Its cost would be comparatively slight and the value of its work would increase with years.

If it is possible—and in the committee's opinion it is possible—to secure the necessary revenue, outside of the dues of member companies, the following plan of procedure was proposed: (1) The engaging of a director, who shall, under the direction of the bureau of the committee on public relations, have charge of the work of the bureau, devoting all of his time thereto. (2) The preparation and distribution among member companies of absolutely authentic and attractively prepared information bearing on matters concerning public relations—to include the important features of public utility commission decisions; the utterances of public officers and of other authorities affecting public relations; statistics showing the tendency of railway earnings and capitalization accounts, and all other matters of interest in connection with public relations. (3) The director of the bureau to assist member companies in securing speakers to present the case of the electric railways before various commercial and civic bodies. (4) The supplying of articles and information to newspapers and periodicals upon public utility affairs. (5) The preparation of any material which member companies may desire in matters affecting public relations.

The above report was signed by C. Loomis Allen, chairman; T. S. Williams, J. D. Mortimer, J. H. McGraw, Guy E. Tripp, S. M. Curwen, E. W. Rice, Jr., J. K. Choate, Frank Hedley, Chas. N. Black, T. S. Wheelwright, Henry A. Blair, Arthur W. Brady, E. G. Connette, Geo. E. Hamilton, H. G. Bradlee, H. H. Vreeland, C. C. Peirce and P. F. Sullivan.

#### SOCIAL RELATIONS

J. D. Mortimer, Milwaukee Electric Railway & Light Company, then read extracts from an extensive report prepared by the subcommittee on social relations. This report discusses the principles of life, health and accident insurance, pensions, etc. At the conclusion of his presentation of this report Mr. Mortimer said that an installment on minimum wage was in the process of publication at the present time and would be ready for distribution shortly. Owing to the extent of the report of the subcommittee on social relations, its publication is omitted this week but it is hoped to include an extended abstract of it in the issue of next week.

#### IVY L. LEE SPEAKS ON PUBLICITY

At this point Ivy L. Lee, New York, was introduced and addressed the association on the subject of publicity. In his preliminary remarks Mr. Lee stated that his address would be in the form of an abstract of a paper which will be published in full later. The sudden appreciation that the public was taking an interest in the direction of all business was the reason for publicity. Electric railway companies in particular are carrying a heavy burden in the way of paving regulations which cost the company much money which the city should pay. Taxes have become excessive and an era of carelessness has increased the number of personal injury accidents. Superimposed upon this, the railways are confronted with an increased cost of materials, jitney competition, an inherited financial past in many cases from which they are unable to escape, and finally they have been limited to a 5-cent fare.

Publicity is a remedy for many of these difficulties, but it is not a shield against unfavorable opinion. To change the metaphor, it should be considered as an anti-

septic to cure the disease rather than a bandage to cover up a sore. Or, to change the metaphor again, publicity is not a coat to cover up defects but an x-ray by which the public can really see what is inside the organization.

A company which inaugurates a publicity campaign must be prepared to take the consequences, because publicity cuts both ways. Unless the railway management is willing to tell everything, the publicity campaign had better not be started. A company cannot sing of prosperity to its stockholders and complain of poverty to its employees and to the tax assessors. Moreover, any policy of publicity should be pursued in a reasonable way, and if this is done the facts presented will cause the public to believe that the railway is doing the best it can to make good. In presenting such facts the railway must realize that the people as a whole are intelligent and fair and that when they have in their possession all of the facts regarding the situation, they will decide in the just way in the long run.

The public as a rule is moved by sentiment. A railway cannot expect to reason out its case with the public because it is not interested enough to analyze facts and figures. The best plan undoubtedly is to induce the people to believe in the management. How this should be done and the proper policy to pursue must be worked out by each company to meet its own local conditions. In other words, the management in each city must convince its public to believe that it is doing the best it can in the way of furnishing service. Often, of course, better service means an expenditure of more money, but that is not always the case. Courtesy to the public on the part of the employee is the first essential to better service. Courtesy in handling complaints and frankness in explaining the facts of any situation are always helpful in improving public relations. Finally, Mr. Lee suggested that it might be well to publish what he termed a "kicker's" bulletin, in which both complaints and the company's answers appear.

Another phase of the publicity problem is the personal attitude of the company toward the community served. If the public is led to believe the company is a machine without sympathy, it is inclined to deal more harshly with it than when it knows the management personally and favorably. A case in point is the past and present situation on the New Haven road. While the present service perhaps is no better than that of the past on this railroad, President Elliott has impressed his public with his desire to give them the best service possible and has gained their sympathy thereby. In publicity matters Mr. Lee did not believe that a manager should be primarily a talker but a doer, and this involved an attitude of open-mindedness. Here Mr. Lee criticized the kind of publicity used to eliminate jitney competition. He said that simply because the jitney bus could not be a financial success it did not cease to be of interest to the public. It supplied a demand which the railway did not furnish, and the only way to meet its competition was by giving a similar service, even if at a higher fare. He also mentioned the London Underground competition with auto-buses, and how their competition was turned into an asset by developing the auto-bus as a feeder service of its own.

Mr. Lee then took up the importance of being sympathetic especially in the case of accidents. The reports of accidents are in many cases too heartless. How much better some evidence of sympathy in these reports would be to both the company and the public. He also stated that the railway management must first of all be good citizens. He mentioned the attitude of the Western Union Telegraph Company when the question of government ownership was raised. It took the position that

it did not know whether it was a good thing or not but believed that in case the government took over the property it would be fairly compensated. In the meantime it proceeded to furnish the best service it could. Such policy should be adopted in the street-railroad contest. Frequently the public takes good service for granted and only complains when the service is not up to the standard. A railway should not hesitate to tell its story in printer's ink. Such stories, however, should contain human interest facts and not be a mere mass of argument and detail.

In any publicity campaign, Mr. Lee urged the railways to be human, be natural, and speak in the language of the people. At this point he offered a compliment to Billy Sunday at his methods of preaching the gospel. In dealing with many public problems, it is wise to avoid the services of lawyers. He said that he had seen many situations spoiled by the intervention of lawyers. Too often the legal mind disregards the people's tribunal. It is always best to let the people know that they are dealing with human beings. In publicity matters it is always a wise policy to tell the news first whether it is good or bad. Through the proper form of publicity even the 5-cent fare can be over-ridden. The public wants the service, and if it can't be furnished for a 5-cent fare it must be taught why this cannot be done.

In conclusion, he urged the railway management to take the newspapers into their confidence on a frank and candid basis. Free service to them creates suspicion. Charge them for a service they receive and pay them for the service that they render. The great value of advertising space in the publicity campaign is that the railway commands its own copy and location in the newspaper. Finally, to be and to do does more than to say in building up public confidence. A railway must believe that it is absolutely right when it goes into a publicity campaign if it expects to win.

In reply to an inquiry about the extent to which confidence in the public had been borne out, Mr. Lee stated that the attitude of most people is that they do not care very much about the other fellow's troubles so long as they are not affected. Nevertheless, he had great confidence in the desire of the American people to do the fair thing when they knew what it was. A presentation of the facts dissolves criticism in some cases, but it does not in others. In the final analysis, however, a railway must believe in the people; if the people cannot be trusted to be fair, the American democratic form of government is in danger.

James H. McGraw, *ELECTRIC RAILWAY JOURNAL*, inquired whether Mr. Lee knew of any publicity campaigns, based upon a frank statement of the facts, which had not won out. Mr. Lee replied that he did not know of any such campaigns that had failed except where the campaigns had been started too late. In response to another inquiry, he said that the abolishment of the "ambulance chaser" lawyer was a difficult problem, but that it was much worse for the railway to conceal the facts in regarding an accident. The policy of willingness to tell the press and any legitimate inquirer what they had a right to know tends to disarm them.

Leake Carraway, Southern Public Utilities Company, Charlotte, N. C., then inquired whether publicity matters should be left in the hands of an executive who is not a trained newspaper man or should he employ a man especially fitted to that work and direct the activities. He believed that executives are frequently so busy that they do not give the question of publicity the attention it should receive. Mr. Lee replied that the reason for his presentation of the subject of publicity at this time was based upon his opinion that the railway executives were not giving it sufficient attention. Re-

garding procedure, he said that the president of the Pennsylvania Railroad never talked for publication orally, but always gave out interviews and opinions in writing. He believed that this was an excellent policy, but that it could not be followed to the letter and was not by the president of the Pennsylvania Railroad, because he was neither undemocratic nor unapproachable. When a railway employs a publicity man it should not do so because he has a wide acquaintance among the local newspaper men, but he should be employed for his technical knowledge and ability.

T. A. Wright, Wilkes-Barre (Pa.) Railway, said that about a year ago a strike was begun on his property and was still in progress. In order to contest this condition he had hired a trained publicity man, because he was of the opinion that publicity afforded the only means of reaching the public and gaining its confidence. In handling this publicity campaign, however, the newspapers had refused to accept some of his advertising material because 85 per cent of the labor territory was unionized and the newspapers feared for their circulation. Mr. Mortimer also mentioned a peculiar situation in Milwaukee, Wis., where his publicity department was so well organized that the opposition complained that the railway had subsidized the press.

Mr. Lee said that both of these questions were germane. Mr. Wright's situation was similar to the publicity campaign conducted by the steam railroads, where circular matter was largely used and proved very effective. In any publicity campaign it is wise to obtain a published expression of opinion from the opposition and trust to the soundness of one's own case. In any event, the argument in any contest must stand on the facts that if they are presented in the right way the public will make a just decision.

T. N. McCarter, Public Service Railway, Newark, N. J., asked whether Mr. Lee believed that if a railway showed that it could not earn a return on its investment would any amount of publicity help it to increase the rate of fare? In reply Mr. Lee said that he felt confident that it could obtain such a result in the long run if it had a good case.

Chief Engineer C. M. Larson of the Wisconsin Railroad Commission said that the commission had found that frequently the cases against public utilities were not representative of the public but were pushed by radicals. The public would be satisfied with much less than was demanded by these radicals, and the only way it could be reached personally was through a publicity campaign.

The discussion was closed by J. H. Pardee, J. G. White & Company, Inc., New York.

OTHER BUSINESS

H. C. Donecker, Public Service Railway, Newark, N. J., then presented the report of the *Aera* advisory committee, which was approved and then filed. President Henry next called attention to the changes in the constitution and by-laws, which he said were made necessary following the rather hasty action at the mid-year meeting in Chicago. These amendments were adopted without discussion. The report on motor vehicles was next submitted, approved and filed. In the absence of A. H. Ford, Cumberland County Power & Light Company, Portland, Me., and chairman of the committee on insurance, H. J. Davies abstracted the report, which was received and filed. The reports of the committees on standards for carloading and street traffic also received brief consideration, and the report of the committee conferring with the United States Bureau of Standards on the National Safety Code was postponed for consideration at a later meeting. Abstracts of these reports except that on insurance ap-

pear below. After the reports had been presented the meeting adjourned.

"AERA" ADVISORY BOARD

In its report the *Aera* advisory board stated that the names of 336 railway men appear in the list of contributors to Vol. IV of the association magazine which was completed with the issue of last July. Of the number mentioned 257 contributed to the question box section, in which during the year there were published 1479 answers to 216 questions. The circulation of the magazine has grown to more than 6000 copies per issue.

The report points out the importance of the magazine to the growth of the company section movement, which the board believes to be only at its start, and particular attention has been paid to company sections in the magazine. Section papers and addresses have been printed when they were of more than local interest. It has been the policy to appeal to company section members not only through the department devoted to the movement, but in the editorial and other sections of the magazine.

The report also directs attention to the expansion of the work in the additional space devoted to association news, the publication of statistics of electric railways and of synopses of important decisions of commission and courts affecting electric railways, and the extension of the scope of the department devoted to the interests of the manufacturers in the membership.

The report was signed by H. C. Donecker, chairman; T. P. Kilfoyle, John Lindall, R. E. MacDougall, H. A. Nicholl, Thomas Finigan and C. C. Peirce.

CHANGE IN CONSTITUTION AND BY-LAWS

The committee on changes in the constitution and by-laws of the American Association was requested by President Henry, with the sanction of the executive committee, to study and report upon the desirability of modifying the scale of dues of manufacturing companies so as to render more equable the gradations in the scale. A report, signed by George H. Harries, chairman; R. I. Todd and E. B. Burritt, was presented to the executive committee and approved on Sept. 5. The approved report was transmitted to the association by the executive committee.

Under the old scale, a company with gross receipts of \$100,000 was required to pay the same dues as a company earning \$1,000,000, and similar wide gradations prevailed throughout the scale. The new scale provides for minimum dues of \$25 to apply to companies with net earnings under \$250,000. The dues of companies having gross receipts in excess of this sum is to be according to the following scale:

Gross Receipts	Annual Dues
Between \$250,000 and \$500,000	\$37.50
Between 500,000 and 1,000,000	50.00
Between 1,000,000 and 2,000,000	75.00
Between 2,000,000 and 3,000,000	100.00
Between 3,000,000 and 4,000,000	125.00
Between 4,000,000 and 5,000,000	150.00
Between 5,000,000 and 6,000,000	175.00
Between 6,000,000 and 7,000,000	200.00
Between 7,000,000 and 8,000,000	225.00
Between 8,000,000 and 9,000,000	250.00
Between 9,000,000 and 10,000,000	275.00
\$10,000,000 and over	300.00

The above scale is the same as that of dues paid by electric railways, and in order to incorporate it in the by-laws the committee recommended the amendment of Section XIV so as to include manufacturers with railway company members. Under the new scale some manufacturing company members will pay less, some will pay more, and the remainder will pay the dues provided in the old schedule.

OPERATION OF MOTOR VEHICLES

The subject assigned to this committee was the motor bus as distinct from the type of automobile known as

the jitney, and it was considered, as a feeder, auxiliary or competitor of electric railways. A great deal of interesting data on the cost of motor-bus operation was collected and is presented in an appendix. The conclusions reached by the committee from these data are briefly as follows:

The motor passenger bus has two distinct fields, one in direct competition with city or interurban lines and one where it acts as a feeder to such lines or serves some community at a distance from steam, electric or water transportation. For the former service, the rate of fare is practically limited to the rate of fare obtaining on existing transportation lines, and in these circumstances these bus routes cannot be commercially successful, as shown by the operating costs and demonstrated by the long list of failures. Where there is no competition, higher rates can be established so that it may be possible to run such a line at a reasonable profit providing there is sufficient business and the rate of fare is not prohibitively high. These instances are so few as to be negligible.

The difficulties of motor-bus operation are further increased by the rapid depreciation of the equipment, owing to bad roads, and the difficulty of securing the services of reliable and careful men in their operation. Generally speaking, they are unable to exist if obliged to comply with regulatory laws such as electric railways are required to operate under, or to submit to similar taxation or other municipal charges.

The development of the gasoline motor truck for hauling freight, express and produce is another phase of the possibilities of the gas engine as affecting existing transportation companies. Where the roads and weather conditions are favorable, this form of operation is making an impression upon the earnings of electric and steam lines, and it is quite probable that the motor truck for freight will develop, first, as a competitor to existing transportation lines and second, as a feeder for them. The committee, however, has not had an opportunity to make a comprehensive study of this particular part of the subject.

In the appendix, information is given about sixty-eight routes for motor buses that have been put in operation. A number of these have not proved profitable and have been discontinued. An important exception is the Fifth Avenue Coach Company, whose earnings are given as 35.29 cents per bus-mile and expenses 24.6 cents per bus-mile with a 10-cent fare for between 6 and 7 miles. Figures are also given of the estimated cost of operation per seat-mile for motor buses, based on cars of five different types and prices, *i. e.*, from a \$500 four-passenger car to a \$4,000 twenty-two passenger car. The sum of the fixed charges and operating expenses per seat-mile are estimated to be from 0.95 cent to 2.42 cents.

#### STANDARDS FOR CAR LOADING

The committee on standards for car loading presented a very brief report. It had been found inadvisable to publish or attempt to formulate any standards because of the varied and complex conditions under which most of the member companies operate, so the committee had simply made a study of the standards which had been attempted by railroads and governing bodies. The result of this study has been filed with the secretary for the use of member companies. The data contain not only the orders formulating the standards, but so far as it has been possible to obtain it, testimony leading up to such orders in court decisions where such orders had been contested in the courts.

The committee consisted of S. W. Huff, chairman; E. J. Dickson, E. J. Cook and W. F. Ham.

## Thursday's Session

The final session of the American Association was opened with the report of the committee to confer with the United States Bureau of Standards in matters relating to the Safety Code. This was presented by W. J. Harvie, Syracuse & Suburban Railroad, Syracuse, N. Y. After making brief reference to the contents of the report, he said that the committee recommended that the Engineering Association study the application of the safety code and recommend the changes desirable. The executives of the various member companies should advise themselves concerning the results of their study, through their respective engineers, and keep the American Association advised. President Henry indorsed this recommendation, and urged the members to apply with the recommendations committee.

#### TAXATION

Henry S. Lyons, Boston Elevated Railway, Boston, Mass., then presented the report of the committee on taxation matters.

This report gave the number of states (32) in which no legislative sessions were held during the year 1915-1916, the number (eight) in which there was no taxation legislation affecting electric railways, and the number (six) in which the legislatures passed laws on this subject. These states were California, Illinois, Massachusetts, New York, South Carolina and Virginia. Legislation was also passed by the Dominion of Canada and Manitoba. Abstracts of the provisions in this legislation are given in the report.

The committee says that in view of the unusual conditions in Canada on account of the war, it is unable to make any suggestions relative to the situation in that country. It finds, however, in the United States that there seems to be no inclination on the part of the states nor of the municipalities to lighten the burden of street railway companies. On the other hand, they are constantly imposing additional burdens. The committee calls attention to the fact that legislatures of every state in the Union, except Mississippi, will hold a session during the year 1917. If the companies in the various states are desirous of obtaining release from some of their burdens, the committee suggests that they begin to make preparation for such action.

The report is signed by Henry S. Lyons, chairman.

After presenting this report Mr. Lyons said that it was of utmost importance for members to keep in close touch with legislative bodies to prevent them from adding more paving burdens. He mentioned a situation which developed in Boston, where the Legislature requested the Public Service Commission to investigate the question of paving as it affected the street railway. Under the law, this company paid the cost of laying and maintaining paving between the rails and 18 in. outside. As a result of the commission's investigation it was recommended that the city install the pavement and keep it in repair, and submit an annual bill to the company. This recommendation was defeated in the Legislature through the efforts of the company.

President Henry then read letters from C. G. Clegg, the Oakwood Street Railway, Dayton, Ohio; Jere C. Hutchins, formerly president of the Detroit United Railway, Detroit, Mich.; John I. Beggs, formerly president of the Milwaukee Electric Railway & Light Co., Milwaukee, Wis.; H. H. Vreeland, a former president of the association; W. Caryl Ely and Gen. George H. Harries. All of these had been especially invited to attend this session of the American Association.

Just before introducing the next speaker, President Henry said that the total registration up to Wednesday night was 2938, as compared with 2454 of two years ago. This increased registration was equally distributed among all of the affiliated bodies. Frank J. Sprague, New York, was then introduced, and addressed the association on the engineering development of electric railways. On his taking the platform he was given a rising reception. He gave a review of electric railway development, published in abstract on another page. It was illustrated by lantern slides.

He was followed by D. W. Nevin, Mayor of Easton, Pa., who spoke of the difficulties of early electric railway promotion.

#### MR. LEACH'S ADDRESS

A. B. Leach, A. B. Leach & Co., New York, was next introduced, and he addressed the association on the financial development of electric railways. After paying a high compliment to Mr. Sprague for his vision and great courage in the development of electric railway equipment, he opened his address with the statement that bankers stand in the market place only by what they can sell. The public has a dual relation with the railway, first as an investor and second as the public in commanding service. He next took up publicity and its value as an aid in solving public-utility problems. Mr. Leach was of the opinion that the railways do not press home the fact that they increase values. He said that the public did not appreciate this, nor the great obstacles which had to be overcome and paid for out of the fares. They continued to have burdens, and a case in point was the pavement. The cost of installation and maintenance of pavement, an outgrowth of horse-car days, did not belong to electric railways. This fact could be presented to the public in an understandable way. When the public demands service it should be reminded of the railway problem in obtaining the additional capital. The public is made aware of the railway difficulties. Better treatment can be expected. In spite of the destructive regulations with which practically every railway company has had to contend, Mr. Leach still had an abiding trust in the fairmindedness of the people. Too many misstatements of facts had been made in submitting the railway's side of the case to them, and this undoubtedly had prejudiced the public in many cases. When the public is convinced that better service means the obtaining of more money from a doubting public it would be more lenient.

Mr. Leach next predicted that the rate on the money necessary for future capital requirements would be higher in the future unless it can be shown that the investment is absolutely safe. New capital cannot be readily obtained as long as the reputation of street and interurban companies is that they are operating on a too narrow-margined profit. Furthermore, railways must obtain more reasonable treatment, or it will be practically impossible to obtain new capital. They must also establish the fact that the industry is on a fair and reasonable basis.

Unless additional money can be had for improvements, public ownership of railways is the only solution. A greater menace could not be brought into this country than public ownership of public utilities. The country has been built upon the theory of individualism, as symbolized in the record of the achievements of Mr. Sprague. Public ownership kills individualism, the best thing that America holds. Through it America has developed many useful things. In conclusion, Mr. Leach summed up his remarks by stating that a material change in public sentiment must be obtained by a fair statement of facts, and street

railways must be put on a basis that will insure safe investment.

After the conclusion of Mr. Leach's address it was expected that a number of pioneers in electric railway development would speak briefly, but as the hour was late it was decided by vote to request these gentlemen to make written contributions to the discussion.

#### OTHER BUSINESS

Speaking for the committee on recommendations that was referred to in the president's address, J. J. Stanley, Cleveland Railways, read the following:

"Your committee, appointed to consider the recommendation of the president of the association in his address at the opening of the convention, with respect to the election of two representatives of the manufacturers to sit as members of the executive committee until the final plans are matured and provided to carry out the intention of the association in the admission of manufacturing companies, recommends that the president's recommendation be carried out, and, to that end, that the nominating committee select the names of five representatives of the manufacturers who have heretofore joined the parent association. We further recommend that before final action is taken with respect to permanent ways and means to preserve the continuation of the manufacturers' interests and their representation, that the member manufacturers be requested to confer with and advise the executive committee of their wishes in the premises on or before the next midwinter meeting, if possible. If not, at the earliest practicable date." [Signed] John J. Stanley, R. B. Stearns, L. J. Drake, Jr. (chairman).

The committee on resolutions presented a memorial to the members who had died during the year, and also expressed appreciation of the efforts of all who had contributed to make the convention so great a success. A special resolution referred to the work of the technical press.

The committee on nominations submitted the names of the following, who were duly elected: For president, L. S. Storrs, the Connecticut Company, New Haven, Conn.; for first vice-president, T. S. Williams, president Brooklyn Rapid Transit System; for second vice-president, John J. Stanley, president Cleveland Railways; for third vice-president, J. H. Pardee, president Eastern Pennsylvania Railways, Pottsville, Pa.; for fourth vice-president, Richard McCulloch, president United Railways of St. Louis.

To carry out the recommendations of the committee on recommendations in the president's address, the committee submitted the following nominations for members of the executive committee, ad interim: Thomas Finigan, manager of sales, American Brake Shoe & Foundry Company, San Francisco, Cal.; James H. McGraw, president McGraw Publishing Company, New York; S. E. Curwen, president J. G. Brill Company, Philadelphia, Pa.; E. W. Rice, Jr., president General Electric Company, Schenectady, N. Y.; and Guy E. Tripp, chairman of the board of directors, Westinghouse Electric & Manufacturing Company, New York. This report was signed by A. W. Brady, J. R. Lovejoy, L. J. Drake, Jr., C. Loomis Allen, T. N. McCarter (chairman).

As there was no unfinished business, the secretary was instructed to cast a unanimous ballot of the meeting for the nominating committee's ticket, which he did. President Henry then asked the officers-elect to come forward, after which he declared the convention adjourned, stating that it was the best convention which the American Electric Railway Association had ever held.

# Meetings of Accountants' Association



PRESIDENT T. P. KILFOYLE

Accountants Listen to Views of Outside Experts on Matters Relating to Valuation, National Franchise Issues, Accounting Fallacies and the Sphere of Modern Accounting—Separate Statistical Department Said to Be Step Forward—Joint Committees on Engineering-Accounting and Claims-Accounting Make Laudable Progress

THE sessions of the Accountants' Association, which began on Monday afternoon, Oct. 9, and lasted up to and including Thursday afternoon, Oct. 12, had to do mostly with questions of general interest in the field of electric railway accounting. Joint sessions with the Engineering Association, the Transportation & Traffic Association and the Claims Association covered matters along the lines of valuation, prepayment systems and other traffic points, and classification of claims. The papers at the several sessions took up such points as the work of the modern statistician, commission valuation for rate-making purposes, commission accounting inconsistencies, the federal census of electrical industries, national issues in local street railway franchises and the part played by accounting in the development of modern industry.

## PRESIDENT KILFOYLE'S ADDRESS

The opening session was called to order at 2.45 p. m. on Monday by President T. P. Kilfoyle, Cleveland Railway. In his annual address, President Kilfoyle referred to the death on May 7 of George G. Whitney, third vice-president, and to the resignation of H. B. Culloden, and to the appointment by the executive committee of I. A. May, The Connecticut Company, to fill the vacancy caused by the resignation of Mr. Culloden, and John J. Landers, York Railways, to fill the vacancy caused by the death of Mr. Whitney. He also spoke about the importance of committee work and urged the support and co-operation of all the members. He considered it their duty to accept appointments when tendered. Moreover, he suggested that officers who do good work should be continued in office and promoted if possible so long as their interest in the work continued. The only office to which a member should not be re-elected, in his opinion, was that of president. He felt, too, that it would be desirable to have some plan whereby the association could hold semi-annual meetings, and also recommended a closer relationship with the National Electric Light Association. In conclusion, he extended his sincere thanks to the officers and committee members for their co-operation during the year.

After the president's address the secretary of the association, M. R. Boylan, Public Service Railway, Newark, N. J., read the report of the executive committee and his own report as secretary-treasurer. The first report showed that the membership of 129 on Nov. 1, 1915, had been increased by four new members and twelve reinstated members to a total of 145, but that

## PROGRAM

### MONDAY

Annual Address of the President.  
Annual Report of the Executive Committee.  
Annual Report of the Secretary-Treasurer.  
Reports of committees:  
Accounting Definitions—John J. Landers, chairman.  
Standard Classification of Accounts—H. L. Wilson, chairman.  
Representing Association at Convention of Railroad Commissioners—W. F. Ham, chairman.  
PAPER—"The Statistician," W. E. Jones, statistician.  
PAPER—"Commission Valuation of Public Service Properties for Purposes of Rate Regulation," John E. Benton.

### TUESDAY

Joint Session with Engineering Association.  
Reports of committees:  
Engineering-Accounting—F. H. Sillick and L. P. Creelius, co-chairmen.  
Life of Railway Physical Property—R. N. Wallis and Martin Schreiber, co-chairmen.  
AFTER JOINT SESSION  
ADDRESS—"Commission Accounting Inconsistencies," by Homer A. Dunn.  
PAPER—"The Federal Census of Electrical Industries," by William M. Steuart.

### WEDNESDAY

Joint Session with Transportation.  
Reports of committees:  
Cost of Rush Hour Service—J. V. Sullivan, chairman.  
Fares and Transfers—C. S. Ching, chairman.  
PREPAYMENT SYSTEMS—General discussion.  
Reports of committees:  
Express and freight traffic—F. D. Nodvick, chairman.  
ADDRESS—"Some National Issues in Local Street Railway Franchises," Prof. Clyde L. King.

### THURSDAY

Joint Session with Claims' Association.  
Reports of committees:  
Claims Accounting—H. J. Davies and H. K. Bennett, co-chairmen.  
AFTER JOINT SESSION  
ADDRESS—"The Part Which Accounting Has Played in the Development of Modern Industry," Prof. John R. Wildman.  
Reports of convention committees:  
Resolutions.  
Nominations.  
Election of officers.  
Installation of officers.

resignations and deaths totaled eleven and charges to company sections fifty-four, making a total loss of sixty-five and leaving a net total on Sept. 30, 1916, of eighty members. A statement of the company section membership showed 113 new members and fifty-four changed from the individual membership list, making a total of 167 members. The appropriation of \$1,500 for the use of the Accountants' Association was more than enough to cover all expenditures for the year ended Aug. 31, 1916, amounting to \$893.

President Kilfoyle then appointed a committee on resolutions consisting of W. G. Nicholson, Omaha & Council Bluffs Street Railway; T. B. McRae, Chicago Elevated Railways, and H. L. Sanders, Cincinnati Traction Company; and also a committee on nominations composed of the following past-presidents: W. H. Forse, Jr., Union Traction Company of Indiana; C. F. Mitchell, Pittsburgh Railways; H. J. Davies, Cleveland Railway; W. J. Ham, Washington Railway & Electric Company; and H. L. Wilson, Boston Elevated Railway.

## COMMITTEE REPORTS SUBMITTED

Reports were then read for the committee on accounting definitions, by Mr. Landers; the committee on the standard classification of accounts, by Mr. Wilson; and

the committee on representing the association at the convention of the National Association of Railway Commissioners, by Secretary Boylan. These reports were in general accepted by the association in the form submitted.

Acting on the recommendation made last year, the committee on accounting definitions called on the American Association of Public Accountants and secured the report of its committee on accounting terminology with the list of words and definitions as accepted a year ago by that association. This list, which is included in an appendix of the report of the committee on accounting definitions, contains definitions of greater interest to those concerned with general industrial accounting than to electric railway auditors, for which reason it is not reproduced herewith. In its report the committee made a request for terms which in the opinion of members should be included in a list of definitions and exchanged with the committee of the Association of Public Accountants. The report was signed by John J. Landers, chairman; George A. Harris, S. C. Stivers and J. G. Dobbins.

According to the report of the committee on standard classification of accounts, many cases were submitted to it during the year by the association, through the Interstate Commerce Commission or directly. The committee could not place its decisions before the member companies except through the publications in the electric railway field, and it therefore urged electric railway auditors to watch these. The Interstate Commerce Commission could not publish a bulletin frequently to cover accounting decisions, but the committee hoped that there would soon be a bulletin out to follow No. 9. The committee stated that while the text of the standard classification of accounts was not perfect, it had proved of great value and use to all interested in utility accounting and the financial statements of the electric railways of the country. The report was signed by H. L. Wilson, chairman; W. F. Ham, W. H. Forse, Jr., R. N. Wallis and P. S. Young.

The members of the committee representing the Accountants' Association at the convention of the National Association of Railway Commissioners held at San Francisco on Oct. 12-15, 1915, found no matters presented which required any special effort on their part. A report of the committee on statistics and accounts of electric railways, however, was presented at that convention and can be secured by those interested from the printed proceedings of the National Association of Railway Commissioners. The report to the Accountants' Association was signed by B. W. Fernald, G. D. Willcutt and W. A. Culloden, who acted as alternates at San Francisco for P. S. Young, C. L. S. Tingley and W. F. Ham, respectively.

After Secretary Boylan had read a report of a special committee on resolutions in regard to the late George D. Whitney, the papers scheduled for the afternoon were taken up. These papers, one by W. E. Jones, statistician The Connecticut Company, New Haven, Conn., on the subject of "The Statistician," and the other by John E. Benton, former member New Hampshire Public Service Commission, Keene, N. H., on "Commission Valuation of Public Service Properties for Purposes of Rate Regulation" are published in abstract elsewhere in this issue. At the conclusion of Mr. Benton's paper, a vote of thanks was moved to both speakers and the session was adjourned.

## Tuesday's Session

The first part of the work of the Accountants' Association on Tuesday was given over to a joint session with the Engineering Association, called to order at 2.30 p. m. with Presidents Lindall and Kilfoyle in the chair. Two committee reports were considered, one on engineering accounting, which was read by Co-chairman L. P. Crecelius, Cleveland Railway, and one on the life of railway physical property, which was presented by Martin Schreiber, Public Service Railway, Newark.

The latter report stated that in the committee's opinion there was no reason to believe that greater success would now be met with in trying to collect experience data regarding the life of physical property than had been the case in connection with prior reports, and that such data would have the same restrictions on their worth as they would have had then. Moreover, in view of the existence of a valuation committee of the parent association, it was thought that the committee on the life of railway physical property possibly should be discontinued in order to avoid duplication of work, or that if continued its work should be defined so as to avoid conflict. It was decided, as recommended, to put the question of the continuance of the committee up to the executive committees of the associations that were concerned in the matter.

### ENGINEERING-ACCOUNTING

The joint committee on engineering-accounting had assigned to it three subjects, as follows: (1) Interdepartmental charges; (2) consideration of the subdivision of accounts covering steam power station costs, as submitted by the 1915 committee on power generation, and (3) development of a property ledger looking toward the maintenance of a continuous inventory, this subject to be considered as applying to the entire physical property.

Inventory Department															Page No. 45		
Continuous Inventory Ledger															Unit No. 506		
Original Date of Acquisition or Installation <i>Sept. 16 1916</i>															Section No. 206		
Property Statement															Annual Changes Ensuring Years, other than Depreciation, Effecting Values in Property Statement		
Year	No. of Units	Description	Total Cost \$	Annual Depreciation Amount	Accrued Depreciation Amount	Total Present Value	Installed Added to or Bettered		Retired or Replaced		Amount to be Added to or Subtracted from the Cost	Corrected Total Cost	Total Present Value Based on Depreciation to Date	Present Value of Property Retired or Replaced	Present Value of Property (of Change)	Amount to be Added to or Subtracted from Present Value	Corrected Total Present Value
							No. of Units Added	Actual Cost	No. of Units Retired	Original Cost							
1910	500	#18 Rectifier Trays	6,000.00	10	1,000.00	5,000.00											
1911	"	"	6,000.00	10	1,000.00	5,000.00											
1912	"	"	6,000.00	10	1,000.00	5,000.00											
1913	"	"	6,000.00	10	1,000.00	5,000.00											
1914	"	"	6,000.00	10	1,000.00	5,000.00											
1915	"	"	6,000.00	10	1,000.00	5,000.00											
1916	600	500 #18 Rectifier Trays 100 #20 Rectifier Trays	9,000.00	15	1,500.00	7,500.00	100	300.00	300	240.00	200.00	9,000.00	1,920.00	720.00	1,200.00	5,000.00	6,200.00
1917	"	"	9,000.00	15	1,500.00	7,500.00											
1918	"	"	9,000.00	15	1,500.00	7,500.00											
19																	
19																	

\* The cost if not actual should be qualified as estimated

The action of the committee upon interdepartmental charges was to this effect. While the committee believed in the theory of including overhead expenses in interdepartmental charges, because of the great desirability of having an understanding of the true cost of work as a basis of comparison with work done outside, nevertheless it felt it inadvisable to enter such charges upon

“Grading,” Account No. 504; “Ballast,” Account No. 505; “Ties,” Account No. 506; “Rails,” Account No. 507, etc. In some cases, such as power station equipment, it will probably be found desirable to subdivide into more units. In this way a check is obtained between the sum of like units on the inventory ledger and the total carried in the capital accounts by the accounting department.

DEPARTMENTAL REPORT FORMS

It was found that a continuous inventory could hardly stop at or rather begin at the ledger, but that it would be necessary to provide loose-leaf forms on which through the co-operation of all departments the necessary information for adding to and changing the values on the ledger could be obtained. It was thought desirable to divide the property for reporting on these forms into the divisions usually maintained by the various departments. Accordingly six forms are printed for “Land,” “Track and Roadway,” “Structures,” “Overhead and Underground Construction,” “Equipment” and “Power.” The second of these is reproduced herewith as Form II. It will be noted that these forms show columns for the cost of new units, original cost of old units retired or replaced, accrued depreciation and present value. When these values are already set up on the ledger for all sections and units of the property, this information need not be furnished.

With a continuous inventory system such as proposed, the committee stated, it is not necessary for a company immediately to make a detailed appraisal of its entire property unless desired, but simply to put in the inventory all new work as it is completed and old work as it is appraised or the original cost determined, this latter work being done at the company’s convenience. The point is that once an item of property is listed on the ledger its value is shown continuously throughout its life. Therefore, where a detailed appraisal of all the property is not made, these forms provide for an appraisal of the old material as it is replaced or retired, or can be used as appraisal blanks at any time when so desired.

To maintain the present value figure for each item on the ledger, it is necessary that replacements be reported on these forms, and in this connection space is provided to show the operating account chargeable. In the case of an addition or betterment which includes a certain amount of replacement, both the operating and construction accounts chargeable can be shown. These

American Electric Railway Co Inventory Department Detailed Report of Changes in or Additions to Physical Property Track and Roadway											
Form #2		Page No. <u>62</u>						Sec. No. <u>206</u>			
Location <u>Main St. Pt.</u>		Date <u>Oct 12, 1916</u>						Units: Include R. & E. Acct. Nos. 504 to 512 Includ. and 516 Oper. Exp. Nos. 2 to 10 16 17			
Auth. No.	R. & E. Acct. No.	Oper. Exp. Acct. No.	Description of Units		No. of Units	Cost per Unit	Total Cost New Units	Total Original Cost Retired or Replaced	Accrued Depreciation	Present Value Old Units Retired or Replaced	Date Retired or Replaced
			An Installed, Added to or Bettered	Retired or Replaced							
1362	506	3	Steel Ties	120	3.90	468.00	240.00	105.00	72.00		
Remarks:			Signed		Signed		Auditor		Engineer Maintenance of Way		

CONTINUOUS INVENTORY—FORM II—EXAMPLE OF DEPARTMENTAL FORM FOR REPORTING PROPERTY CHANGES

the records, because of the likelihood of disturbing their accuracy.

In regard to the subdivision of accounts covering steam power station costs, the joint committee voted that it be referred to the committee on standard classification of accounts of the Accountants’ Association.

DEVELOPMENT OF A PROPERTY LEDGER

On the subject of a continuous inventory, the committee in its report said that their seems to be no question regarding the value of such an inventory as will show at all times the cost of the various units of railway property and also, if desired, the present or depreciated value. The report stated that the present value of property units is invaluable in cases of insurance and checking of tax assessments; that with a carefully prepared inventory actual costs in late work take the place of hurried estimates in making replacements; that such an inventory is useful in rate cases, security-insurance cases and for public information; that by calculating the weighted age of property units it is possible to interpret the maintenance accounts with greater accuracy, and that a continuous inventory provides an opportunity for studying unit costs and thereby helping to check operating efficiency.

The nucleus of the continuous inventory system suggested by the committee is the property ledger, a loose-leaf page of which is shown in Form 1 on page 615. Because more or less data are necessary regarding the description, location, etc., of each item entered, it was thought desirable to show this on a separate form, confining the ledger to the showing of the cost and present value of each item and these values as and how they change from time to time. The item is, therefore, designated by a section and unit number.

The size of the sections taken is optional and may be either a piece of track work, special work location, lot of land, a power station or car. It was considered essential for entering on the ledger that each section chosen should be divided into units or subdivisions thereof corresponding to the classification of the construction accounts used by the company. The classification used by the committee was the official Interstate Commerce Commission one for construction and operating expense accounts. Under this, for example, a section of track would be divided into the units of

<u>Main St. Power Station Equipment.</u>		63-542-A1	
Location of Sec.		Sec. No. Unit No.	
<u>Boilers #10</u>		Unit	
	Ledger	Vol.	Page
	Detailed Report	1	120
	Description	2	73
		3	42
Power	Operating Div. _____		

CONTINUOUS INVENTORY—FORM III—SPECIMEN INDEX CARD FOR FACILITATING REFERENCE

forms should be filled out partly by the auditor, who should give the actual amounts charged to each account at the completion of the work, and the department handling the work, which should give the number of units affected, description thereof, and when necessary an appraisal of the old material replaced.

In addition to the six forms above outlined, the committee said, a form was considered necessary to describe in detail the physical characteristics of each section. In

some instances it might be desirable to attach drawings or sketches, such as for special work layouts, parcels of land, etc. This form provides in the upper left-hand corner spaces for location data, and in the upper right-hand corner spaces for page number, section number and date. Instructions at the top state: "Give below a detailed description of section. If track, give type and weight of rail, kinds of ties, ballast, etc.; if land, detailed description of property; if overhead work, size of wire, and kind, etc.; if structure, size, type, etc. Where practicable, plans should be made, the size of this sheet, further to describe property and filed herewith in description loose-leaf binders."

All these detailed report forms made out by the various departments should, in the committee's opinion, be bound and kept by the inventory department in loose-leaf binders. In this way the original signed record is always at hand for reference.

#### CARD INDEX FOR READY REFERENCE

To complete this system properly, it was considered advisable to show a card index system by which any unit might be readily found either in the ledger or in the volumes for the other forms. The card system was divided under six headings, one for each class of property as represented by the six forms previously mentioned. One of the six cards, which it was proposed to file in duplicate under these headings, is shown in Form III on page 615.

In all cases, with the exception of "Equipment" and "Land," one set of cards is filed alphabetically by locations, with alphabet subtab cards under tab cards bearing the name of the unit. The unit may be as small as desirable, and if the classification used does not give a fine enough subdivision, some such scheme as annexing a subletter to the account number may be used. Under all six headings the second filing of cards is numerically by section numbers, with number tab cards. Of course, it will be seen that when a power station, for example, is taken as a section, there will be a number of cards bearing the same section number, but a different unit number, and all cards bearing the same section number should be filed together in the numerical order of the unit number.

As to the "Equipment" index, it was thought desirable to cross-index numerically by car numbers with subtab cards, under tab cards bearing name of the unit. For example, if it is desired to find the electrical equipment of car No. 1267, this will appear in numerical order of the car number under the tab card "Electrical Equipment." Because of the fact that it may not be desirable to use the car number as a number designating this sectional part of the equipment, as itemized in the ledger, but rather instead use a section number as in all other cases, these "Equipment" cards are planned to be filed in duplicate, the same as in the other five cases. The only difference in the "Land" index is that in the alphabetical filing, the tab cards bear the name of town or tax district instead of unit.

#### SEPARATE INVENTORY DEPARTMENT RECOMMENDED

It seemed to the committee that to handle and maintain properly such a system for a continuous inventory as outlined, a separate department should be created. The man in charge of this department should have a certain practical knowledge of engineering and accounting, and at the same time be more or less familiar with the physical characteristics of railway property. The cost of maintaining such a department and the number of men required will, of course, depend upon the size of the property and the extent to which the various units are subdivided.

The report was signed by F. H. Sillick and L. P. Crecelius, co-chairman; B. E. Bramble, C. H. Lahr, J. C. Collins, H. A. Gidney, Harold Bates, Norman Litchfield, J. P. Ripley and E. P. Roundey.

#### DISCUSSION ON ENGINEERING-ACCOUNTING FINDINGS

The discussion on the engineering-accounting report was opened by Edwin Gruhl, North American Company, New York, N. Y., who stated that too little attention had been paid to the perfection of details for property accounts. At the present time, owing to questions arising in connection with depreciation, valuation and the like, there were increasing opportunities for the use of such accounts in their most complete form. In his opinion, however, the report as presented by the committee was complicated, and a careful analysis of its fundamentals would have to be made before his company could recommend it for use by its various properties.

In the first place, Mr. Gruhl thought that the idea of a separate department for handling a continuous inventory was impracticable, for many records of original entry that would have to be used must at the same time be available for the accounting department. In his opinion a practicable system must provide for a department adjoined to the accounting department, with perhaps some visé by the engineering or construction department concerned in the work. In the second place, he criticized the portion of the report stating that sections or units to be used in the inventory would be optional with the various companies, and he suggested that the committee would do well to indicate the units for a moderately small company and a moderately large company. He felt, too, that the question of the proper units might well be extended to cover the question of where a line of demarcation should be drawn between maintenance and renewals.

Furthermore, as the third point deserving criticism he mentioned the provision for accrued depreciation in the property ledger, stating that the keeping of such a record would necessitate an enormous number of entries each year and the arbitrary writing down of the property. Studies had shown that depreciation depended upon other factors than age, so that the arbitrary calculation of accrued depreciation upon a life basis would cause the property ledger to show values misrepresenting actual conditions. A cause of especial complications would be scrap values, for the price of scrap varied considerably and this would upset all fine-spun considerations as to how much accrued depreciation existed in an item of property. Lastly, he stated that the report straddled the fence on the question of cost versus value. Accounting had always adhered strictly to actual costs and not estimates of value, and when a property ledger disclosed and divided the costs and associated them with the proper units, all had been accomplished that could be expected.

Mr. Schreiber took up first the question of interdepartmental charges and stated that without doubt such charges would involve a large amount of work and would upset the books. Engineers, however, should estimate such charges in comparing the cost of internal shop work with outside costs, and the auditing department and the purchasing agent should co-operate to see that such charges were fully considered in such cases so that no one should be misled as to the advisability of the company doing its own work. In regard to the property ledger section of the report, Mr. Schreiber observed that it practically assumed definite life tables for property, which the committee on the life of railway physical property had never favored. In his opinion, there was a serious question as to the worth of such an assump-

tion. The time to consider depreciation was when a question demanding such consideration arose, for the subject involved too many variables for it to be settled in advance. In general, he felt that a ledger along the line submitted was very desirable and that the committee had accomplished much in the way of getting the work started.

Mr. Forse considered that the committee had blocked out the subject well and that the report was a good basis for future work. He suggested that the committee in formulating the property ledger consider the report for betterments and additions required by the Interstate Commerce Commission. He saw no reason why there should be a separate department to handle a continuous inventory, in view of the existing co-operation of engineering and accounting forces, and he thought that a separate department would not be needed unless the company were engaged in valuation work and needed a large staff for that purpose.

C. R. Harte, The Connecticut Company, New Haven, Conn., mentioned the fact that the valuation work now being done by the Interstate Commerce Commission for steam railroads would probably be extended to electric railways and that when the federal government and the states had come to a conclusion as to what principles would be applied in steam railroad valuation, the same ones would without doubt be applied also to intrastate properties. If it were decided that original cost should predominate in valuation findings, it would be highly important that companies should have charged in all interdepartmental items so that a company which did its own work should not be made to suffer, by having lower rates imposed upon it, in comparison with a company which contracted out all its work. Mr. Creelius explained that the object of the property ledger was to provide the cost of all unit sections with due consideration of all factors in such cost, and that the difficulty in using interdepartmental charges was in connection with accounting for the credit of overhead charges to the department doing the work. Harold Bates, also of The Connecticut Company, stated that the complications in the report would depend upon the number of units that each company decided to use, that the property ledger had included a column for accrued depreciation simply because some companies had seemed to desire to show present value, and that the joint work in connection with a continuous inventory could be handled more understandingly by a separate department headed by a man having both an engineering and an accounting knowledge.

Harry E. Carver, assistant engineer in charge of appraisals, Board of Public Utility Commissioners of New Jersey, stated in a written discussion that the report of the committee outlined a system which would probably give excellent results if carried out, but that it could be simplified to save expense. His discussion made the following four points:

1. No place was provided on the property ledger, or summary sheet, by which term it might also be designated, to show from what detailed sheet the information was assembled. This appeared to be a very important omission. In lieu of this a rather elaborate system of card indices was suggested in order to locate various items in the inventory. If this information was desired for a certain item, at least the account in which it should be included was known or could readily be determined. The summary sheet for all property should show the sheets from which the total for the account in question had been derived, and these sheets should show the preliminary sheets from which the data there contained was found. In other words, if proper use were made of the system of accounts as a subject index and

proper references were used in making up inventory sheets, a further system of referencing should be unnecessary except for such items as might be included in the inventory in groups. For items like rolling stock equipment, track special work, etc., card or individual records of some kind kept at present could probably be made an integral part of the inventory system. A list might also be made of various items which should be included under each account, and arranged alphabetically in order readily to classify them if this should appear desirable.

2. In the forms submitted it was proposed to identify the various sheets by a section number, a unite number and a sheet number. The "unit number" was evidently intended to be in practically all cases the account number or subdivision of a particular account, and the term "account number" would be more suggestive and would better be used. Moreover, data referring to one account only should be placed on any one sheet, except the summary sheet or sheets containing general information, which might be classified under Account No. 1 or some other number not referring to a particular account. If a holding company operating a number of different subsidiaries were involved, it would probably be advisable to substitute "file number" for the term "section number" to denote the company, and to designate the section or particular subdivision of any one company by a series of sheet numbers using as many series as desired with an index of each account. In many, if not all, cases the same series of sheet numbers in the various accounts could be used for the same section. If it should afterward prove that an insufficient number of sheets were allowed, a decimal could be used before and after the numbers. By combining a letter with the sheet number a separate and distinctive number could easily be given to each and every inventory sheet that might be in reference to any company in the state for a period of twenty-five to fifty years.

3. The forms suggested provided for the computation of the accrued depreciation for each item. While this would be useful information to have, and information which the federal or state commissions would probably be delighted to have a company keep, there was some question as to the advisability of making these detailed computations on each sheet. It would seem to be desirable to keep a record of the expected and actual life of each individual item, but the accrued depreciation or the present value of any single item appeared to be of little value except in making up an estimate of the total accrued depreciation or present value for the whole company or for a taxing district or other subdivision. It would probably be less work to make these computations at the time needed when making up a summary as a considerable number of items could probably be grouped for the purposes of computing depreciation.

4. Other problems in this work would involve the proper computation and allocation of labor costs; material costs when a large number of items were included in one contract, storeroom charges, tools and other miscellaneous small items, engineering, supervision, interest during construction, legal expenses, etc. All of these items would enter into the cost of any particular piece of property, and in computing accrued depreciation or in making withdrawals, etc., a proper allowance would have to be made for all of these items.

After this discussion the report of the engineering-accounting committee was accepted and the committee was continued. The meeting was thereupon ended in order that the Engineering Association might hold a joint session with the Transportation & Traffic Association, as reported under the head of the first-named

association, and in order that the Accountants' Association might take up its separate program for the afternoon.

#### MEETING OF THE ACCOUNTANTS

After the joint engineering-accounting session the members of the Accountants' Association listened to a paper on "Commission Accounting Inconsistencies," by Homer A. Dunn of Haskins & Sells, New York, N. Y., and one on "The Federal Census of Electrical Industries," by William M. Steuart, chief statistician for manufactures, Bureau of the Census. These papers are abstracted elsewhere in this issue.

In the discussion of the first paper, F. W. Sweney, chief examiner of accounts Interstate Commerce Commission, took exception to Mr. Dunn's remark that the appropriation accounts might have been devised as a trap for electric railways, and Mr. Ham emphasized the fact that the commission had never tried to trick the companies and that some things regarding the classification which did not seem clear to outside experts might be easily explained by those brought up in the school of practical experience in connection with it. R. N. Wallis, Fitchburg & Leominster Street Railway, Fitchburg, Mass., commented on the frankness of the treatment accorded electric railways by Interstate Commerce Commission representatives. Mr. Sweney said that he appreciated the co-operation of the committee on the standard classification of accounts, for this committee had always presented constructive criticism instead of stopping with destructive criticism as many committees did.

Before reading his paper Mr. Steuart related various details to show the magnitude of the work carried on by the Bureau of the Census—work which costs \$14,000,000 at the time of the regular census and \$1,500,000 in the intervening periods. He suggested that schools should teach more about census work and other governmental activities, and urged the need of greater public co-operation. After the conclusion of his paper a vote of thanks was moved to both speakers of the afternoon and the meeting was adjourned.

### Thursday's Session

The only meeting of the Accountants' Association on Wednesday was a joint session with the Transportation & Traffic Association, which was given over to reports of committees on the cost of rush-hour service, fares and transfers, and express and freight traffic, as well as to a general discussion on prepayment systems and an address on "Some National Issues in Local Street Railway Franchises" by Prof. Clyde L. King, Wharton School of Commerce, University of Pennsylvania. A more extended reference to all of these and the discussion thereon is made elsewhere in this issue in the proceedings of the Transportation & Traffic Association.

On Thursday afternoon the Accountants' Association held a joint meeting with the Claims Association, and afterward finished its individual program for the convention. The sole subject of discussion at the joint meeting was the report of the committee on claims-accounting, which was read by H. J. Davies, Cleveland Railway.

#### CLAIMS-ACCOUNTING

The joint committee on claims-accounting, as a result of the re-commitment by the Claims Association of a report in 1915 on this subject, this year presented a classification of accidents embodying the following groups:

##### 1. Collision with pedestrians.

2. Collisions at railroad crossing other than company's.

3. Collisions between cars of company.

4. Collisions with vehicles and animals:

- |                          |                               |
|--------------------------|-------------------------------|
| (a) Automobiles.         | (d) Horse-drawn vehicles.     |
| (b) Auto trucks.         | (e) Motorcycles and bicycles. |
| (c) Taxi-cabs and buses. | (f) Animals.                  |

5. Derailments.

6. Defective equipment:

- |                        |                          |
|------------------------|--------------------------|
| (a) Spread rail.       | (f) Gear pan dropped.    |
| (b) Broken rail.       | (g) Motor case dropped.  |
| (c) Broken brake beam. | (h) Flashing controller. |
| (d) Broken axle.       | (i) Broken trolley wire. |
| (e) Broken journal.    | (j) Fuse blown out.      |

7. Boarding cars.

8. Injuries on cars (not in collision):

- |                                |                              |
|--------------------------------|------------------------------|
| (a) Due to sudden start.       | (f) Hit by passing object.   |
| (b) Due to sudden stop.        | (g) Hit by passing car.      |
| (c) Going around curve.        | (h) Hit by falling car parts |
| (d) Fall in car over obstacle. | (under defective equip-      |
| (e) Hit by missile.            | ment).                       |

9. Alighting from cars.

10. Falling from cars (not purposely alighting).

11. Stealing rides.

12. Doors, gates and guard rails.

13. Ejectments and disturbances.

14. Clothing damaged.

15. Employee accidents.

16. Miscellaneous.

In commenting upon this outline, the committee stated that it endeavored to make the report broad in its construction and elastic enough for the most exacting company to be enabled to adopt it without confusion. The sixteen main groups, the committee believed, will embrace every accident that any company may ever be called upon to consider, and the divisions under each general head may be added to or taken from to suit individual requirements. Under Group 16, "Miscellaneous," the committee would place broken glass, broken fenders, burst air hose, gear pans and motors dropped, etc. Group 1, "Collisions with Pedestrians," would include every known kind of an accident of that sort. One question the committee was unable to solve and left to the association, this under the heading of "Defective Equipment." It was an open question whether broken rails, brake beams, suspension bars, etc., that cause derailments should be placed under this heading or under "Derailments"—in other words, whether the accident should be cataloged under the primary or secondary clause.

The report was signed by H. J. Davies and H. K. Bennett, co-chairmen; H. V. Brown, J. R. Pratt, G. B. Cade and H. S. Swift.

Acting President R. E. McDougall, New York State Railways, who was in the chair, read a letter from J. H. Handlon, United Railroads of San Francisco, who made numerous suggestions in regard to the recommended classification. H. V. Drown, Public Service Railway, Newark, N. J., stated that the classification was a composite of those used by the various companies, and it came as near to the object to be attained as possible. He believed that member companies should be able to find a way easily to observe the classification in their accounts so as to make possible comparisons with other companies.

Most of the ensuing discussion related to the propriety of certain primary divisions in the classification. President McDougall stated that "Defective Equipment" represented conditions, the accidents resulting from which were mostly covered by other heads, and this might make the classification confusing. W. F.

Weh, Cleveland Railway, was of the opinion that in all cases the primary cause was the one to be considered in applying the classification. He said that while his company did not need primary divisions for "Stealing Rides" and "Clothing Damaged" some companies might find such items important and worthy of inclusion in the primary group.

A. G. Jack, Wilmington & Philadelphia Traction Company, asked why the first six headings under "Defective Equipment" could not be taken out, have "Bad Joints" and "Broken Flanges" added to them, and be placed under the preceding heading of "Derailments," thus leaving the heading of "Defective Equipment" to cover electrical equipment, which was usually the cause of injuries inside the car. Mr. Davies thought that the first six divisions under "Defective Equipment" might be placed under "Derailments," if derailments actually occurred. He thought, however, that it was inadvisable to use the word "defective" in any classification heading, inasmuch as it might seem to present *prima facie* evidence against the management. He suggested that "Equipment" be used as the sole word in the heading. He also brought out the point that the heading, "Accidents to Employees," did not designate the cause of accidents, and that this division should be omitted and the accidents thereunder distributed to the respective causes named or to "Miscellaneous." His opinions were indorsed by W. H. Forse, Jr., Union Traction Company of Indiana. A. H. Kayser, San Diego Electric Railway, thought that the heading of "Clothing Damaged" also did not show cause and could properly be placed under "Miscellaneous." These three

changes were adopted and the amended report was accepted.

#### FINAL SESSION OF ACCOUNTANTS

The only paper scheduled for the final meeting of the accountants following the joint claims-accounting session was one on "The Part Which Accounting Has Played in the Development of Modern Industry," by Prof. John R. Wildman, School of Commerce, Accounts and Finance, New York University. An abstract of this paper is published elsewhere in this issue. After a vote of thanks to Professor Wildman, T. B. McRae, Chicago Elevated Railways, presented the report of the committee on resolutions, containing words of appreciation to all those who had helped to make the convention a success. This was adopted, and then Mr. Forse, for the committee on nominations, presented the following names: President, M. R. Boylan, Public Service Railway, Newark, N. J.; first vice-president, H. B. Cavanaugh, Cleveland, Southwestern & Columbus Railway; second vice-president, I. A. May, The Connecticut Company; third vice-president, John J. Landers, York Railways; and secretary-treasurer, S. C. Rogers, Empire United Railways, Inc. The executive committee nominees were: P. V. Burlington, Columbus Railway, Power & Light Company; F. E. Webster, Massachusetts Northeastern Street Railway; F. H. Sillick, Hudson & Manhattan Railroad, New York, N. Y.; and W. G. Nicholson, Omaha & Council Bluffs Street Railway. The secretary was instructed to cast a unanimous ballot for these nominees, and, after short installation speeches, the session was ended.

## Proceedings of the Claims Association



R. E. MCDUGALL

In Four Largely Attended Sessions This Association Discussed the Fundamentals of Claims Work, the Relation of this Work to that of the Operating Departments, and Some of the Larger Questions Upon the Successful Answering of Which Permanence in Accident Reduction Must Be Based. The President Says Time Is Now Ripe for Accident-Prevention Organization.

THE annual meeting of the American Electric Railway Claims Association was opened on Monday afternoon by Acting President R. E. McDougall, claim agent New York State Railways, Rochester, N. Y. A brief abstract of the proceedings only is given this week. Abstracts of the papers presented will follow in a later issue.

#### MONDAY'S SESSION

The Monday afternoon session was called to order at 2.30 by Acting President McDougall, who first delivered his presidential address.

In his presidential address Mr. McDougall stated that with the increase in electric railway business during the last year there had come an even greater increase in the number of accidents, and that the time was now ripe for an active accident-prevention organization. Individual companies in the past have carried an accident

### PROGRAM

#### MONDAY

Annual Address of Acting President.  
Annual Report of the Executive Committee.  
Annual Report of the Secretary-Treasurer.  
Reports of committees:  
Employment—B. B. Davis, chairman.  
Ways and Means—J. S. Kubu, chairman.  
PAPER—"Ohio's Compensation Act." R. C. Green.  
Written Discussion—Leonard J. Tynan.  
General discussion.  
Joint Session with Transportation and Traffic Association.  
Reports of committees:  
Claims Transportation—R. P. Stevens, chairman.

#### TUESDAY

PAPER—"The Near Side Stop," John J. Reynolds.  
Written Discussion—S. B. Hare.  
General discussion.

#### WEDNESDAY

PAPER—"Automobile Accidents and Traffic Regulations," by H. G. Winsor.  
Written Discussion—A. D. Brown.  
General discussion.  
PAPER—"Hooper-Holmes Index Bureau," by B. B. Holmes.

#### THURSDAY

Joint Session with Accountants.  
Reports of committees:  
Claims-Accounting—H. J. Davies and H. K. Bennett, co-chairmen.  
PAPER—"Claims Work"; Claim Agent—Past, Present and Future, Policies and Principles, Psychology. E. P. Walsh.  
Written Discussion—C. G. Rice.  
General discussion.  
General business.  
Election of officers.  
Installation of officers.

prevention campaign, but there has been little or no uniformity in the plan followed. Mr. McDougall asked why it would not be possible to get in such campaigns the co-operation of all interested, legislative and executive authorities, utility and industrial corporations, automobile clubs and others.

As a step in this direction Mr. McDougall suggested that a joint claims-transportation committee be appointed to determine what highway-crossing and warning signs could be standardized and where and how they could be placed to render them more efficient. Mr. McDougall also mentioned the indifferent use of the Hooper-Holmes Index Bureau by claim agents, and stated that they were making a mistake in not taking advantage of their opportunity. In conclusion he extended his thanks to the members and committees of the association for their support and help, mentioning particularly B. B. Davis and E. B. Burritt.

After the presentation of the report of the executive committee and the secretary-treasurer, the committees on resolutions and nominations were announced. The latter committee consisted of W. F. Weh, Cleveland, Ohio; H. M. Braun, East St. Louis, Ill.; and C. B. Proctor, Memphis, Tenn.

The committees on ways and means and employment then presented their reports, after which R. C. Green, accident department Cleveland Railway, read a paper on "Ohio's Compensation Act." The discussion, which was very extensive, was led by L. J. Tynan, Public Service Railway, Newark, N. J.

At 4.30 the Association adjourned to hold its joint session with the Transportation & Traffic Association to consider the report of the committee on transportation-accounting. This session is reported under the proceedings of the latter association.

#### TUESDAY'S SESSION

The meeting of the Claims Association on Tuesday afternoon was devoted entirely to a discussion of the relative advantages of the near-side and the far-side stop in electric railway service. The subject was brought before the association by a paper read by John J. Reynolds, claim attorney Boston Elevated Railway, followed by a written discussion by S. B. Hare, claim agent Altoona & Logan Valley Electric Railway.

A large number of those present engaged in the following discussion, the general conclusions reached being that for city traffic the near-side stop is preferable.

Before the conclusion of the session Acting President McDougall announced that besides the paper scheduled for Wednesday's session the association would listen to an address on the Hooper-Holmes Index Bureau from Bayard P. Holmes, president and general manager of the bureau.

#### WEDNESDAY'S SESSION

The meeting of the Claims Association Wednesday afternoon attracted a large attendance, there being more than sixty delegates present. The meeting was largely given up to the paper on automobile accidents and automobile regulation, presented by H. G. Windsor, superintendent of investigation and adjustments Puget Sound Electric Railway. Mr. Windsor's paper was followed by a written discussion by A. D. Brown, claim agent New York State Railways, Syracuse, N. Y., by oral discussions by a number of others. At its close the president suggested the appointment by the incoming executive committee of a special committee to formulate some plan by which the questions brought out in the paper and discussions could be settled.

As the next feature on the program Bayard B.

Holmes, president and general manager Hooper Index Bureau, gave a talk on the bureau and its relations with the Claims Association. Owing to the lateness of the hour, the discussion on Mr. Holmes' talk was postponed until Thursday, when the president requested the members of the Claims Association to express their opinion as to the value of the index bureau, and whether the association is warranted in asking the parent body to continue the service.

A very pleasant feature of the meeting was the presentation to George Carson, claim agent Fifth Avenue Coach Company, New York, of a past president's gold badge, similar to those which have been presented to other past presidents of the association. The presentation came as a matter of great surprise to Mr. Carson. It will be remembered that Mr. Carson was elected president of the Claims Association last October, when he was claim agent of the Seattle Electric Company, but, as he resigned soon after from that company, he became ineligible to hold office in the Claims Association. Consequently, he resigned as president, and Mr. McDougall was appointed as acting president. Mr. Carson has done a great deal of valuable work for the Claims Association in the past, and mention was made of this work when the badge was presented.

#### THURSDAY'S SESSION

Early in the afternoon of Thursday the Claims Association met with the Accountants' Association for consideration of the report of the committee on claims-accounting. This session is reported under the proceedings of the Accountants' Association.

After the joint session, a paper on "Claim Work," by E. P. Walsh, attorney United Railways of St. Louis, was read by C. C. Mullin, Pittsburgh Railways, and was discussed at length by C. G. Rice of the same company.

Resolutions of thanks were next passed recognizing the work of the writers of papers and the subjects committee and the co-operation of the Mutual Information Bureau of Chicago. Officers were then elected as follows:

President, R. E. McDougall, claim agent New York State Railways, Rochester, N. Y.

First vice-president, S. B. Hare, claim agent Altoona & Logan Valley Electric Railway, Altoona, Pa.

Second vice-president, J. J. Reynolds, claim agent Boston Elevated Railway.

Third vice-president, W. H. Hyland, claim agent Fonda, Johnstown & Gloversville Railway, Gloversville, N. Y.

Secretary-treasurer, B. B. Davis, claim adjuster Columbus (Ohio) Railway, Power & Light Company.

Members of Executive Committee: C. G. Rice, assistant to president Pittsburgh Railways; H. D. Briggs, assistant claim agent Public Service Railway, Newark, N. J.; W. H. Renaud, claim agent New Orleans Railway & Light Company; J. H. Handlon, claim agent United Railroads of San Francisco.

The following committees were also appointed:

Subjects: C. C. Mullins, Pittsburgh Railway; R. C. Green, Cleveland Railway; H. M. Braun, East St. Louis & Suburban Electric Railway, East St. Louis, Ill.; L. J. Tynan, Public Service Railway, Newark, N. J.

Ways and Means: J. S. Kubu, New York State Railways, Utica, N. Y.; J. S. Harrison, Jacksonville (Fla.) Traction Company; L. W. White, Toledo Electric Railway & Light Company.

Employment: B. B. Davis, Columbus (Ohio) Railway Power & Light Company; C. B. Brunner, Easton (Pa.) Traction Company; A. D. Brown, New York State Railways, Syracuse, N. Y.

# Sessions of the Engineering Association



PRESIDENT JOHN LINDALL

The Program of the Engineering Association Consisted Entirely of Committee Reports. These Were Replete with Data and Were Accepted in General with Little Controversy. The Association Plans to Make a Strenuous Effort to Promulgate the Standards and Recommended Practices Which It Has Developed.

**T**HE sessions of the American Electric Railway Engineering Association began on Monday, Oct. 9, 1916. President John Lindall, after calling the meeting to order, delivered the annual presidential address. This in part was as follows:

#### PRESIDENT LINDALL'S ADDRESS

"Owing to the abnormal conditions brought about, in part, at least, by the war in Europe, the past year has been one of unusual difficulties. The increased costs and scarcity of materials, the delays in freight transportation, and the conditions of labor have been such as to call for the most strenuous efforts by engineers in order that the railways might continue to be operated, and with some hope of profit. Notwithstanding this the work of the Association has been undertaken with increased energy. The subjects and executive committees were again confronted with more subjects than the standing committees could properly handle. These were carefully assorted but even then there remained a large number deserving of prompt attention. The latter were assigned to the committees with the understanding that they were to investigate and report upon as many as circumstances and time would permit.

"A part of the work of the committees is to review the Association's standards and recommendations. With changing conditions and the advancement of the art such revisions may frequently be necessary, and this part of the work must necessarily require more time. Likewise the committees' work in conjunction with other engineering bodies is extending and requires still more time. To meet this condition, at least in part, it has been suggested that arrangements be made for getting the work started more promptly after the close of the convention. To accelerate the work of the committees the executive committee has taken the steps necessary to enable the incoming officers to appoint committees and assign subjects soon after the close of this convention.

"The question of arousing a larger amount of interest in the use of the association standards and recommendations which are now available was referred to by President Crecelius in his address last year. It must be conceded that if the work of establishing standards and recommendations is properly done it is of very great value to the member companies, providing they make use of it. Not feeling satisfied that the member companies were getting all the value they could from this work, the executive committee caused the appointment of a sub-committee on the use of the asso-

## PROGRAM

### MONDAY

Annual Address of the President.  
Annual Report of the Executive Committee.  
Annual Report of the Secretary-Treasurer.  
Reports of committees:  
Power Distribution—C. L. Cadle, chairman.  
Standards (on recommendations contained in above report).  
Special sub-committee, acting with the committee of the American Institute of Electrical Engineers, on Stranding Tables—W. W. Brown and C. L. Cadle.  
Standards—H. H. Adams, chairman.

### TUESDAY

Joint Sessions with Accountants.  
Reports of committees:  
Engineering Accounting—F. H. Sillick and L. P. Crecelius, co-chairmen.  
Life of Railway Physical Property—R. N. Wallis, Martin Schreiber, co-chairmen.  
Joint Session with Transportation and Traffic Association.  
Reports of committees:  
Block Signals—J. M. Waldron and J. W. Brown, co-chairmen.  
Standards (on recommendations contained in above report).  
Transportation Engineering—F. R. Phillips and W. A. Carson, co-chairmen.

### WEDNESDAY

Report of committees:  
Power Generation—J. W. Welsh, chairman.  
Standards (on recommendations contained in above report).  
Way Matters—C. H. Clark, chairman.  
Standards (on recommendations contained in above report).  
American Good Roads Congress—J. M. Larned,

### THURSDAY

Reports of committees:  
Equipment—W. G. Gove, chairman.  
Standards (on recommendations contained in above report).

### FRIDAY

Report of committees:  
Buildings and Structures—C. F. Bedwell, chairman.  
Heavy Electric Traction—E. R. Hill, chairman.  
Standards (on recommendations contained in above report).  
Electrolysis—A. S. Richey, chairman.  
General business.  
Report of Committee on Resolutions.  
Report of Committee on Nominations—Paul Winsor, chairman.  
Election of officers.  
Installation of officers.

ciation standards, and this committee has endeavored to further the use of standards by holding personal interviews with representatives of the railways, and by addressing local railway associations on the subject. They have also caused the matter to be given publicity through the columns of *Aera* and the *ELECTRIC RAILWAY JOURNAL*, and through a circular letter to members. Undoubtedly these efforts will be productive of some good results, but I feel it my duty again to call your attention to the very great importance of close co-operation in the matter by member companies, manufacturers and engineers. Of course, there are conditions which preclude the adoption of standards in some instances, but before dismissing the matter engineers should fully assure themselves that such conditions or reasons exist to such an extent as to outweigh the value of the standard.

"During the year the association has been in active co-operation with the following committees of other associations: American committee on electrolysis; national joint committee on overhead and underground line construction; national joint committee on standardization of method for determining the cost of power; committee on

standard thread for pins and insulators; sub-committee on stranding of the A. I. E. E. committee on standards. In addition, a vast amount of work has been done in connection with the tentative safety code of the United States Bureau of Standards. The slogan 'Safety First' has been well established throughout the country. The work of reducing accident hazard is of great importance to the industry, but it can be carried beyond the point where the end would justify the means, and for that reason, as well as the desire to promote safety, this matter should receive very careful attention.

"The Association's official organ, *Aera*, has now been in existence for five years. That it is growing more valuable each year and that it is quite a necessary adjunct to the work, I am sure you will all agree. It is your publication, and I bespeak for it your hearty support. This does not necessarily mean that you are to become an author, nor does contributing to it require literary talent. You all have individual problems which you work out successfully. You have views on pertinent questions connected with your line of work. To inform your fellow-workers of what you are doing, to express your views through the columns of *Aera* in simple language is a help to the industry and a help to yourself in crystallizing your ideas. The Question Box also offers a very ready means 'for the interchange of ideas, to acquire and distribute information, and to promote uniformity of practices.'

"During the past year our relationship with the manufacturers has undergone a change, and we are this year glad to receive them into full fellowship. To the Engineering Association they have always been of great assistance, and under the new conditions will undoubtedly be more so. On behalf of this association I wish to take this opportunity to thank the manufacturers and their representatives for many favors past and present, and to offer to them a very cordial welcome to full membership in our association."

C. W. Stocks abstracted the report of the executive committee meetings held during the year, and read the report of the secretary-treasurer. This report showed that in 1915 there was a decrease of forty-six in the membership, and that in 1916 there was a further decrease, due in part to the loss of Manufacturers' Association memberships. Some of these memberships were not renewed because the associate members' companies had not joined the American Association. On Sept. 30 the engineering membership totaled 1030. President Lindall then appointed the following committee on resolutions: C. R. Harte, Connecticut Company, New Haven, Conn.; C. E. Fritts, Kansas City (Mo.) Railways, and E. H. Dusen.

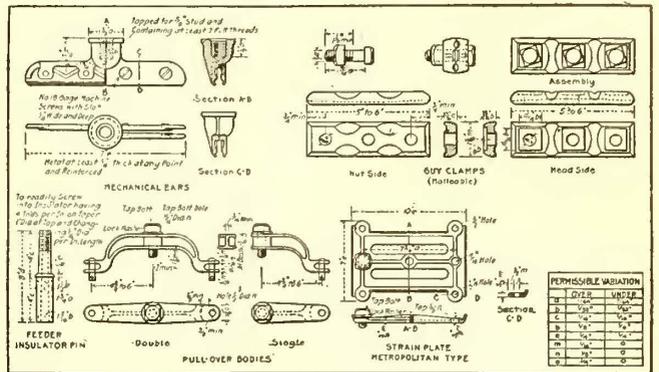
POWER DISTRIBUTION REPORT.

C. L. Cadle, chairman, briefed the report of which the following is an abstract, and read the list of eight subjects which had been assigned to the sub-committees on Dec. 17, as follows: Review of existing standards and recommendations, consideration of such of the A. I. E. E. standardization rules as apply to the work of the committee, clearance diagrams for semaphore signals, derivation of deflection formulas and tables for tapered concrete poles, additional specifications for overhead line material, types of third-rail construction and data on twenty-two different installations, collection of data on high-voltage d.c. and catenary trolley construction, and the tentative safety code of the Bureau of Standards in so far as it affects line construction.

The committee stated that the proposed revision of the recommended specification for overhead crossings of electric light and power lines could not be made at this time. The object of the revision is to make the speci-

fication correspond with the work done by the national joint committee on overhead and underground line construction, and this committee is withholding the final revision of its specifications until the Bureau of Standard's safety code is in more permanent shape.

On the subject of the standard specification for rubber insulated wire and cable for power distribution purposes, the committee submitted a new table of temperature coefficients, the values in which are the reciprocals of the coefficients given in the original table. This gives a mul-

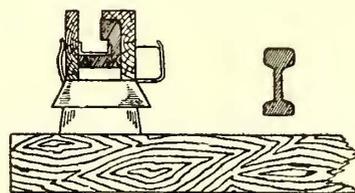


HALF SIZE REPRODUCTION OF SAMPLE PLATE SHOWING DETAILS OF OVERHEAD LINE MATERIAL

tiplying coefficient instead of a dividing one, thus making test computations a little easier. The coefficients were also specified definitely instead of the maximum and minimum limits being given. A new table was recommended for the required thickness of lead sheaths for cables, and it was recommended that the table giving the minimum number of wires in the conductor be revised to conform to the A. I. E. E. standard stranding.

The committee suggested certain changes in the A. I. E. E. definitions applying to the height and gage of third-rails. As to the suggestion of having a more definite dividing line between the transmission system, the distribution system and the substation, it was thought that this might lead to confusion and was therefore undesirable. The remainder of the A. I. E. E. rules considered were reported to be satisfactory.

Two diagrams were submitted and recommended for approval showing the location of signal masts and semaphores with reference to trolley poles, etc., for use on interurban roads. The diagrams covered the cases



PROTECTED, SIDE-CONTACT THIRD-RAIL CONSTRUCTION

where trainmen were allowed to climb up the side and ride on the top of the car and where they are not allowed to do so.

The committee's report on the subject of concrete poles contained a brief history of the work done by previous committees, gave the general theory of flexure of beams as applied to concrete poles, and developed the formulas by which the dimensions, the allowable loading, the most effective position of the reinforcing rods and like factors were computed.

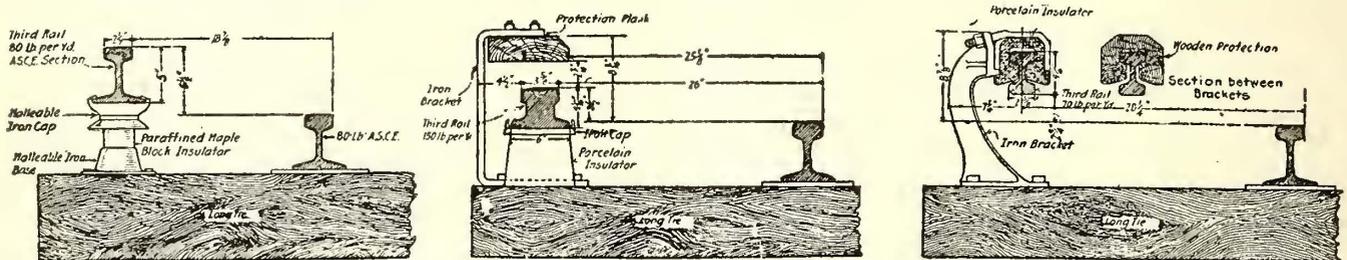
As pointed out by the committee, a concrete pole is essentially a reinforced concrete beam. It is assumed that the pole is tapered both in section and reinforce-

ment, and that the general theory applying to reinforced concrete beams also applies to these tapered beams. Detail calculations are given by which the equations for the position of the resultant compressive stress, the location of the neutral axis, the value of the resisting moments and the allowable loading of the pole are derived. Detailed drawings of a steel form for 30-ft. and 35-ft. concrete poles were given in an appendix.

The committee submitted specifications covering the following items of overhead line material: Intermediate castings for feed-in points; strain plates and bronze castings for trolley wire equipment, including plain and insulated crossings, ears, feed-in hangers, frogs and splicing sleeves. Under the heading of porcelain for voltages not exceeding 3000, specifications were submitted covering strain insulators and large and small feeder insulators. The other specifications recommended were for the following material: Seven-strand steel cable, switch boxes, tree and cable guards, wood insulator pins and brackets and wood-break strain insulators. In order to make the specifications clearer, drawings, made up into seven plates each  $3\frac{3}{8}$  in. x  $6\frac{3}{4}$  in., were included in the report. One of the accompany-

ing illustrations is a half-size reproduction of one of these plates. The compositions, since developed, have had a lower percentage of carbon and manganese and a greater conductivity. This gives a softer rail, and it was pointed out that there are certain disadvantages in the handling and installation where a soft rail is used.

The conductivity of the rail depends on the percentages of manganese and carbon. Commercial Bessemer rail, having from 0.4 to 0.5 per cent carbon and as high as 0.7 per cent manganese, was at first used, and the specific resistance was from ten to twelve times that of



TYPES OF THIRD-RAIL CONSTRUCTION, OVERRUNNING RAIL UNPROTECTED, OVERRUNNING RAIL PROTECTED AND UNDERRUNNING RAIL PROTECTED

ing illustrations is a half-size reproduction of one of these plates.

The committee stated that reports from member companies indicated that the majority find steel arms of higher first cost but cheaper in the end, as easy to obtain and install as wood, and requiring less maintenance. The committee recommended that the subject be broadened to include all metal arms and that specifications for the same be prepared. Certain minor changes, principally in the wording, were recommended in the general description of overhead line material and in the following specifications relating to 600-volt d.c. overhead trolley construction: Concrete settings, anchors in earth, anchors in rock, guy protection makers, trolley wire guy anchors, feeder supports, and lightning arrester grounds.

The committee did not consider it advisable to prepare a detailed specification covering third-rail construction. A general description of the development and the different types of third-rail construction was, however, submitted. It was pointed out that when electrification was extended to systems operating heavy cars at high speeds and over long distances, the overhead collector system as then used was not satisfactory. The adoption of the third-rail, however, solved the problem of providing a continuous conductor having a larger section than could be conveniently used overhead. This also allowed the use of a type of collecting device making the contact with the continuous conductor positive and not easily broken. The first practical use of the third-rail was in 1892, when patents were obtained in the United States by Charles H. McCloskey and Henry M. Brinkerhoff.

Third-rail construction were roughly classified by the committee as the overrunning, the underrunning

and the side contact types, of which typical installations are shown by the accompanying illustrations. The early installations were of the overrunning contact type, a gravity shoe being used. Later it became necessary to provide protection for the rail, and the gravity shoe was no longer practical owing to the fact that the entrance to the contact surface had to be made from the side. A slipper shoe, held in contact with the rail by means of a spring, has taken the place of the gravity shoe on protected third-rail systems. The protection of the overrunning third-rail consists in a plank about 6 in. wide which is supported above the rail by means of brackets bolted to the ties. The underrunning type can be protected both on the top and sides, and this construction has the added advantage in that the rail is self-cleaning in stormy weather. The side contact was used on a 1200-volt electrification in England, but it has many disadvantages.

In regard to the location of the third-rail the committee included in its report a plate showing the standard limiting clearance lines for third-rail, permanent way structures and rolling stock. Although this standard has already been adopted by the American Electric Railway Association, attention was called to the fact that there were certain conditions not covered by these clearance lines.

A table was included in the committee's report giving the characteristic third-rail data of twenty-two railway companies, and a partial list of bibliographical references on third-rail construction.

A large amount of important data on high-voltage d.c. and catenary construction had been collected by the committee, and it was its opinion that the problems involved were no different from those of 600-volt construction, except as to insulation and minor mechanical changes. Past experience, it was said, seemed to prove that the simplest form of sliding hanger and single contact wire is best for the lighter service, with the question as to whether it or the duplex wire is best for heavy service still open. Two tables were submitted, one giving a partial list of high voltage d.c. railways with construction data and the other giving a partial list of catenary installations with fundamental data regarding each. It was recommended that the 1916-1917 committee be instructed to prepare specifications for catenary overhead trolley construction.

Having kept constantly in touch with the work of the

United States Bureau of Standards on the proposed national electrical code, the committee described briefly what had been done on the section on overhead and underground lines. In preparing this code, conferences were held with the representatives of light and power companies, electric railways, steam railways, telephone and telegraph companies, state industrial and public service commissions and the like, and the rules have been discussed from every angle. It was the bureau's suggestion that the code be adopted on trial for a period of one year, after which changes could be made. The committee emphasized the importance of studying the application of the code to existing conditions since after the year's trial state commissions might make the code mandatory. Instances were pointed out where the code differed from the standards of the association.

In completing the report the committee suggested the following subjects for reference to the succeeding committee: Additional specifications for overhead line material including high-voltage d.c. and catenary construction, continuation of the present committee on the subject of a standard thread for pins and insulators, and a further study of structural steel crossarms and fittings with a view to standardization. The report was signed by C. L. Cadle, chairman; E. J. Blair, E. J. Burdick, E. S. Gillette, C. R. Harte, M. J. Kehoe, C. R. Phenicie, R. H. Rice and C. F. Woods.

George W. Palmer, Jr., Bay State Street Railway, Boston, Mass., congratulated the association on the efficient and willing way in which the members of the power distribution committee had worked during the past year. He then referred to the thickness of lead sheaths for cables as recommended after the work of the 1915 committee. He noted that the present committee had decided to reduce the thickness of the lead sheaths in the larger sizes of cable, the reductions being about 10 per cent. He pointed out that on cables 2 in. in diameter and larger, the sheath had to withstand considerable rough usage, and he inquired on what experience the committee had based its recommendations for reducing the thickness of the lead sheath. He also inquired whether the A. I. E. E. had adopted the standard stranding rules to which the report referred. Mr. Cadle answered in the affirmative and also said that the proposed reduction in the thickness of lead sheaths was based upon the general experience of the committee members. For the larger cables the committee held the opinion that with the present standards the cables were too large, too expensive and too liable to breakage, therefore, the reductions in the thicknesses of the sheaths were favored.

Mr. Cadle also said that the definition given for the term "core" was that which best fitted the requirements of the committee. After general discussion the association approved as standard the specification for rubber-insulated wire and cable (Engineering Manual, D. S. 1 lb.), and the amendments to Sec. 17c and 22 and Tables I and VI shown on pages 6 and 7 of the report. President Lindall asked for the consideration of subject B and the recommendations of the standards committee, which were then given as follows:

G. W. Palmer, Jr., opened the discussion by asking whether the committee had taken up the matters relating to third-rail gage and elevation with the committee on heavy electric traction. He said that this committee had approved the American Institute of Electrical Engineers' rules on this subject. Chairman Cadle stated that this subject had been approved by the heavy electric traction committee, although no definite action had been obtained. H. H. Adams, Chicago Surface Lines, chairman of the standards committee, was also of the opinion that the other committees interested had approved this part of the report. In order

to clarify this matter President Lindall requested the secretary to check up the action of other committees and report any conflict to the executive committee for its consideration.

Subject C of the recommendations and standards committee was then submitted for approval.

A. S. Richey, Worcester (Mass.) Polytechnic Institute, opened the discussion by referring to the specifications for wood insulators and pins, and asked whether the dimensions recommended would conflict in any way with the work of the committee considering standard threads. C. R. Harte replied that the diameter of the pin and the length of threaded portion did not limit the work of the special committee which was to standardize the pitch and contour of the threads. He said the matter of standardizing threads was not new because practically standard threads are being used but they have not been clearly defined. Now whenever the question of fit between the insulators and pins arose, it was impossible to fix the blame because there was no standard thread contour and pitch.

Mr. Palmer inquired about the mix for bronze castings recommended in paragraph 58 of the report; the standard pin referred to in paragraph 69; the manner of bringing the cables out of the switch boxes in paragraph 74, and the hinged hasp and the manner of fastening the molding on the cable to make it secure, and the offset in the outer end-casting. In reply Chairman Cadle stated that the specification for the bronze mix was obtained from a number of manufacturers, and that the manner of bringing the cable out of a switch box was common practice where cables are brought from underground to overhead lines. Mr. Harte stated that the rib on the trolley ear did not take into account the cap-and-cone-type hanger because that type is becoming obsolete. Regarding the form of the end casting, he said that the committee simply adopted a manufacturers' standard. After some further discussion on the threading wood-insulator pins, a motion to defer action on this part of the specification was defeated and Subject C was approved. Brief consideration was then given to Subject D and the recommendation of the standards committee following which it was approved.

Chairman Cadle next called attention to the recommendation of the committee that the data on concrete poles be accepted for publication in the Manual. He asked whether this had the approval of the convention. In reply Mr. Richey stated that data in this form could not be found in any other place and that it was too important to be omitted. Mr. Adams called attention to the large size of the present Manual and said that it was a question whether matter of this kind should be included. He said that the standards committee was considering the question of including in the index references to all matter of this nature contained in the annual proceedings. At this point the motion to adopt the report as a whole was approved.

Chairman Cadle then submitted the report of the special committee considering the revision of the standard stranding table. The three recommendations of the committee, which were approved by the standards committee, were adopted without discussion. Chairman Adams then submitted the report of the standards committee and called particular attention to that part of it relating to the revision of the Manual. He also stated that the whole question of the standards was up for a very thorough review in order to determine why they were not being used more extensively. L. A. Mitchell, Union Traction Company of Indiana, Anderson, Ind., was of the opinion that the present form of the Manual made it difficult to use for reference purposes and suggested a different binding. A. E.

Harvey, Kansas City Railways, Kansas City, Mo., concurred in this and was of the opinion that the loose-leaf form with a different binding, perhaps the ring type, would put the Manual in more convenient form. In the discussion which followed it was the consensus of opinion that the loose-leaf form should be retained and that the binding should be changed to make the Manual open more easily. It was also believed the pages should all be of uniform size, including those containing standard sketches, and that thinner paper would reduce the size of the Manual. Finally, it was decided, upon motion, to refer the whole matter of revision of the Manual to the executive committee. This completed the program and the meeting adjourned.

#### ENGINEERING STANDARDS

Although the work of the committee on engineering standards forms a complete whole, it will be noted that the recommendations were considered in connection with the several other reports. An abstract of the standards committee report itself follows:

The report of the committee on standards included an outline of the proceedings during the past year and a report from the sub-committee on style which recommended minor modifications in the present form of specifications. The report of the sub-committee on revision of the Engineering Manual was also submitted in which it was recommended that the existing section devoted to miscellaneous methods and practices should be eliminated; that the Manual should be bound and printed for three years with yearly supplements; and that the present index be abolished and one similar to that found in technical periodicals be substituted. However, these recommendations were referred to the ensuing committee on standards for action.

The report contained a statement of the position of the committee on standards on a design for track construction submitted by the 1915 committee on way matters, on which no action had been taken by the 1915 convention. The committee on standards disapproved of the design, which provided for a 6-in. concrete slab underneath the stone ballast and ties, because conditions which would require such construction occur so seldom that the association is not warranted in adopting it.

The committee's action on current recommendations of the various standing committees was outlined in the report. The nature of this action has been published also as a part of each of the various standing-committee reports, which are abstracted elsewhere in this issue. The personnel of the standards committee is H. H. Adams, chairman; Martin Schreiber, vice-chairman; E. R. Hill, E. B. Katté, W. G. Gove, J. S. MacWhirter, C. F. Bedwell, J. W. Welsh, J. H. Hanna, C. H. Clark, R. C. Cram, C. L. Cadle and C. R. Harte.

On the revision of the recommended specification for overhead crossings of electric light and power lines, Mr. Cadle said that meetings had not been held because the national safety code covered similar ground. The committee thought it best to await final action on the code before proceeding with its work.

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## Tuesday Afternoon

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Just prior to the joint session of the Transportation and Engineering Associations, the latter held a joint session with the Accountants' Association and the report of that meeting is contained in the proceedings of the Accountants' Association.

#### BLOCK SIGNALS

The joint session of the Transportation and Engineering Associations was opened with the report of

the joint committee on block signals for electric railways. This was presented by J. M. Waldron, Interborough Rapid Transit Company, New York, and President Lindall presided.

The joint committee on block signals devoted the first part of its report to a review of existing standards and recommendations that had originated with it in previous years. Among other things it was recommended that the present standard covering the use of continuous track circuits for the control of automatic signals for high-speed interurban service should be removed from the Engineering Manual, the most important reason being that, as worded, this standard is misleading and does not give the proper information. In its place, requisites for automatic block-signal installations on high-speed interurban railways, as adopted by both the American Railway Association and the Railway Signal Association, were recommended as a standard.

The report contained also a digest of block-signal laws, giving references to the work on this subject that has been heretofore accomplished by the committee. From abstracts of the replies to an inquiry directed by the committee to the various commissions in the country, it was evident that there had been no legislation of importance enacted during the current year.

With regard to the subject of design of block-signal apparatus, the committee submitted a design for block-number figures arranged horizontally on a plate attached to the signal mast. The committee also submitted drawings showing foundations for switch indicators, and for signal masts with top-post and bottom-post mechanisms. Two standard clearance diagrams for semaphore signals were proposed for adoption as standard. One of these is designed to cover all cases where steam railroad equipment is operated over electric lines and trainmen are allowed to climb up the side of or ride on top of cars, while the other covers the case where permission is given to trainmen to ride upon the tops of cars.

Progress was reported in connection with the subject of block signal rules, a special committee having been appointed to confer with the American Railway Association to the end that joint consideration might be given to this subject, although up to the present time no opportunity has been afforded for mutual action.

Considerable space was devoted in the report to highway crossing protection, a large amount of data having been collected during the past year. The committee recommended, however, that the study of the entire problem, especially as regards the adoption of a standard aspect for highway crossing signals, should be continued by the incoming committee. The committee also proposed a list of desirable features which should be embodied in all types of crossing signals and suggested that with further study the list might be adopted by the association as a series of requisites for such installations.

With regard to light signals for interurban railways, the report stated that no radical changes had been made since the report of last year's committee except that a new type of lamp had been developed which made unnecessary the use of two lamps behind each lens. This new lamp is made with a semi-concentrated double filament in which one section has a higher resistance than the other and hence tends to burn longer, thus minimizing likelihood of both sections burning out at the same time. With regard to the size of lens the report stated that these now range from  $5\frac{3}{8}$  in. to  $10\frac{3}{8}$  in. in diameter and that, since the Railway Signal Association was considering the subject, the adoption of a definite lens size should be postponed pending further investigation.

In the report was included, also, a description of a series of tests which can be applied generally to trolley-contact signals to determine the reliability of design.

In this connection the committee stated that in all types of contactor signals the signals should have a definite indication showing that the block is unoccupied. This indication should be so arranged that on failure of power or dearrangement of the signals, no indication will be given. Signals should be so designed that as a car passes under the contactor when entering a block, the signal at the opposite end will display a danger indication and the signal at the entering end will show proceed.

The committee stated also that it had tried to further the standardization of aspects for trolley contact signals and to advocate those which would be easy of interpretation and incapable of being mistaken, and to this end certain aspects for contactor signals were recommended in the hope that the different manufacturers would lend their efforts toward standardization. The committee considered that the aspects which had been recommended for use in the past were the best that could be made practical in view of the development which the contactor-signal art had reached at that time. However, a means

the committee stated that, during the year, it had continued its investigation of the subject and had found but little change to have taken place in operating methods. No appreciable extension of this method of operation had taken place, and the committee was without necessary information based on actual practice to make definite recommendations concerning the matter. Therefore the committee set forth its position as given in last year's report.

As appendices to the report there was a bibliography on block signals; a summary of some recent signal installations; a tabulation of replies to a data sheet giving the cost of maintenance of signal systems, their operating records and the schemes of organization of the signal department, and a review of the work of previous committees. The report was signed by J. M. Waldron, chairman; J. W. Brown, vice-chairman; J. B. Stewart, Jr., John Leisenring, G. N. Brown, J. J. Doyle, F. W. Coen and G. K. Jeffries.

In considering the above report separate attention was given to the clearance diagrams which were presented at the 1915 convention but were referred back for joint action. Upon motion these diagrams were adopted as standard and the remainder of the report was accepted as information.

TRANSPORTATION-ENGINEERING

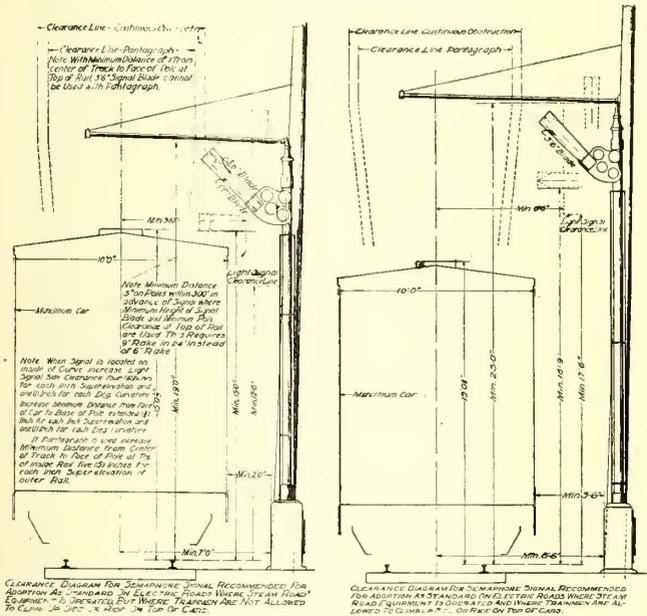
The subject of one-man car operation was taken up at considerable length by the committee on transportation-engineering. The report consisted of a summary of replies from 101 companies to a request for data on one-man cars, together with the committee's comments. From these there appeared to be a general agreement that one-man cars are not suitable for operation where traffic congestion is great and where considerable loading and unloading of cars takes place. There is a saving in platform costs, but this may be offset to some extent by decreased schedule speed. It is probable also that the one-man car has an effect upon the riding habit, but no data on this subject could be obtained.

With regard to the cost of operation of one-man cars, a saving was reported by seven companies and in four other cases the saving was not offset by any disadvantages. Two companies stated that the reduction in cost had made it possible to operate in districts where this was otherwise impossible. In general, a favorable attitude was reported on the part of the public, but in some cases public service commissions were opposed to one-man car operation. In general, franchise stipulations were not restrictive.

No serious difficulties of operation appear. At grade crossings seven companies report the employment of flagmen and nineteen companies report flagging the crossing by the motorman. Two report the use of a derail device operated by the motorman, and thirteen require the car to make a stop before going over the crossing. With regard to the trolley operation, retrievers and trolley guards over railroad crossings are suggested as advisable. With regard to fare collection, it is generally agreed that some type of fare box should be employed. Fifty-three companies report the issuance and collection of transfers in the usual way, while fifteen companies report that no transfers are used.

According to the data submitted in sixteen of the replies, the average length of car is 30 ft., the maximum being 40 ft. and the minimum 21 ft. The average weight is 22,300 lb. as reported by nine companies, the maximum being 30,000 lb. and the minimum 11,000 lb. The average seating capacity as reported by twenty-two companies is thirty-five, the maximum being fifty-two and the minimum twenty-four.

In general, it appears that one-man cars reduce boarding and alighting accidents, although there is a



CLEARANCE DIAGRAMS FOR SEMAPHORE SIGNALS

had now been suggested whereby it might be possible to use the standard high-speed signal aspects for contactor signals. [This scheme was described in detail in the ELECTRIC RAILWAY JOURNAL of Sept. 30, 1916.] Since the desirability of such aspects was obvious, the report included an outline of the scheme in order to ascertain the feeling of the members of the association as to its practicability. Apparently it is possible with these aspects to get full flexibility of operation and to cover all special movements as well as they can be covered with the present aspects.

The report included, also, a summary of the work of the various joint committees on block signals from the year 1910 to the year 1915, giving in outline the recommendations of past committees and a brief abstract of the contents of each year's report. With regard to methods of drawbridge protection the committee submitted a set of requirements for the protection of traffic on movable bridges, together with a recommendation that they be adopted as a standard practice and included in the Engineering Manual. In addition the committee displayed a number of sketches to show the various methods of protecting drawbridges for the information of the member companies. With regard to the operation of single-track lines by block signals only,

question whether the reduction has been due to the new method of operation or to the use of inclosed platforms which are frequently used with one-man cars. Separate entrance and exit passageways are believed by the committee to be preferable, together with power operation for doors and steps. Nothing definite appears in regard to seating arrangement, nor with regard to the necessity for an emergency exit at the rear. Manual operation for brakes appears in the majority of cases, but the committee recommends power brakes, particularly where high schedule speed is necessary.

The report was signed by W. A. Carson and F. R. Phillips, co-chairmen; C. F. Hewitt, P. N. Jones, W. J. Harvie and J. W. Allen.

J. M. Bosenbury, Illinois Traction System, Peoria, Ill., opened the discussion. He said that when one-man operation was first considered by his company the question of converting old cars or buying specially designed new cars was raised. After a careful analysis it was decided to purchase new cars. This was done in 1912 and since that time much lighter cars have been built. Regarding the safety features he said that they had been included to counteract the criticism of city officials. By the change from two-man to one-man operation it had been possible to increase the service from 25 per cent to 40 per cent and at the same time show a saving of from 25 per cent to 30 per cent in platform and current consumption costs. The light-weight cars also permitted extensions to the service because cheaper track could be built and thus reduce the fixed charges.

Furthermore the small cars tended to reduce track maintenance costs by reason of their light weight, and the reduction in energy consumption affected overhead lines and power house requirements.

On the various properties where one-man car service had been inaugurated and the service increased thereby, the public was favorable to their operation. Mr. Bosenbury was also of the opinion that when this type of car had demonstrated its safety in operation regulating bodies would have no objection to its use. In no case did the Illinois Traction System disregard franchise stipulations in inaugurating one-man car service. In one instance, however, it was necessary to obtain special permission to operate them under an existing franchise. When they were first introduced the scheduled speed was reduced somewhat but as soon as the public became familiar with their operation this condition did not hold. He said that his company had not encountered any particular difficulty in issuing transfers or making change. Mr. Bosenbury was also of the opinion that longitudinal seats should be used in double-end one-man cars and cross seats in single-end cars of this type. In order to simplify the duties of the motorman air brakes are a necessary part of the equipment and air-operated doors and steps may readily be included in the air-brake system. As a matter of fact his experience had demonstrated that air-operated doors and steps were safer.

Chief Engineer Larson of the Wisconsin Railroad Commission said that the members of that commission were favorably disposed toward one-man cars where conditions warranted their use. The commission asked, however, that their operation at railroad crossings be safeguarded and that their design be made safe for passengers. Mr. Phillips then closed the discussion with the statement that a decrease in operating costs could also be obtained by reducing the weight of two-man cars. This would, no doubt, make the savings by one-man operation less attractive. He was also of the opinion that one-man cars tended to slow up the schedules and thus increase the cost of operation. This completed the program and the meeting was adjourned.

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## Wednesday's Session

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The first business on Wednesday afternoon was the presentation of the report of the committee on power generation by J. W. Welsh, Pittsburgh Railways, chairman.

### POWER GENERATION

The report of the committee on power generation comprised the results of a study of certain sections of the A. I. E. E. standardization rules, a comparison of the different types of rotary converters, together with the accompanying transformers, a tabulation of data on power-house operation, including costs, and a recommendation of approval of the A. S. M. E. boiler code as a standard.

Regarding the A. I. E. E. standardization rules, the committee pointed out a number of significant facts and made several recommendations for consideration by the institute. Attention was called particularly to the following points: The rating of motors is expressed in kilowatts at the shaft instead of horsepower; and a single rating, preferably the continuous rating, is made the standard for electrical machinery, but no provision is made for overload ratings except in the case of nominal ratings for railway motors and railway substation machinery. The standard ambient temperature of reference for air is 40 deg. C. instead of 25 deg. C. and no correction is made in the temperature rise in case of other ambient temperatures. An increased rating is permitted on water-cooled transformers for the same ultimate temperature by fixing the temperature of entering water at 25 deg. C. The thermal limit of electrical machinery is put on the basis of ultimate temperature and not temperature rise and these ultimate temperatures are respectively 95 deg. C., 105 deg. C. and 125 deg. C. for the several classes of insulating materials with specified corrections based on the method of measurement.

The committee recommended for consideration by the A. I. E. E. the following: That the limitations of noise and vibration be added under "Objects of Standardization" of electrical machinery. That the correction for change in resistance in air-blast transformers for entering air at temperature other than 40 deg. C. should apply to other machinery when the ambient temperature is other than 40 deg. C. That the momentary commutation limit on continuously rated machines be not less than 200 per cent of the continuous rating in amperes instead of 150 per cent. That the term "auxiliary pole" be added to the name plate information of machines when this type of construction is used. That the range in the setting of circuit breakers be specified in per cent below and above rating. That, in the tests of performance of lightning arresters, the minimum voltage at which they discharge be fixed in terms of a minimum and maximum percentage range of the normal voltage of the circuit they protect. That the limits of successful commutation be specified in connection with the nominal rating of substation machinery. A load of 300 per cent should be successfully commutated and carried for one minute without disqualifying the machine for continued service.

In comparing the advantages and disadvantages of 60-cycle apparatus with particular reference to commutating-pole rotary converters, the committee gave tables of data of 600-volt, six-phase railway synchronous converters, and rotary converter transformers of 1915 and 1913 of the single-phase 11,000-volt class, with 15 per cent re-

actance. The following salient facts regarding converters were given: (1) The speed of the commutating-pole machine ranges from 33 per cent in the case of 60-cycle machines to 100 per cent in the case of 25-cycle machines higher than the non-commutating pole type. (2) The peripheral speed of the armature is approximately the same in both types. (3) The peripheral speed of the commutator is approximately the same as both types. (4) The floor space occupied by the commutating-pole type is approximately two-thirds of that required by the non-commutating-pole type. (5) The efficiencies of the two types are approximately the same but slightly in favor of the commutating-pole type. (6) The most noticeable gain is in the weights of these two types, the commutating-pole type weighing roughly only one-half as much as the non-commutating-pole type. (7) The price per kilowatt of the commutating-pole type ranges from 75 per cent in the 60-cycle machines to 50 per cent in the 25-cycle machines of that of the non-commutating-pole type.

On the subject of rotary converter transformers the committee states that the use of silicon iron has permitted higher flux densities without increased losses. Better means for conducting away the heat from transformer coils and core have been provided, and the standard rated capacity in transformers supplied to a given rated capacity in rotary converters has been reduced. The following deductions from the data tabulated are made: (1) The rated capacity of the 1915 transformers is approximately 10 per cent less than the 1913 transformers for use with the same rotary equipment. (2) The weight of the 1915 transformers is approximately 20 per cent less than the 1913 transformers of the same rating and frequency. (3) The floor space of the 1915 transformers is approximately three-fourths that of the corresponding 1913 transformers. (4) The efficiencies of the two types of transformers are approximately the same. (5) The price per kilowatt of the two types of transformers is approximately the same, but slightly in favor of the 1915 transformers.

A large part of the committee's report is occupied with power plant data in which total costs per kilowatt-hour, fuel costs per kilowatt-hour and labor costs per kilowatt-hour are given, as well as the following fundamental data: Net output from busbars in kilowatt-hours; maximum one-hour peak in kilowatts; load factor (one hour to average kilowatt-hours); capacity for two-hour peak in kilowatts; plant factor (average hour to two-hour capacity); pounds of coal per month; pounds of coal per kilowatt-hour; B.t.u. as received; B.t.u. per kilowatt-hour; cost of building; cost of maintenance; cost of employees' labor; cost of fuel for power; cost of water for steam; cost of lubricants, and cost of miscellaneous supplies. While the committee points out that this tabulation is incomplete, it is believed that the tables will be useful as indicating actual performances under various conditions of load factor, fuel costs, and types of equipment.

The above report was signed by J. W. Welsh, chairman; H. G. Stott, G. H. Kelsay, F. S. Freeman, A. B. Stitzer, G. T. Bromley, W. E. Rolston, L. E. Sinclair and J. G. Swain.

In the discussion L. P. Crecelius, Cleveland Railway, referring to the numerous factors entering into the design of rotary converters which have been largely responsible for putting this type of apparatus on an entirely new basis as regards a frequency of 60 cycles said substantially as follows:

Only a few years ago the requirement of 600-volt d.c. power from transmission circuits operated at 60 cycles made a combination for which rotary converters were poorly suited. Their use for railway purposes at least

was to be avoided under the circumstances. This situation does not hold to-day and in fact it is now not only possible to make use of rotary converters for this purpose, but the higher frequency has several decided advantages, namely, standardization of frequency, low cost and high economy.

Sixty-cycle substation apparatus is considerably less costly than smaller apparatus designed for 25 cycles. Although the committee's report indicates an advantage in efficiency in favor of 25-cycle converters, on the other hand the 60-cycle transformers are somewhat more efficient. Consequently the respective combinations of converters and transformers are about on a par in this respect. In fact, 17,000 kw. of 60-cycle rotary converter equipments have been in continuous operation in Cleveland since January, 1913. Their operation has been entirely satisfactory and the efficiency is very high. The combined conversion loss is but 8.64 per cent of all the power delivered to the alternating current bus bars at the substations.

Mr. Crecelius stated that in studying the data of operation and the costs of railway power stations given in the report he had prepared a summary grouping the data according to the character of the plant and using

OPERATING DATA, VIADUCT POWER PLANT, CLEVELAND RAILWAY, ONE YEAR'S OPERATION, D. C. CROSS-COMPOUND CONDENSING ENGINES

1. Output from bus, kilowatt hours.....	44,988.468	
2. Maximum one-hour peak, kilowatt-hours...	11,050	
3. Load factor: one hour to average kilowatt-hours, per cent.....	46.5	
4. Capacity for two-hour peak kilowatt.....	11,000	
5. Plant factor average kilowatt-hours to two-hour cap. ....	467	
6. Tons coal (2000 lb.).....	87,609	
7. Pounds coal per kilowatt-hour.....	3.9	
8. B.t.u. as received .....	12,530	
9. B.t.u. per kilowatt-hour.....	48,801	
10. Account No. 45, management and care.....	\$4,331.53	\$0.0096
11. Account No. 46, buildings.....	980.67	.0022
12. Account No. 47, maintenance.....	22,653.90	.0504
10. Account No. 45, management and care.....	\$4,331.53	0.0096
14. Account No. 53, fuel for power.....	143,632.32	.3195
15. Account No. 54, water for steam.....	8,057.83	.0179
16. Account No. 55, lubricants.....	6,386.47	.0142
17. Account No. 56, miscellaneous supplies....	3,657.14	.0081
18. Total above accounts .....	\$240,679.83	
19. Total cost per kilowatt-hour, cents.....		0.5356

percentage of total expense opposite the several accounts instead of dollars and cents. This table is reproduced herewith.

The summary includes the performance of a cross-compound condensing engine driven 600-volt d.c. generating plant, also shown in an accompanying table. He said at this point that it would be interesting to examine further into the expense of operating the two types of power plant represented, with a view to bringing out the influence of overhead expense upon the cost of operating them, giving also consideration to high tension distribution and conversion losses.

An analysis along this line showed that, all things considered, there is less than 5 per cent difference in expense between the operation of the best modern turbine plant as presented by the committee and that of an old direct-current engine plant. Nevertheless, the latter familiar type of railway power plant is fast disappearing. There are numerous important causes other than cost of operation which are at work. Most of the remaining power plants of this character were built fifteen to eighteen years ago and were located without regard to suitable water facilities.

It was of prime importance to locate these plants more with regard to accommodating the low-tension distribution system because of the severe restriction imposed by the 600-volt requirement. The range of mechanical usefulness of this type of plant in this regard was limited to a radius of less than 15,000 ft., in conse-

ARRANGEMENT FOR COMPARISON OF POWER PLANT OPERATING AND COST DATA ACCORDING TO CHARACTER OF EQUIPMENT. (CRECELIUS)

Plant	Modern Turbines				Average	Engines			Average
	A	B	C	D		E	F	G	
Net output from bus, kw.-hr.	130,076,945	111,082,725	91,402,690	172,927,100	126,372,365	41,304,359	43,314,700	44,988,468	43,202,509
Maximum one-hour peak, kw.-hr.	42,000	33,240	23,000	46,100	38,085	13,900	8,500	11,050	11,150
Load factor, one hour to average kilowatt-hour	0.35	0.38	0.453	0.428	0.403	0.339	0.58	0.465	0.461
Pounds of coal per kw.-hr.	1.75	1.97	2.78	2.48	2.245	2.58	4.19	3.90	3.56
B.t.u. as received	14,459	14,250	13,000	13,300	13,752	14,165	13,100	12,530	13,265
B.t.u. per kilowatt-hour	25,300	28,100	36,200	33,232	30,708	36,400	54,889	48,801	46,697
Management and care: (All quantities below in per cent)									
Buildings	0.41	0.27	0.14	0.99	0.45	0.28	0.57	0.41	0.42
Maintenance	3.91	7.25	7.55	11.30	7.50	8.81	8.96	9.59	9.12
Wages	8.81	7.25	15.61	17.60	12.32	16.10	20.30	21.57	19.32
Fuel for power	84.58	83.84	72.48	64.30	76.30	66.50	55.40	60.77	60.89
Water for steam	0.78	...	0.00	0.62	0.47	5.60	11.37	3.41	6.79
Lubricants	0.17	0.61	0.79	1.10	0.67	1.14	1.54	2.70	1.79
Miscellaneous supplies	1.34	0.78	3.43	4.07	2.41	1.57	1.82	1.55	1.67
Total of above accounts	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

quence of which it was impossible to serve the average railway system from a single plant. The capacity of such plants was therefore confined to about 1200 kw. and the numerous plant sites thus created have now become immensely valuable as real estate but entirely too expensive to keep.

The addition of low-pressure turbines coupled to direct-current generators may in a few cases prolong somewhat the effective life of such plants, but taken on the whole the continued extension and growth of electric railway systems has outdistanced this type of plant because of its inflexibility. Thus at its best this old familiar power house must go, for it does not fit into the larger scheme of things.

After Mr. Crecelius' paper was read, C. L. Cadle, New York State Railways, Rochester, N. Y., suggested the importance of having some standard basis for load factor. Mr. Crecelius thought that this matter is already fairly well standardized, but, in any event, it will be brought up for consideration by the national joint committee on standardization of methods for determining cost of power. The representatives of the Engineering Association on this committee are Mr. Crecelius, Mr. Welsh and E. H. Scofield, Twin City Rapid Transit Company, Minneapolis, Minn. Continuing the subject of load factor, W. G. Carlton, New York Central Railroad, New York, N. Y., said that in determining load factor the 1-hr. peak as used by the committee is hardly fair, as far as boiler costs are concerned. A 15-min. peak would be better, as boilers can carry a peak for this period.

M. V. Ayers, Interstate Commerce Commission, Washington, D. C., suggested that to the statement of the committee to the effect that the price per kilowatt of the 1913 and 1915 transformers is but very slightly in favor of the latter there should be added that the later rotary converters are cheaper.

After Mr. Welsh had explained that the committee did not consider it wise to publish further the tables of power plant operating cost data, the report of the committee was accepted with thanks.

WAY MATTERS

The report of the committee on way matters containing 100 pages was confined largely to three sets of specifications, namely, those for all classes of special work, for several types of pavements, for preservatives and the treatment of woods and a review, with recommendations regarding ballast for suburban and inter-urban lines. In connection with the special work specifications the committee made a complete revision of this subject, particularly with respect to form, and also prepared specifications for plain bolted special work. In revising these specifications it was decided that the great variety of materials entering the manufacture of the various classes made it advisable to prepare a separate set of specifications for materials. In preparing these specifications the way committee had the counsel of a committee of special work manufacturers. In connection with the specifications for manganese steel special work, the manufacturers objected to the size of the test piece and the time of its heat treatment as provided in the 1915 specification. After consideration their criticisms were accepted and the specification changed. In addition this specification was amended to limit the wind or warp in the bearing surfaces of solid manganese steel pieces, and extraordinary care in this particular was recommended where the special work was to be laid on steel instead of wooden ties. These specifications are revised and enlarged were submitted as recommended specifications by the way committee and approved by the committee on standards.

REVISED SWITCH AND MATE DIMENSIONS

Under the subject of recommended design of layouts for switches, mates and frogs, the committee paid particular heed to the lengths of switches and mates as contained in the Engineering Manual. It found that in practice the modern rail sections, when made into switch pieces of the standard lengths, did not permit adequate opening at the heel for setting the joint plates and tightening the bolts. In order to obviate these difficulties the committee revised the table of lengths,

TABLE I—DIMENSIONS OF SWITCHES AND MATES

Standard Radius	Radius for All Gages	DIMENSIONS							
		A		B and C		D		E and F	
		Suggested	Present	Suggested	Present	Suggested	Present	Suggested	Present
50 deg. Lat.	47 ft. 7 1/2 in.	-6 in.	-6 in.	10 ft. 0 in.	10 ft. 0 in.	-6 in.	-6 in.	10 ft. 0 in.	10 ft. 0 in.
75 deg. Lat.	72 ft. 7 1/2 in.	0 in.	0 in.	12 ft. 0 in.	12 ft. 0 in.	0 in.	0 in.	12 ft. 0 in.	12 ft. 0 in.
100 deg. Lat.	97 ft. 7 1/2 in.	0 in.	0 in.	13 ft. 6 in.	12 ft. 0 in.	0 in.	0 in.	13 ft. 6 in.	12 ft. 0 in.
150 deg. Lat.	147 ft. 7 1/2 in.	12 in.	12 in.	15 ft. 0 in.	14 ft. 0 in.	12 in.	12 in.	15 ft. 0 in.	14 ft. 0 in.
200 deg. Lat.	197 ft. 7 1/2 in.	18 in.	18 in.	16 ft. 6 in.	15 ft. 0 in.	18 in.	18 in.	16 ft. 6 in.	15 ft. 0 in.
100 deg. Wye.	97 ft. 7 1/2 in.	-6 in.	-6 in.	10 ft. 0 in.	10 ft. 0 in.	-6 in.	6 in.	10 ft. 0 in.	10 ft. 0 in.
150 deg. Wye.	147 ft. 7 1/2 in.	0 in.	0 in.	12 ft. 0 in.	12 ft. 0 in.	0 in.	0 in.	12 ft. 0 in.	12 ft. 0 in.
200 deg. Wye.	197 ft. 7 1/2 in.	0 in.	0 in.	13 ft. 6 in.	12 ft. 0 in.	0 in.	0 in.	13 ft. 6 in.	12 ft. 0 in.
350 deg. Wye.	347 ft. 7 1/2 in.	12 in.	12 in.	16 ft. 6 in.	15 ft. 0 in.	12 in.	12 in.	16 ft. 6 in.	15 ft. 0 in.

NOTE.—It is recommended that the 100 foot radius Lateral and 200 foot radius Wye shall be used wherever practicable. It will rarely be found necessary to use others.

which was unanimously approved by the committee of special work manufacturers. The diagram and the revised dimensions of switches and mates are shown in the table at the bottom of page 830.

The committee also called attention to the desirability of standardizing special work layouts with a view of minimizing the number of frogs having different angles. It suggested that the initial step toward accomplishing this result would be to adopt a standard spiral. Special work manufacturers were in sympathy with this recommendation, and indicated that they would be glad to accept a spiral adopted by the association. The dimensions of switches and mates were approved as recommended design by the standards committee.

#### BALLAST FOR OPEN TRACK

Ballast for suburban and interurban lines was also considered in this report, and the following conclusions were drawn and approved by the standards committee:

1. The best ballast is crushed stone or washed gravel ranging in size from  $3\frac{1}{4}$  in. to  $2\frac{1}{2}$  in.

2. Crushed stone or washed gravel ballast should not be less than 8 in. deep under the ties for main-line tracks.

3. Bank-run gravel ballast should not be less than 12 in. deep under the ties for main-line tracks.

4. Cinder ballast should not be less than 12 in. deep under the ties for main-line tracks.

5. Any increase in the minimum depths of ballast stated in conclusions 2 to 4 inclusive should decrease the cost of track maintenance.

6. The greater the depth of ballast the better the drainage, which increases the life of ties, decreases maintenance, maintains better general track conditions, and decreases rolling-stock maintenance.

7. Drainage is of primary importance to maintain a stable subgrade.

8. The ballast section should be so formed as to provide surface drainage.

#### PAVEMENT SPECIFICATIONS

Pavement for use in connection with girder grooved and plain girder rail (T-rail) received thorough consideration and recommended specifications were prepared for brick pavement, granite block pavement and creosoted wood block pavement, and foundations for these pavements, together with specifications for cement grout filler, asphalt filler, gas-tar pitch filler and coal-tar mastic filler. These specifications were mainly adapted from those of the American Society of Municipal Improvements and the American Wood Preservers' Association. These specifications were submitted as information with the request that they be studied carefully in detail with a view of bringing out suggestions for their improvement. A continuation of the subject was recommended with a view to embodying such criticisms and suggestions in the specifications before they are finally submitted as recommended standard.

#### SPECIFICATIONS FOR PRESERVATIVES AND TREATMENT OF WOOD

Acting upon its instructions, the way committee submitted specifications for preservatives and the treatment of wood for inclusion in the Engineering Manual, taken largely from the standards of the American Railway Engineering Association, the National Electric Light Association and the American Wood Preservers' Association. The committee deemed this the wise course, because the specifications adopted by these associations have now been in general use for a number of years without requiring important revision. In adapting these specifications for electric railways, however,

the committee recommended a number of modifications, the principal one of which was a simplified and readily obtainable apparatus for analyzing preservatives. This report, after discussing the fundamental principles and the advantages of timber preservation, sets forth ten general requirements, largely taken from the manual of the American Railway Engineering Association, and information regarding the importance of grouping timber and preparing it for treatment. The modified specifications submitted for adoption as recommended specifications include those for Nos. 1, 2 and 3 grades of creosote oil used as standard by the American Railway Engineering Association; a specification for creosote coal-tar solution, which is also a standard of the American Railway Engineering Association; a specification for the fractionation of creosote oil, one for tie treatment and treatment by the Bethell process. Specifications were also prepared for brush, dipping and open-tank treatments, including a specification for the creosote oil to be used when treatment is by these processes. This subject was referred back for further consideration of other materials and for joint action by other interested committees. A form was submitted for the purpose of gathering service records of ties and other timber, in order to put it before the electric railway industry.

In view of the large amount of work necessary to prepare these specifications, the committee did not have time to take up a number of other important subjects assigned to it. In commenting upon this fact, as well as the work of past committees, it expressed itself as dissatisfied with the conditions under which committee work has been conducted, and suggested a careful review of the methods in order to bring about an arrangement whereby the work can be continued from year to year and the appointments of committee members made more promptly than in the past. Attention was also called to the growing importance of the subject of curved heads for girder rails and the fact that a number of member companies have installed test sections of track with rails of this type. In order to put this matter before the association, the way committee recommended that this subject receive prompt consideration by the ensuing committee acting jointly with the committee on equipment.

In the discussion on the above report A. E. Harvey, Kansas City Railways, pointed out how useful these specifications will be in loose-leaf form for sending out to bidders on materials. He explained how some of the paving specifications had been made up. For example, those on granite blocks were based on the "Chicago specifications," while the brick specifications followed those of the American Brick Manufacturers' Association.

At this point A. C. Simmons, a former president of the association and now Commissioner of Public Works, Milwaukee, Wis., was invited to say a few words. He said that during the past five years he had found himself in a position to understand both sides of the problem of the relation of railways to municipalities. In Milwaukee the situation is complicated by the fact that many technical questions are being settled in the courts. Referring to Mr. Simmons' remarks, G. W. Palmer, Bay State Street Railway, Boston, pointed out that in serving corporations engineers should remember that they are public servants as well as corporation servants.

E. M. Haas, ELECTRIC RAILWAY JOURNAL, devoted his remarks to wood preservation. He stated that the committee had in its work the co-operation of the United States Forest Products Laboratory and other expert assistance. The committee had not included in its report the zinc-chloride treatment of ties, because this appears

not to be considered well adapted for electric railway tie preservation. Water-gas-tar specifications were not included, although such tar is used in connection with coal-tar creosote.

In response to an inquiry concerning the effect of preservatives on the electrical resistance of ties, Mr. Haas quoted from "Preservation of Structural Timber," by H. F. Weiss, director Forest Products Laboratory, the following statements:

"1. The resistance of timber varies directly with the length and inversely with the cross-section.

"2. The resistance of timber varies almost inversely with the amount of moisture present, between the limits of 15 and 50 per cent.

"3. The resistance of timber is lowest when measured along the grain and highest when measured tangentially to the growth rings.

"4. When treated with a soluble salt, such as zinc chloride, the resistance varies approximately inversely as the amount of the salt present.

"8. Treatment of timber by different creosote processes does not greatly change the natural resistance of the timber.

"A number of traction companies state that the zinc-treated ties corrode their spikes very rapidly, and for this reason they are opposed to using them. It is entirely possible that this will occur, especially if the ties are liable to hold much moisture and are situated a long distance from the power house. Ties which can be kept fairly dry and can be laid close to the power house so that the return current will be through them, rather than away from them, should give little trouble."

At this point E. M. T. Ryder, Third Avenue Railway, New York, called attention to the importance of service data on the use of the various types of pavement included in the specifications. L. A. Mitchell, Union Traction Company of Indiana, Anderson, Ind., asked for information concerning the use of water-gas-tar-creosote. He also called attention to the effect of zinc-chloride-treated ties on signal operation as experienced by steam railroads. He referred to the use of cinder ballast, and said that it was not always injurious to ties. He said that there was a section of track on his road where cinder ballast had been used exclusively for a number of years, and he had never been able to find a case in which a tie appeared to be affected by the cinders.

Martin Schreiber, Public Service Railway, Newark, N. J., stated that he was in full accord with the action of the standards committee in referring the subject of wood preservation back to the committee for further consideration. He believed that a specification should also be included to cover water-gas-tar creosote. Such a specification had been prepared by the National Electric Light Association, and he had been purchasing oil under it for a number of years. Up to the present time, he said, he had been unable to discover that the results being obtained were any different from those where coal-tar creosote had been employed. He was of the opinion that the subject was too important to pass over hastily, and he then told of the tremendous amount of work necessary in preparing wood-preservation specifications for the National Electric Light Association. The discussion also brought out the fact that cinder ballast was being generally used by the Honolulu Rapid Transit & Land Company, Honolulu, Hawaii, without deleterious effect on the ties.

H. M. Steward, Boston Elevated Railway, Boston, Mass., said that his company had recently installed a wood-preserving plant and had found that he could make a saving over having the treatment done in commercial plants. A. B. Skelding, Tidewater Power Com-

pany, Wilmington, N. C., said that his company was also treating its own ties with Maintenance of Way specification creosote. Very satisfactory results were obtained by the open-tank process, in which a hot and cold bath is employed. Short-leaf pine ties, which only lasted a few years in his part of the country, were in a perfect state of preservation eight years after treatment.

George L. Wilson, Twin City Rapid Transit Company, Minneapolis, Minn., stated that his company had recently purchased 20,000 ties treated by the Card process. After three or four years the spikes were found to be badly corroded. These ties were used in track in paved streets and undoubtedly the presence of moisture and the  $\frac{1}{2}$  lb. of zinc chloride per cubic foot were responsible for the rapid rate of corrosion. He then referred to the paving specifications, and recommended that granite block be used exclusively for track in paved streets. While it was somewhat higher in first cost than other types, it gave a much longer life. Undoubtedly the objection of the public to this type of pavement was based on its experience with the old form of granite block used. Under the specifications included in this report granite block may be purchased and, if carefully laid, will produce a most satisfactory pavement.

Mr. Wilson also recommended that the blocks be inspected at the quarries rather than at the point of delivery. He had found that the quarrymen did not object to rigid specifications as long as the blocks were inspected when they were in the hands of the cutters. When the blocks are inspected at the point of delivery the quarrymen have no way of fixing the blame for imperfect workmanship. He said that granite-block pavement was purchased for Chicago in this manner, and the inspectors picked out the culls, placing those which could be recut in one pile and those which could not in another. Mr. Wilson also recommended a grout filler for granite-block pavements.

Mr. Steward then described a method he had recently adopted which made it possible to use old blocks or seconds in laying granite-block pavement. This process included extreme care in laying the blocks with open joints, filling the bottom of the joint with clean pea-gravel and filling them with 1:1 grout. Just before the grout has taken the initial set it is scraped from the surface of the blocks with a hoe, with the blade bent to 45 deg. with the handle. Following this operation, the pavement is swept with a push-broom, with the broom fixed at 45 deg. with the handle. After this had been done the surfaces of the blocks were thoroughly cleaned with a whitewash brush and water.

R. D. Hood, Massachusetts Northeast Street Railway, Haverhill, Mass., said that he had employed this method of laying granite-block pavement and obtained very satisfactory results. Although he had used many blocks which were seconds or culls, the finished pavement showed no depressions and it was dustless. If this process of grouting the pavement is employed, old blocks are just as satisfactory as new ones. He also called attention to the fact that the granite-block specifications in the report did not provide for the use of pea-gravel in the bottom of the joints. He was of the opinion that this was important, because it saved a certain amount of grout filler and the gravel increased the mechanical strength of the joint. As a matter of fact, in removing some pavement which had been grouted in this manner he found many instances where blocks broke instead of the grout filler.

E. A. West, Denver Tramway Company, Denver, Col., and D. P. Falconer, New York State Railways, Rochester, N. Y., described types of concrete pavement which they had employed with satisfactory results. Mr. West

used a 1:4:8 mix below the ties, a 1:3:6 mix for the pavement foundation and a 1:2:3 mix for the pavement wearing surface. Mr. Falconer's experience with concrete pavement had been in making temporary repairs where he desired a pavement that would last as long as the old rail. He was of the opinion that concrete pavements would not last for periods longer than seven or eight years.

R. C. Cram, Brooklyn Rapid Transit Company, Brooklyn, N. Y., closed the discussion and asked for additional criticism of the report by letter for the benefit of the 1917 committee. He laid particular stress on the importance of service data for treated timber, and asked that the members fill in the information on the data sheets whenever they had occasion to rebuild track. He also questioned the value of treating yellow-pine ties when they were used in paved streets. He said that his company had removed untreated yellow-pine ties from track in paved streets which had been down from sixteen to twenty-two years. In rebuilding this track approximately 60 per cent of the ties were reused. In Brooklyn he had also found that Georgia-pine ties would last only three years in track laid in cinder ballast. At this point the report of the way committee was approved and President Lindall called for the report of the committee that had attended the American Good Roads Congress. This was presented by J. M. Larned, Pittsburgh Railways, Pittsburgh, Pa., and it was received as information. An abstract appears in the proceedings of the American Association. Before adjourning the meeting President Lindall announced that arrangements had been made for advancing the final session of the Engineering Association from 2 o'clock Friday afternoon to 9 o'clock Friday morning.

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## Thursday's Session

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At the Thursday afternoon session of the Engineering Association the report of the committee on equipment only was presented as more time was consumed in its discussion than was anticipated.

### EQUIPMENT

The report of the committee on equipment covered eleven subjects, therefore it was necessary to consider some of these in a rather preliminary way, while others were reported in detail. After a thorough investigation of the question of revising the steel wheel designs, the committee drew the following conclusions: Wheels of a diameter of 26 in. and under should have a rim thickness of 2 in., and wheels of 28 in. in diameter up to 36 in. in diameter should have a rim thickness of 2½ in. Wheels with diameters of 35 in. and 37 in. were eliminated from the designs because these sizes were not generally used. Although the equipment committee had prepared and recommended a revised contour of wheel tread and flange, it could not reach an agreement on these changes with the way committee, therefore the standards committee approved the new designs subject to an amended report being made at the convention. Agreement was reached, however, with the way committee that the present coning of the tread would be maintained at 1 in. in 25 in. The question of flange contour is still in controversy.

A revision of the standard design of brakeshoes, brakeshoe heads and keys was also undertaken by this committee to obviate the uneven wear of the shoes and the rapid wear of portions of the face of the brake head in contact with the shoes, resulting from insuffi-

cient wearing area. An investigation developed the fact that manufacturers were not following the association's standards for brakeshoes except in a general way, so that the revision was taken up with them. While the designs were changed, they in no way affect interchangeability with the present designs. A summary of the changes follows:

A plate type of brake head was proposed, *i.e.*, a head which covers the full bearing portion of the brakeshoe except for the indentations for end and center lugs and slight clearance recess; head design with square ends to fit end stops; a 3/16-in. clearance was provided between top of lug on shoe and brake head; the location of the center line of the key lug on narrow-tread shoes was corrected; the lip of the shoe flange was omitted at the center for a distance of 50 per cent of the total length of the shoe; the clearance was indicated around the flange of the wheel; standards were included for brake heads, brakeshoes and keys for wheels 26 in. in diameter and under, and unflanged brakeshoes were eliminated from the standards, investigation indicating that there were very rarely used for electric service, and where required to meet special conditions it was recommended that the members use M. C. B. standards. The new proposed designs were illustrated in appendix to the report and they were approved by the standards committee.

This committee also investigated the question of revising the standard design of axles to provide for the recent development in small-size motors. In its investigation of this subject the committee had the assistance and co-operation of representative motor and truck manufacturers, and the new proposed standards were illustrated in an appendix to the report. In connection with the design of these axles the report states that a very careful analysis of the stresses indicated that the former capacity ratings were somewhat high for ordinary annealed carbon steel and a reduction for the various sizes was made. The committee's investigation also developed the fact that while the present axle standards have been very desirable from the standpoint of standardizing the motor fit, excepting for heavy electric traction and interurban service, the standards indicated could not be used, because the lengths were too great for city service. To take care of this situation, two designs for 3¾-in. x 7-in. axle were added, with journal centers of 69¼ in. and 72 in. respectively. The former will meet the requirements of the driving axle for maximum traction trucks, and the latter for the heavy four-motor equipments operated in city service. To meet the requirements for small-size motors and light-weight cars, axle designs were added, one for 3½-in. and one for 4-in. motor fit, both having 3¼-in. x 6-in. journals spaced at 69¼-in. centers. These were recommended as standard designs and they were approved by the standards committee.

Car ventilation was also investigated and the committee reported that this subject revealed the fact that opinions differ as to the requirements for good ventilation and few if any of the theories or proposed requirements have been generally accepted. In some localities, state and municipal authorities have specified that cars must meet certain specifications, and a large number of electric cars have been equipped with various ventilating systems in an endeavor to meet these requirements.

In several cases authorities now admit that their methods of meeting these requirements are not practical from an operating standpoint. Due to this unsettled state of the art, the committee believed that definite recommendations could not be made, and, therefore, confined its report to a general review of the subject.

Under the subject of lighting electric cars, the report calls attention to the fact that during the last two years special attention has been given to the question of scientific reflection and diffusion of light, and to the fact that investigations have demonstrated that the tungsten wire lamps are superior to the old carbon filament lamps both as regards efficiency and economy. Generally, however, the results of the scientific analysis were so dependent upon the construction of the car, the shape and color of the ceiling and other reflecting parts, as well as on the quantity and quality of adjacent light absorbent surfaces that the committee concluded it would be impractical to adopt any definite standards. It therefore recommended that all member companies be urged to give the matter of car lighting the careful and scientific study it deserved.

Since the manufacturers could not agree on what sizes of carbon brushes could be recommended as a standard for street railway motors, the committee deemed it inadvisable to take any action on this subject.

M. C. B. brasses for heavy electric traction were designed and submitted in this committee's report to obviate the difficulties encountered in the operation of M. C. B. journal bearings on heavy, high-speed equipments, particularly in connection with motor axles where the higher brake-shoe pressures become an important factor and result in abnormal wear due to comparatively heavy side thrusts. The committee found that a number of prominent member companies had developed a form of high-speed journal bearing which had proved satisfactory in overcoming these difficulties. In considering this subject, however, the committee deemed it highly desirable to have the high-speed bearings interchangeable with M. C. B. standards, not only insofar as the bearings themselves were concerned, but as regards the modifications in the journal boxes and supplementary end-thrust facilities. The details of these proposed high-speed journal bearings were illustrated in an appendix accompanying this report, and included those developed for 3 $\frac{3}{4}$ -in. x 7-in., 4 $\frac{1}{4}$ -in. x 8-in., 5-in. x 9-in., and 5 $\frac{1}{2}$ -in. x 10-in. sizes of journals. Journal thrust plates were also designed and submitted with the report, for applying on 3 $\frac{3}{4}$ -in. x 7-in. and 4 $\frac{1}{4}$ -in. x 8-in. sizes of journals, and one was designed for both the 5-in. x 9-in. and the 5 $\frac{1}{2}$ -in. x 10-in. sizes.

Limit-of-wear gages for the association's standard flange contours were also designed by the equipment committee for the 1-in. thickness of flange and the 1  $\frac{3}{16}$ -in. thickness of flange. These designs were submitted in an appendix to the report, and they were approved by the standards committee.

A trolley catcher socket which is essentially the same as that known as the Keystone catcher, manufactured by the Electric Service Supplies Company, was adopted by the committee as standard and approved by the standards committee. Before its adoption, however, the sanction of the manufacturer was obtained, as well as permission for other manufacturers to make their style of trolley catchers fit this socket.

After analyzing the replies received from a number of representative electric railroads on the subject of car painting, such a wide variation in the methods employed was found that it was practically impossible to formulate any set of specifications which would be applicable to the various conditions or acceptable to the various member companies. Some companies spend considerable money to obtain a very smooth surface for the color and varnish coats, and others finish their cars with the principal object in view of obtaining protection from the action of the elements. The committee also found that some companies were forced to paint their cars quickly on account of limited shop space and the lack of extra equipment, while others were more favor-

ably situated in these respects. The report also took up the various enameling processes, and the committee recommended that the accelerated drying of paints and varnishes receive more attention from member companies than they have in the past, because it believed that a closer study would develop greater advantages and result in extending its use.

In the investigation of rail corrugation in its relation to the use of rolled or forged-steel wheels versus the use of chilled iron wheels, the committee made observations on a number of large railway properties and discussed the subject with the engineers and the officials of these roads. It was found that some of the lines using rolled or forged-steel wheels exclusively were free from corrugations, while others showed corrugations in various stages of development. Likewise some of the roads using only chilled cast-iron wheels were free from corrugations, while others showed corrugations as pronounced as those found on any of the roads using steel wheels. It was the consensus of opinion of the engineers of some of these properties that one type of wheel was no more conducive to rail corrugation than the other. As a result of these investigations the committee reported that nothing could be found to indicate that one type of wheel more than another was responsible for rail corrugation.

#### PLAN OF COMMITTEE WORK AND APPOINTMENTS CRITICISED

At the close of this report the equipment committee placed itself upon record as opposed to the detailed consideration and recommendation of matters where it was evident from the start that no final determination could be made that would be conscientiously observed or advocated by individual members. In other words, it did not care to put forth the ideal as an ideal, and confine the consideration of the subject to historical sketches or reviews without adding definite recommendations. This committee also expressed itself of the necessity of some arrangement whereby its work could be continued from year to year, and with less interruption between the time of rendering reports and assignment of subjects for the ensuing year. It recommended that some more definite plan of continuing membership in committees be considered.

In connection with the report Mr. Gove said that next year a less number of subjects should be assigned and therefore more time would be available for consideration. The subjects of revision of wheel design and contour and tread and flange of wheel brought forth a lively discussion on flange dimensions and their relation to rails.

James Wilson, National Car Wheel Company, did not see the need for reducing the thickness of flange. There were many roads using flanges 1  $\frac{3}{16}$  in. thick and in Baltimore flanges 1 $\frac{1}{4}$  in. thick are used. H. H. Adams, Chicago Surface Lines, called attention to the growth in the use of steel wheels. Flanges on street car wheels were formerly thickened to introduce more grey iron and thus increase the strength in the flange. He thought that a compromise design to suit the requirements of both iron and steel wheels would eventually be reached. W. A. Bennett, Griffin Wheel Company, did not think that thicknesses of 1  $\frac{3}{16}$  in. and 1 $\frac{1}{4}$  in. were unusual. Wheels had been used in Peoria with a flange thickness of over 1 $\frac{1}{4}$  in.

N. B. Trist, W. A. Bennett and R. H. Dagleish next discussed the wear on the back of flanges and the relation of flanges to guard rails. Mr. Dagleish said that the radius of throat on  $\frac{5}{8}$ -in. and  $\frac{7}{8}$ -in. flanges could not be the same or there would be no tangent. He thought there would always be a demand for two sizes of flange and perhaps for three sizes.

Mr. Adams said that in Chicago a taper on the tread of one to sixteen was used on steel wheels and that the average mileage of wheels from January to May, inclusive, had been 110,000. These were 34-in. wheels worn to 30-in. minimum diameter. He considered this a fairly good life for wheels in city service.

Mr. Dalglish had conducted experiments with wheels of various tread tapers and found that an increase in taper had brought about an increase in the life of the wheels. He said, however, that if in conjunction with the way committee standards were adopted which assured a tread bearing over one-half the rail head in extent then taper would not be an element of importance. R. C. Cram, Brooklyn Rapid Transit System, said that the question of flange thickness was one to be determined largely from usage and experience.

Ralph D. Hood, Haverhill, Mass., held that in the association discussions and studies the aim should be to establish standards for the future to which all properties when reconstructing could work. L. A. Mitchell, Union Traction Company of Indiana, Anderson, Ind., argued for a larger flange and corresponding flangeway. Mr. Gove said that the one-wear wheel was increasing in popularity and consideration for that also must be made.

After further discussion the committee recommendation on this matter was approved.

Mr. Adams did not think that the committee had gone far enough in shortening axles. Every axle possible should be shortened because of the need for saving weight. A shorter axle meant that every cross-piece in the truck could be shortened. F. R. Phillips, Pittsburgh Railways, said that the committee should not overlook those several large companies which operated wide-gage track. The present standard axles can now be used with wide gage equipment, but if they were shortened it would mean new axle designs. The committee's recommendation on axles was then approved.

After an abstract had been presented by Mr. Gove, the association next approved the committee's recommendations regarding the standardization rules of the A. I. E. E.

As previously mentioned in regard to electric-car ventilation, the committee on this subject held that definite recommendations could not be made at this time, and therefore confined its report to a general review of the subject.

Mr. Adams recited his experience with ventilation intakes. Floor intakes brought about difficulty from street dust, but on studying the subject he had found a point at the side of the car where there was little dust. Therefore the intakes on later cars had been located on the sides of the cars, and this was found satisfactory.

That part of the report on lighting was read by W. E. Johnson. No discussion followed.

On the subject of carbon brushes, E. H. Martindale, National Carbon Company, Cleveland, Ohio, said that the Electric Power Club and the carbon brush manufacturers had been working toward common standards which had been submitted to the A. I. E. E., and which, after further consideration, would no doubt be submitted to the Engineering Association.

Mr. Gove then read an abstract of the committee's report on the M. C. B. brass for heavy electric traction. L. M. Clark, Indianapolis Traction & Terminal Company, pointed out that certain changes were necessary in design in order to facilitate the removal of the brass from the box. These could easily be made and, therefore, the association approved the committee's report and passed an amendment providing for the changes.

W. E. Johnson, Brooklyn Rapid Transit System, read the section of the report on the design of limit-of-wear gage for standard flange contours. F. J. Foote, Ohio Electric Railway, inquired why two general designs were shown. Mr. Johnson replied that the 1 13-16-in. gage followed the Central Electric Railway Association designs, but that the general shape of both gages could be made uniform. The association approved the designs recommended.

Mr. Johnson stated that on account of the patent situation, the committee wished to withdraw its recommendation on the subject of design of trolley-catcher socket. The sections of the report on painting of cars and consideration of a code of safety rules were read, as was also that on the investigation of rail corrugation in its relation to the use of rolled and forged steel wheels as opposed to the use of chilled cast-iron wheels.

Owing to the lateness of the hour, the report of the committee on buildings and structures was postponed to the Friday afternoon session.

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## Friday's Session

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This session of the Engineering Association was opened with the report of the committee on buildings and structures, which had been carried over from the previous session.

### BUILDINGS AND STRUCTURES

Of the topics assigned for its consideration this year the committee on buildings and structures found the following the most fruitful for study: Designs for fences; general specifications and form of contract for railway structures; provision for contraction and expansion in restrained concrete structures, and oil houses and their equipment.

Under the first head a number of dimensioned drawings of fences were given, together with brief statements of their characteristics. The general specification and form of contract which had been recommended for adoption in 1915 were submitted again in revised form. The revisions had been made after securing comments from many member companies, and the committee stated that it had now no hesitancy in submitting the form for adoption as a recommended specification and form of contract.

On the subject of providing for expansion and contraction in restrained concrete structures the committee recommended that its further consideration be suspended for the present on account of the exhaustive nature of the 1915 report. However, some drawings were submitted showing a few special problems that have occurred in actual practice and the methods of solution. One showed a method of waterproofing either a transverse or longitudinal expansion joint on a bridge structure. The success of these joints is believed to be due to placing rolls of plastic waterproof membrane in the copper "V" pieces which connect the end of the bridge and the abutment before filling the joints with plastic waterproof compound. The membrane gives the mass more body and allows the use of a softer mastic than otherwise.

Another drawing, reproduced herewith, showed a method of waterproofing a subway manhole where a sewer or water pipe of necessity passes through the structure and also several special cases of waterproofing expansion joints.

A third drawing showed a method of waterproofing the bases of iron or steel columns, the following explanation being given: It is well known that when

concrete or other protection is built up around columns in streets or other exposed places, due to changes in grade or from other causes, in order to act as wheel guards or other protection, it is impossible to maintain a tight joint between the concrete and metal due to difference in the coefficient of expansion of the two materials, with the consequent rapid deterioration of the metal due inevitably to moisture collecting between the two. It so happens that the peculiar properties of some waterproofing compounds, especially that used in the case illustrated, is that the waterproofing material can be made to adhere equally well to both the metal and concrete, consequently positively sealing the opening, no matter how small. Of course, the compound is applied to the steel before pouring the concrete. This makes no difference as it has always been proved that the concrete, when set, has become firmly bonded to the waterproofing compound.

The fact that some materials bond to steel and iron has been found to eliminate the annoying troubles sometimes experienced in keeping steel work painted for appearance or for protection. Two examples illustrate this, one being the case of exposed bottom flanges of a bridge or floor structure and the other being an otherwise non-protected girder or beam. One treatment with waterproofing compound will outlast many coats of paint.

The last topic covered by the committee was oil houses and their equipment. A form of oil house was recommended to meet the requirements of municipalities and insurance companies. Two forms were suggested, one with tanks above, and the other with the tanks below the floor. It was stated that a list of manufacturers of oil pumps, metal tanks, waste bins and similar apparatus could be obtained from the secretary of the association or from the local board of underwriters having jurisdiction.

The report was signed by C. F. Bedwell, chairman; R. C. Bird, H. E. Fink, C. S. Kimball, James Link, F. F. Low, William Roberts, H. G. Salisbury and H. G. Throop.

G. W. Palmer, Jr., Bay State Street Railway, Boston, Mass., opened the discussion and told of his company's experience in preparing a contract form similar to this one. He said that they had gone to a great deal of trouble to develop a form of contract which was almost identical with the one submitted in the committee report. If the committee's form had been available at the time his company was endeavoring to develop one, it would have saved an immense amount of detail work.

H. H. Adams, Chicago Surface Lines, speaking as chairman of the standards committee, said that it had not acted on the recommendation of the buildings and structures committee because his committee did not deem it a good policy to include matter of this kind in the manual. The contract form submitted by the 1914 and 1915 committees had been sent back because the standards committee did not think it suitable for adoption as a recommended specification. However, as the general specification form of contract already appeared in the Manual under the heading "Miscellaneous Methods and Practices," Mr. Adams agreed that the form as revised by this committee should replace the one now in the Manual. Accordingly the recommendation of the committee was approved and the remainder of the report accepted.

#### HEAVY ELECTRIC TRACTION

The committee on heavy electric traction recommended further consideration of the standard diagram for clearance of overhead working conductors and stated that it approved the proposed standard clearance dia-

gram for block signals submitted by the block signal committee. The committee indorsed the standardization rules of the American Institute of Electrical Engineers and gave an outline of its activities in connection with the proposed safety code of the United States Bureau of Standards. In addition there were submitted tabulated data regarding electric locomotives used on main line railroads in America and in Europe similar to those submitted in last year's report, these tables having been revised and corrected where necessary. A new table covering data regarding electric locomotives on the various interurban railways in America was presented. The report was signed by E. R. Hill, chairman; E. B. Katté, Hugh Hazleton, W. S. Murray and C. H. Quinn.

G. W. Palmer opened the discussion by calling attention to the fact that the power distribution committee had not accepted the standard rules of the A. I. E. E. and the heavy electric traction committee and had approved them without change. C. L. Cadle, chairman of the power distribution committee, explained that its action on the standardization rules had been governed by the fact that they did not conform to the standards already adopted by the association. Mr. Hill explained that his committee's action was only intended as a general indorsement of the rules. This conflict in the action of the two committees was therefore referred to the executive committee for reconciling the differences. This closed the discussion and the report was accepted.

C. W. Stocks next read the report of the committee on electrolysis, which was simply one of progress, and it was received as information. C. R. Harte, Connecticut Company, New Haven, Conn., presented the report of the committee on resolutions, and H. H. Adams that of the committee on nominations, which were unanimously approved.

President Lindall, before turning the gavel over to incoming President F. R. Phillips of the Pittsburgh Railways, thanked the members for the assistance they had given him during the past year and urged their co-operation for the new president. R. C. Cram, Brooklyn Rapid Transit Company, Brooklyn, N. Y., and Mr. Cadle escorted President-elect Phillips to the chair. In accepting the honor conferred on him Mr. Phillips said that since many of the committees believed that too many subjects had been assigned to them from year to year, it would be his policy to reduce the number so that more attention could be given to the details of the subjects considered.

#### NEW OFFICERS

The report of the nominating committee was then presented, and in accordance with its recommendations the following were elected: President, F. R. Phillips, superintendent of equipment Pittsburgh Railways, Pittsburgh, Pa.; first vice-president, G. W. Palmer, Jr., electrical engineer Bay State Street Railway, Boston, Mass.; second vice-president, W. G. Gove, superintendent of equipment Brooklyn (N. Y.) Rapid Transit System; third vice-president, E. R. Hill, consulting engineer Norfolk & Western Railway, New York City; secretary-treasurer, E. B. Burritt, 8 West Fortieth Street, New York City; members of the executive committee, the officers and C. S. Kimball, engineer maintenance of way Washington Railway & Electric Company, Washington, D. S.; C. L. Cadle, electrical engineer New York State Railways, Rochester, N. Y.; C. F. Bedwell, assistant engineer Public Service Railway, Newark, N. J.; J. W. Welsh, electrical engineer and traffic agent Pittsburgh Railways, Pittsburgh, Pa.

This report of the nominating committee was signed by Paul Winsor, chairman; E. O. Ackerman, William S. Twining, A. T. Clark and S. L. Foster.

# Transportation and Traffic Meetings



PRESIDENT H. A. NICHOLL

In Addition to the Committee Reports, the Association Had a Number of Contributed Papers, Which Added to the Interest of the Meetings. The Discussion Brought Out Many Valuable Ideas Regarding the Training of Men for Supervisory Positions, the Practical Aspects of Public Work, Etc.

**T**HE annual meeting of the Transportation & Traffic Association was called to order by President H. A. Nicholl, who first read his annual address. An abstract of this follows:

## PRESIDENT NICHOLL'S ADDRESS

At the opening meeting of the Transportation & Traffic Association held Monday afternoon, President Nicholl spoke first of the convention last year at San Francisco, which he said not only gave an opportunity to Eastern members to see a wonderful country under most favorable conditions, but the place at which it was held was particularly convenient for the members located west of the Rocky Mountains. The great hospitality of these members was greatly appreciated and will long be remembered. The large number of jitneys seen in the Western cities impressed those who participated in the trip and the Eastern members of the association sympathize with those companies which have to contend with this unfair competition.

President Nicholl then spoke about the change in the organization of the executive committee by which the first vice-president takes a more active part in the work of the association and will report to the president on June 1 of each year when he will recommend a list of appointments for the new committee on subjects. He will also report at the last meeting of the executive committee a tentative list of the recommended committee appointments for the ensuing year. In accordance with this change, the new subjects committee has already been appointed for the ensuing year and will undoubtedly be able to assign the work to the other committees earlier than heretofore. Other changes in the organization of the Association consist of the abolition of the board of accident control and the appointment in its stead of a joint committee designated as the joint claims-transportation committee, the appointment of a committee on the operation of motor vehicles, one on company publications, a joint committee with the Engineering Association to co-operate with the signal committee of the American Railway Association to secure a uniform code of rules for block signals and to coordinate the work of the two associations, and the committee on the cost of rush-hour service.

Mr. Nicholl then spoke briefly of the work of each committee to report this year and of the special papers which had been prepared for the program. He also urged during the year the co-operation of the different member companies with the committees and the attendance of members at meetings of committees.

## PROGRAM

### MONDAY

Annual Address of the President.  
Annual Report of the Executive Committee.  
Annual Report of the Secretary-Treasurer.  
Reports of committees:  
Standards—L. H. Palmer, chairman.  
Construction of Schedules and Time-tables—Edward Dana, chairman.  
Joint Session with Claims Association.  
Reports of committees:  
Claims-Transportation—R. P. Stevens, chairman.

### TUESDAY

Reports of committees:  
Passenger Traffic—J. K. Punderford, chairman.  
Uniform Definitions—J. V. Sullivan, chairman.  
PAPER—"The Development of Schedule Makers," H. C. Donecker.  
PAPER—"Training Men for Supervisory and Executive Positions," L. C. Bradley.  
Joint Session with Engineering Association.  
Reports of committees:  
Block Signals—J. M. Waldron and J. W. Brown, co-chairmen.  
Standards, Engineering—(On recommendations contained in above report).  
Transportation-Engineering—F. R. Phillips and W. A. Carson, co-chairmen.

### WEDNESDAY

Joint Session with Accountants.  
Reports of committees:  
Cost of Rush Hour Service—J. V. Sullivan, chairman.  
Fares and Transfers—C. S. Ching, chairman.  
PREPAYMENT SYSTEMS—General discussion.  
Reports of committees:  
Express and Freight Traffic—F. D. Norviel, chairman.  
ADDRESS—"Some National Issues in Local Street Railway Franchises," Prof. Clyde L. King.

### THURSDAY

Reports of committees:  
Rules—C. E. Morgan, chairman.  
PAPERS—"Company Publications": "Their Use and Value," F. W. Hild, T. S. Wheelwright. "Their Preparation and Publication," Leake Carraway, James H. Braden.  
General discussion.  
General business.  
Election of officers.  
Installation of officers.

In conclusion he referred to the immense increase in the number of automobiles and consequently in accidents from them, and expressed his belief that an effort should be made by the association as well as by the parent association to see that proper legislation is enacted, making it a penal offense for an automobile to be operated across a steam or electric railway track without first coming to a stop to see that the way is clear and to be operated by anyone who is not a licensed chauffeur. Automobile accidents in cities from which reports were available showed that up to Sept. 1 of this year 1040 persons had been killed and more than 8000 injured, a larger number by far than those who had been killed and injured in the Zeppelin raids in England. This indicates that the automobile is much more dangerous than the Zeppelin.

In conclusion Mr. Nicholl expressed his appreciation for the co-operation of the officers, secretary of the association and the committeemen and members as well as for the honor conferred upon him at San Francisco.

Following the president's address, Secretary E. B. Burritt presented the report of the executive committee, which consisted of minutes of the two meetings held during the year. He also read his report as secretary-treasurer. From this it appeared that the committee had expended about \$1,425 out of \$2,750 appropriated. The membership on Sept. 30, 1916, was 201 individuals,

a loss of 272 as compared with Nov. 1, 1915. Two hundred and forty-eight had been transferred to company section membership, of which company section members there were, on Sept. 30, 669.

#### TRANSPORTATION & TRAFFIC STANDARDS

L. H. Palmer, Eastern Pennsylvania Railways, Pottsville, Pa., then presented a report of the committee on standards.

The committee on standards stated in its report that, at the stated meeting held in August at New York City, formal action could not be taken by the committee because no quorum was present. However, the reports of six standing committees had been considered and had been forwarded to the executive committee of the association with the statement that, in the opinion of the members of the standards committee attending the stated meeting, the reports were in form to be submitted to the convention. The report stated also that a start had been made on the compilation of a syllabus covering the proceedings of the association since its inception, and it was hoped that this work would be completed during the ensuing year. The report was signed by L. H. Palmer, chairman; J. N. Shannahan, vice-chairman; A. H. Ford, C. H. Harvey, C. V. Wood, H. C. Donecker, J. K. Punderford, F. D. Norviel, N. W. Bolen, C. E. Morgan and Edward Dana.

The discussion of this report was opened by H. C. Donecker, Public Service Railway, Newark, N. J., who emphasized the point that the association is not getting the most possible from its committee work, although he did not criticize the work of the present committees. Operating men are busy and have difficulty in getting to committee meetings, so that even though committee members are carefully selected the results are not always satisfactory. Consistency is an important factor in committee work. It is evident that in the past the attempt has been made to do too much committee work, and in the future the committee work will be simpler. He expressed his belief that the member companies should consider the committee work of employees to be a part of their regular duties.

L. C. Bradley, Houston (Texas) Electric Company, referring to the work of the standards committee, said that this committee is in a position to understand the detail of committee work and its comments should be valuable. Men who accept committee appointments should realize their responsibilities. Committee work is an honor and a duty, and the success of the association work depends on faithfulness. C. Loomis Allen, Allen & Peck, Syracuse, N. Y., said that the association had done fine work but so far has merely scratched the surface. Referring to the suggestions of the committee, R. B. Stearns, Milwaukee Electric Railway & Light Company, said that executives do not lack interest in the work of the association. Although representatives are harassed with problems, managements are always willing to assist in solving problems, particularly those of this association. The trouble with the committee work has been that the shots are too scattered and the results indecisive. Some subjects should be closed out and a follow-up system of committee work should be inaugurated.

J. E. Gibson, Kansas City (Mo.) Railways, referred to the difficulty of getting full attendance of committee meetings. Companies should send men not only to convention but also to committee meetings. H. B. Potter, Boston (Mass.) Elevated Railway, suggested that members of the executive committee should be assigned to ex-officio position on committees, where they could give valuable assistance. Mr. Stearns stated that while this year's committee work was very satisfactory, most of

the work was done by the chairmen. J. E. Duffy, New York State Railways, Syracuse, N. Y., thought that geographical restrictions prevent regular attendance at committee meetings. A. Swartz, Toledo & Western Railway, Toledo, Ohio, suggested that members might voluntarily express their preference for committee work. J. L. Adams, Philadelphia & Western Railway, Upper Darby, Pa., believed in small committees, but J. R. Harrigan, Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., opposed a reduction in the size of committees for fear of not having representative membership. Mr. Donecker explained that the committee recommended was intended to secure closer cooperation between the member companies and the committees. The report of the committee was then adopted.

#### CONSTRUCTION OF SCHEDULES AND TIME-TABLES

The committee on construction of schedules and time-tables, besides giving a summary of the work of previous committees on this subject, entered a plea for more permanence in the membership of committees. This committee has a membership of seven, but during the past seven years thirty-three different individuals have served on the committee. The longest period of service was three years, and two members served for this time. Nine members served for only two years, and twenty-two members served for only one year.

The first subject considered by the committee was the skip-stop development. Of sixty-eight companies replying, thirty-five companies as yet have made no move to reduce the number of stopping places on their lines, whereas thirty-three have made such an effort. Of the number that had tried the plan, fifteen indicate in a general way that a net saving has resulted, but eighteen had compiled no definite data. The committee believes that any method of operation such as this, which provides a more efficient service, must ultimately be successful even where there is a minority opposition, but, like rerouting, it is often difficult to introduce, and where marked economies result, the companies could well allow a portion of the saving to revert to an increase in the service and show the public that this has been done. The committee also commends the *ELECTRIC RAILWAY JOURNAL* for reprinting in folder form several vital articles on this subject published in the issue of Jan. 1, 1916.

Four methods of skip stop are classified, namely: (1) The removal of every other stop inbound and outbound, placing the outbound stops at streets where the inbound stops have been eliminated. (2) The elimination of certain stops during rush hours by stenciling white bands on the poles with the statement that within certain hours the cars will omit that stop. (3) The designation by signs on the cars that at even or odd numbered streets, the car will not stop, as the case may be. (4) The operation of express cars with so-called locals.

The company urges the adoption of a standard inter-urban time-table and submitted a form which it recommended. Of the ten companies which replied to requests for criticism on the table, four were very much opposed to the practice of showing trains in one direction on one side of the table and those in the opposite direction on the reverse side. They preferred that the stations be placed in the center of the sheet, and the time of trains in one direction be shown to the left reading down and the time of trains in the opposite direction shown to the right reading up. The committee cannot agree that there is sufficient to be gained by this arrangement to warrant it, as it thinks the practice of reading up an unnatural one.

In its study of running time, wide variations were

found. Some companies report that they check running time between specific points as often as three times a day, while others check once a year only. Various methods are used for checking. No change in running time throughout the day or year was reported by twenty-eight companies, whereas forty-four report variations during the rush hours or after 8 p. m., and one company varies its running time seven times a day. The importance of the subject to economical operation is emphasized, and the committee says that it could have found work enough to concentrate its entire energies upon this subject or upon any one of the subjects assigned to it.

Under the study of traffic regulations, a summary is given of various municipal traffic regulations that are in force. Attention is also called to the Standard Code of Traffic Regulations adopted by the Safety-First Federation of America. In the opinion of the committee the efforts of this organization in this direction should be approved.

The report was signed by Edward Dana, chairman; J. P. Kineon, Herman E. Hicks, H. F. Fritchs and Fred Cooper.

The discussion was opened by J. J. Dempsey, Brooklyn (N. Y.) Rapid Transit System, who brought out the importance of careful study of the skip stop and was followed by J. V. Sullivan, Chicago (Ill.) Surface Lines, on the same topic. Mr. Sullivan said that education on the skip stop is necessary. The skip stop is a move in the right direction, and a study of several cities where the number of stops have been diminished showed that the public would adapt themselves to the change. Insistent property owners sometimes oppose these skip stops and compromises should be used instead of arbitrarily locating stops. The public should be fully informed of the savings and explanations of the advantages to the public should be made. Experiments should be continued long enough to give the plan a fair trial, and stops should be eliminated with reference to the effects on business districts. Mr. Dana gave an example of the solution of the general problem where local and express two-car train schedules had been introduced.

R. T. Sullivan, Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, pointed out that skip stops increase the inconvenience of service, which is important in view of the auto competition. On the same point J. F. Starkey, Lake Shore Electric Railway, Sandusky, Ohio, said that jitney competition in Sandusky, Ohio, had impressed on the management the importance of stopping as frequently as possible. Mr. Stearns indorsed the recommendations of the report, and stated that it represented an excellent piece of work. G. A. Richardson, Puget Sound Traction, Light & Power Company, Seattle, Wash., said that the skip stop was used some time ago in Seattle, and that the people in outlying districts liked it. He wanted to know, however, how the people in the inner part of the skip stop zone could be pleased. Alexander Jackson, Public Service Railway, Newark, N. J., said that the success of the skip-stop system will depend largely on the manner in which it is inaugurated, it should be done on one line at a time, and should begin on a line with short blocks. Suitable signs should be erected, and there should be considerable advertisement prior to the installation of the system. Express service could hardly be operated on lines where the headway is less than 5 minutes.

Regarding interurban time tables, Mr. Jackson took exception to a number of points in which he thought the form submitted by the committee was deficient. These referred to durability, the numbering of turnouts on

interurban lines, and a number of typographical details. He objected to the printing of time tables in such a form as to show the trains in one direction on one side of the table and those in the opposite direction on the reverse side.

Before proceeding to the joint meeting with the Claims Association, President Nicholl announced the appointment of the following committees: On resolutions, J. N. Shannahan, E. C. Spring and P. N. Jones. On nominations, Dana Stevens, H. C. Page and S. W. Greenland.

#### CLAIMS-TRANSPORTATION

The joint committee on claims-transportation presented a progress report stating that it was investigating the cost of moving-picture reels and was developing a plan of operation for their use in electric railway safety work, since it had been found that seventy-three member companies desired to use such pictures, providing they could be displayed at a reasonable expense. As soon as full information on this subject has been obtained it will be put in the form of a further report and a recommendation by the committee. The committee had nothing to recommend at the present time in connection with co-ordination with the street traffic committee in the general safety-first movement. The report was signed by R. P. Stevens, chairman; E. F. Schneider, Edward A. Maher, Jr., W. F. Weh, S. B. Hare and J. J. Reynolds.

Mr. Stevens explained that the report was a progress report. The committee had conducted a great deal of correspondence with moving picture concerns, but these manufacturers were so busy that they had not given the matter as full attention as the committee hoped they would later. The committee had also corresponded with railway companies which had prepared such films, but with one exception these companies had refused to loan their films. Some 100 reels, however, were available at present. Seventy-three railway companies had written that they would be interested if films could be obtained at a reasonable expense.

E. C. Spring, Lehigh Valley Transit Company, Allentown, Pa., said his company had had considerable experience with reels and had made one of its own at a cost of \$2,300, although this reel was for advertising purposes and not an accident reel. His company had thought of preparing such a reel, but realized that it would be very expensive and after once shown it would be obsolete. It was found better to hire reels than to make them or have them made. There was also the question as to how these reels should be shown. At first the moving picture people raised some objection because the exhibits made of these reels were free. The company told them, however, that being a different class of picture, it would attract people who rarely or never went to moving picture shows and encourage the regular business, so that the company had no difficulty in hiring halls and operators. The speaker recommended hiring experienced operators as economical in the long run. He believed that the pictures did a great deal of good.

H. V. Drown, Public Service Railway, Newark, N. J., said that his company in 1911 had a reel made by the Edison Company and later this reel was released throughout the country. It was produced at no cost to the railway company except the loan to the picture company of its equipment, men, etc. This year the company had endeavored to repeat the contract with the Edison Company, but was unsuccessful and had arrangements with another concern to produce a reel. The experience of the company had been very satisfactory with these reels. It should be remembered, however,

that they are perishable and wear out, and that may be one reason why companies do not care to loan them.

Alfred Sweeney, Portland, Me., asked if it was considered worth while to show accident reels unless an educational campaign was followed. Mr. Spring thought that it was much better to carry on such a campaign at the same time.

H. M. Braun, East St. Louis & Suburban Railway, suggested that it was most desirable to educate the trainmen first before starting in to educate the public.

H. C. Mallon, Chicago Elevated Railway, said that three years ago some stereopticon slides were prepared on his lines and that the moving picture manufacturers had offered to make some moving picture films, but could give no guarantees that they would be shown in the theaters. It is hard to get realistic views because the men realize that they are only acting, and to be attractive the picture must be realistic. He believed, however, that it was possible to get such views and referred to some very good views made of the work by the telephone company in Chicago to show the problems of telephone operation.

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## Tuesday Afternoon Session

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The second session of the Transportation & Traffic Association meeting was held in accordance with the program, except that the paper of H. C. Donecker, Public Service Railway, Newark, N. J., scheduled for Monday was added.

### PASSENGER TRAFFIC

The first report presented was that on passenger traffic, which was abstracted by J. K. Punderford, Connecticut Company, New Haven, Conn.

This committee presented a digest of work of previous committees on the subject, and in its own report discussed first the subject of interline passenger traffic arrangement between interurban and steam roads. Of 120 member companies submitting answers to the questions sent out, 17 per cent have traffic arrangements with steam roads, and of these nearly one-third, or 5 per cent, have reciprocal arrangements with all steam roads in their respective territories. Although it is generally said that steam roads do not interchange with electric railways, sixteen of the large steam railroads do interchange to a greater or lesser extent. Most of the interline arrangements were initiated more by the steam roads than by the electric roads, but they have been remunerative and satisfactory to both, as well as to the public. Rates have been usually constructed on the sums of local fares, although in some cases arbitrarily constructed basing rates have been used. Most of the lines using these basing rates have established them by prorating on rates, although some have prorated on mileage. Outside of Iowa there has been very little exchanging of mileage with steam railroads. The committee recommends that renewed efforts be made by electric railway officials to extend their traffic arrangements with steam roads.

Although most electric railways report that they carry baggage free up to 150 lb. and up to \$100 value, the committee finds that some electric railways charge 25 cents for baggage of 150 lb., and believes that all should do so. It recommends, therefore, that a committee be appointed to meet with a like committee from the steam roads to establish a universal charge for the handling of baggage. It also recommends that through rates, when constructed on basing rates, should be prorated on mileage and that efforts be made to develop the interchange of mileage with steam roads.

The examination of the committee of the subject of open cars shows that the number of such cars in service is rapidly diminishing, and that practically all of the present users of such cars contemplate discontinuing their use, at least as rapidly as the equipment becomes unserviceable.

The committee also made an examination into rates charged for special car service, but finds an alarming lack of uniformity and one for which there is no justification.

The committee consisted of J. K. Punderford, chairman; B. E. Wilson, Charles Currie, E. M. Walker, J. S. Keys and P. P. Crafts.

In connection with the report, Mr. Punderford said that the committee had studied the subject of special car services, and found a great lack of uniformity as to rates charged by different roads for the same services. While the report contained no recommendations, he raised the question of the desirability of having a more rational basis for such services. C. R. Gowan, New York State Railways, Syracuse, N. Y., described the experience of his company in interline arrangements with the New York Central and the Ontario & Western. Some years ago his company had arrangements which placed it under the jurisdiction of the Interstate Commerce Commission. This proved quite a burden and was discontinued on March 1, 1913, since which date the arrangements have applied only to intrastate business. The results are very satisfactory, as a fairly good business is done, and the interchange arrangement is convenient to the public and hence promotes traffic. On the subject of advertising, Mr. Gowan thought each carrier should bear its own expense. The relations of his company with the steam roads have been pleasant. Regarding carrying of baggage he said that on one line baggage is charged for, while on another 150 lb. are carried free. Conditions determine this matter.

B. E. Wilson, New York State Railways, Rochester, N. Y., said that his company does some interchange business between Geneva and Rochester, this being intrastate only. He suggested that the subject of excess fare might profitably be studied to determine what companies can do to compel passengers to purchase tickets at stations. F. D. Norviel, Union Traction Company, of Indiana, Anderson, Ind., said that he was interested in the report because it covered conditions in the central states. He said that his company has interline arrangements with a number of steam roads. At first the local tariffs were combined, but now the tariffs are all practically the same as those prevalent among steam roads. He thought that the matter of special car rates must be controlled by local conditions.

The next speaker was J. F. Starkey, Lake Shore Electric Railway, Sandusky, Ohio, who said that his company gets a great deal of business from the Clover Leaf Line, and also has an arrangement with certain others. On the subject of advertising interline business, he thought that the initiating line should bear the expense. On his property, the special car rate is based on fifty passengers, a minimum rate of \$15 being charged. This he considered too low. Above 50 passengers the fare is prorated. He wanted to know if roads which carried baggage on limited cars found that handling baggage at stations interfered with schedules.

J. H. Crall, Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., said that on his road fifty passengers is a basis for special car rates with a minimum of \$25 total, and 50 cents per passenger. Baggage must be carried free by commission ruling.

Mr. Donecker put in a good word for the open car, objecting to the part of the report stating that the open

car is out of date. The Public Service Railway some years ago had no fixed policy regarding open cars, but after a careful study of local conditions had lately decided that open-car operation should be continued on certain lines. The railways must develop new business in competition with automobiles, the jitneys and amusement attractions. The open car can be a factor in this, and the experience of the past summer has shown that the new cars of this type recently put into operation on the Public Service Railway has enabled the company to meet this competition. The study of the subject should be carried further.

W. J. Whiteside, International Railway, Buffalo, N. Y., told of the success of his company in developing interline business in connection with excursions to Niagara Falls. He thought that it was only necessary to go after this business. Mr. Norviel, referring to the Niagara Falls excursion business, in which his company is interested, said that he had found that through routing of cars over electric lines pleased the people better than combined electric and steam interline arrangements. He also believed the subject should be studied further.

#### UNIFORM DEFINITIONS

The subject of uniform definitions was brought up for the fourth time by the committee that had been assigned in 1912 to develop a code of terms used in electric railway work, and a request was made that some definite action be taken on the matter by the convention. The committee presented as an appendix to its report a list of definitions that had been recast from the list submitted to the 1914 convention, these being offered for the approval of the convention. If, however, the work of fixing a more complete list was to be undertaken to the various associations in accordance with the request of the committee, it was proposed that action on the list be deferred until some future convention, when a general report on terminology might be ready for discussion. The report was signed by J. V. Sullivan, chairman; W. C. Greenough and Frederick Nicholas.

In order to carry out the recommendation of the committee, L. H. Palmer, Eastern Pennsylvania Railways, Pottsville, Pa., moved that the report be referred to the executive committee for consideration, with the recommendation that a committee of representatives of the several associations be appointed to study the whole subject of uniform definitions. This motion was carried.

After the presentation of the above report, H. C. Donecker, Public Service Railway, Newark, N. J., read his paper on "The Development of Schedule Makers." This is abstracted elsewhere.

The discussion of Mr. Donecker's paper was opened by Edward Dana, Boston Elevated Railway, who emphasized the importance of this subject in view of the fact that men must be able to explain the matter of schedules to public bodies. There are many factors involved in making of schedules, at least six weeks being required to turn over the timetables of a property like the Boston Elevated Railway. The company should provide reasonable forces for this department, and should realize that days or even weeks may be necessary in making comparatively small changes in the schedules. Many railway officials do not realize this fact.

Alexander Jackson, Public Service Railway, Newark, N. J., reiterated Mr. Dana's statement regarding the difficulty of turning over the timetable of a railway. So many details are involved in this, on a large property, that the six weeks specified by Mr. Dana are none too much. Much money can be wasted through the use

of improper timetables. They should be so made that the public is satisfied that the company is doing its best to give good service, that employees will be satisfied through reasonable wages and working conditions, and that due consideration may be paid to the income. There are evidently many problems involved in the making of schedules.

L. C. Bradley, Stone & Webster, Texas District, Houston, Tex., then read a paper on "Training Men for Supervisory and Executive Positions," which is abstracted elsewhere in this issue.

R. T. Sullivan, Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, opened the discussion. He indorsed the qualifications set forth in the paper, but was of the opinion that hopeful-mindedness should be added. This quality was of vital importance in operating and supervisory officials in order to counteract the effect of ever-present public criticism. A cheerful and hopeful official makes a much better man for his company in its relations with the public, Mr. Sullivan said, while surprised at Mr. Bradley's statement of the failure of boyhood leaders to make good, was of the opinion that this was due to inordinate ambition. Selfish motives frequently governed their decisions rather than the general good of the company by which they were employed. Mr. Sullivan did not believe that limit should be placed on the class of employees to be trained for supervisory and executive positions, but that the road should be kept open to all who were ambitious. In closing he said that social gatherings were also very important in developing *esprit de corps*. This cannot be developed by facts and figures, but must come as a result of social intercourse. The day of the aloof, domineering executive officer is over, and he has been succeeded by one who looks upon his organization as a part of his family.

S. D. Hutchins, Westinghouse Traction Brake Company, Columbus, Ohio, complimented Mr. Bradley's paper very highly, and he was of the opinion that much of it should be preserved for subordinate employees. Continuing, he said that men are sometimes promoted from the ranks and their whole attitude of mind toward their subordinates changes. Frequently, this created ill feeling among the employees and trouble followed. Mr. Hutchins was of the opinion that the paper prescribed a method for training employees that would not produce that sort of an official.

At this point President Nicholl turned the meeting over to President Lindall of the Engineering Association, who in turn opened the joint session. The proceedings of this are covered in the Engineering Association report for Tuesday afternoon.

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### Wednesday's Session

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The Transportation & Traffic Association met on Wednesday at 2.30 p. m. in a joint session with the Accountants' Association to consider committee reports on the cost of rush-hour service, fares and transfers, and express and freight traffic, and also to discuss prepayment systems and to listen to an address by Prof. Clyde L. King, Wharton School of Commerce, University of Pennsylvania, on "Some National Issues in Local Street Railway Franchises." The report of the committee on rush-hour service was read by J. V. Sullivan, Chicago Surface Lines, chairman; the one on fares and transfers by J. T. Moffett, Washington (D. C.) Railway & Electric Company, and the one on express and freight traffic by F. D. Norviel, Union Traction Company of Indiana, chairman.

COST OF RUSH-HOUR SERVICE

The report of the committee on the cost of rush-hour service was more in the nature of a progress report, not aiming to give definite conclusions as to the best method of proving such cost. The committee suggested to member companies (except those having elevated or subway lines) a tentative method of computing rush-hour cost, but the three reporting companies whose data forms the greater part of the committee's report deviated more or less from the suggested method, and the result was a varying ratio between rush and non-rush-hour cost. The committee presented in detail the data submitted by each company, with description of the methods of computation used, and also distribution data regarding fixed and variable expenses from the publication of the Bureau of Fare Research on "The Cost of Urban Transportation Service." One of the most interesting exhibits presented by one company, the committee stated, was in the form of a diagram showing the revenue, cost and net income per passenger for a

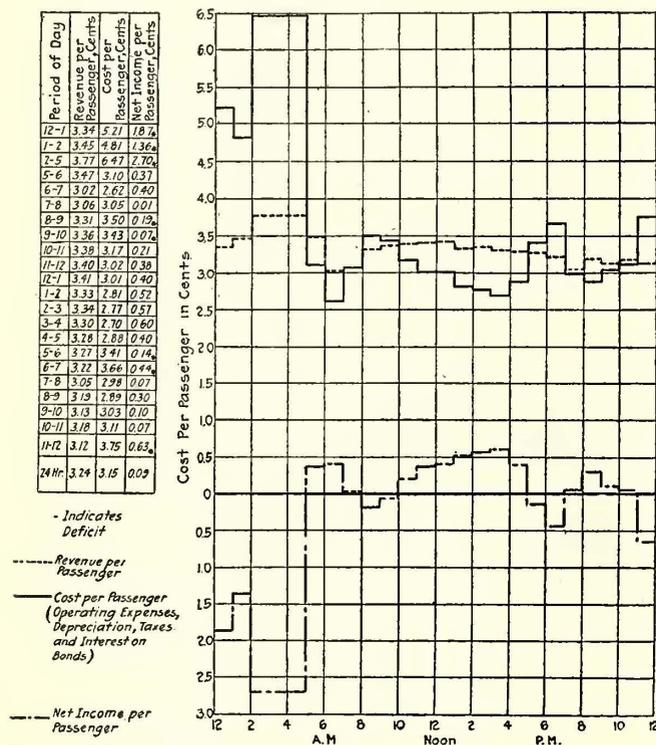


CHART SHOWING REVENUE, COST AND NET INCOME PER PASSENGER ON TYPICAL WEEK-DAY FOR ONE COMPANY

typical week day. The accompanying reproduction of this shows a deficit in hours for the periods from 12-1, 1-2, 2-5, 8-9, 9-10, 5-6, 6-7 and 11-12.

In the opinion of the committee the general adoption of a plan of "day-light saving" probably would not assist materially in lowering the cost of rush-hour service, but its application in separate factories and stores here and there would doubtless be helpful. In conclusion, the committee stated that it is apparent to railroad men that any increase in business can decrease the cost of production only when the increase is distributed so as to make possible a more efficient use of existing equipment. Whenever that increase is concentrated so as to require more equipment, the cost of production per unit of service is increased, and consequently the cost of peak-load service is higher than that of normal service. A rate schedule, to be equitable to all consumers of a public utility, should make persons who need and create the peak-load service pay a price which will be commensurate with the extra cost of the service they

are receiving. That principle is nearly always recognized in the making of electric lighting and power rates, but it has rarely been observed in rate making for electric railways. If it is not possible, however, for a street railway to charge a higher rate during rush hours, it does seem reasonable that the company be allowed to charge the same rate of fare as during the non-rush hours, rather than a decreased rate, as is done by workmen's and other forms of tickets which are good only during rush hours. Similarly, the objection holds good that the return on investment should not be further impaired by requiring the use of more cars during the peak hours where service is already highly concentrated.

The committee recommended that the study be continued next year by a larger committee, having representatives from the Transportation & Traffic, the Engineering and the Accountants' Associations; that the member companies assist more actively in furnishing the information requested; that future studies of the problem include a separate investigation of rush-hour costs on subway and elevated lines, and that the American Association be urged to assist in promoting an appreciation by large industrial establishments of the acuteness of the rush-hour problem and the possibilities of improving rush-hour conditions by adjusting the opening and closing hours for work.

The report was signed by J. V. Sullivan, chairman; A. T. Warner and H. B. Potter.

DISCUSSION ON RUSH-HOUR COSTS

In opening the discussion of this report, Edward Dana, Boston Elevated Railway, stated that the committee had taken a long step forward in the analysis of the cost of rush-hour service. In his opinion, until the companies could explain the facts of this matter fully to public service commissions, they could not expect the commissions to view with as much seriousness as they themselves the question of adding service during the rush hours. A. T. Warner, Public Service Railway, Newark, N. J., mentioned the past studies made by his company along this line and said that if the work were to be done now, the railway would have to consider charging a large part of the cost of the new terminal to rush-hour service, for if it had not been for the rush-hour problem the terminal would not have been built for some years to come.

Prof. A. S. Richey, Worcester Polytechnic Institute, noted that public service commissions had generally recognized that electric lighting and power rates should be higher for rush-hour service than during the off-peak hours, but that in the case of street railways no recognition of a higher rush-hour cost was given except through telling the passengers not to expect non-rush-hour service in rush hours. In some localities, it is true, rates had been made lower during the rush hours either through workman's tickets or through a general fare reduction, but in a general fashion this was known to be a mistake, and the association was doing well to try to provide a method of proving the fact. Whatever variation there might be in the results secured by different methods of computing rush-hour costs, owing to the differences of individual judgments in their application, they would all show that service costs at least as much in rush hours as in non-rush hours, and that the companies ought to be relieved of lower fares in rush-hours.

According to Mr. Warner, he had found in his investigations that while the passenger traffic was much greater in rush hours the amount of service demanded was also much greater. In other words, the number of transfers and the average length of ride per passenger

were greater in rush hours. In one case a ratio of 31 per cent for transfers to passengers in the middle of the day was changed to 40 per cent between 5 p. m. and 6 p. m., and the average length of ride per passenger was 14.8 per cent greater during this hour than in the middle of the day. Mr. Sullivan suggested the advisability of further study of rush-hour service being handled by a joint committee of the Engineering Association, the Transportation & Traffic Association and the Accountants' Association, and the report was accepted and this recommendation referred to the executive committees.

#### FARES AND TRANSFERS

The report of this committee contains a digest of the reports of previous committees on the same subject. A part of its report is devoted to statistics showing the percentage of transfers issued to revenue passengers carried on the 122 roads replying to the data sheet. The highest percentage shown is 74, and only nine lines report that they do not have free interchange of passengers at some point on their lines. Of 103 roads answering the question in regard to the delivery of transfers from the printers, twenty-seven have the transfers delivered to the general manager or superintendent, thirty-one to the accounting or auditing department, twenty-four to the storekeeper, ten to the general office, ten to the ticket or purchasing agent, and one road prints its own transfers. On sixty-three out of 113 roads the conductor punches the month, day, time and destination. On the other lines one or more of these designations is printed, punched by a clerk, designated by colors, or not shown at all. Transfers collected by conductors are turned in at the end of the day on seventy-seven roads, at the end of each trip on twenty-five roads, and at the end of each half trip on eleven roads. Other statistics of the use of transfers and the practice of the different companies are presented in the report.

While it is impossible to eliminate entirely the use of paper transfers, the committee recommends where possible the establishment of inclosed areas at large transfer points so as to obtain bodily transfer, because just as long as transfers are delivered to conductors for issue there will be some abuse of the privilege. For the collection of fares at such prepayment areas, the committee strongly recommends wherever possible the elimination of tickets and the collection of fares by means of a motor-driven fare box. While this device requires change makers, their number does not equal the number who would be required to sell tickets, and passengers are said quickly to acquire the habit of having the exact fare ready.

In conclusion, the committee recommends the appointment of a special committee to sit with a joint committee of the Accountants' Association on the whole question of transfers, that member companies give their support and encouragement to manufacturers in their effort to perfect a transfer-issuing machine, and that where transfers are issued they be printed where possible with day, date, month and year, and that the same color be not issued on consecutive days.

The report is signed by C. S. Ching, chairman; G. L. Radcliffe, Bruce Cameron, J. T. Moffett and B. C. Edgar.

#### OPINIONS ABOUT FARES AND TRANSFERS

Mr. Sullivan thought the transfer question was one which deserved thorough study. As a point in favor of a company printing its own transfers, he mentioned the possibility of a leak in the outside printing office. One company had to destroy 1,000,000 transfers because

duplicate numbers had been run off by the printers and put in circulation. In another case it was found that transfers were swept up from the floor of the printing establishment and used. In regard to using transfers on which the month and day must be punched, instead of transfers printed for each day, Mr. Sullivan said that that use of the former transfers would reduce the cost of printing on account of no large excess being needed for each day, but that companies would probably admit the greater risk involved in using transfers valid for any day in the year, on account of the temptations for conductors to dispose of them. As to the registration of transfers, Mr. Sullivan stated that where the number in use was not so great as to prohibit the checking up of transfers to compare with the register statements, registration should be used. He said that it was advantageous to have the transfers placed in envelopes at least every round trip, boxes being placed at convenient terminals rather than on the cars. Furthermore, he felt that carelessness in regard to punching transfers was the principal cause of ill-feeling on the part of patrons, but it seemed that no amount of instruction would train every conductor to punch transfers as he should. It behooved a careful superintendent, however, to minimize this evil.

J. E. Duffy, New York State Railways, Syracuse, N. Y., believed that a check of transfers was worthy of consideration, inasmuch as it might show where re-routing might help riders. As for a transfer-issuing machine, if it could be made to occupy a small space, print legibly and reduce transfer costs to a minimum, there would be a good field for such a machine. He thought that the printing of the day, date, month and year on the transfers would be advisable for large companies, but that the waste might be prohibitive for small companies. He admitted, however, such transfers would probably give better satisfaction than no fraud was being committed. In regard to a joint committee with accountants for considering the questions of fares and transfers, Mr. Duffy thought that the executives of the companies should be the only ones to consider the question of transfer costs and the accountants should only follow orders and provide the transfer system desired.

W. F. Ham, Washington Railway & Electric Company, averred that it was just as proper for the accountants to make recommendations in regard to the proper spending of money along transfer and other lines as it was for the transportation officials to do so. The members of the accounting department would always follow instructions, but it would be wise to cooperate with them to find out whether any good was being accomplished by such instructions. To Mr. Ham's mind the question of the proper issuance of transfers was fundamental, and he asked whether it was reasonable, practicable or desirable to hold conductors strictly to a correct punching of transfers. Operating conditions, he said, made it difficult for conductors to punch transfers correctly at times, and unless the act was performed correctly there would be very little advantage in checking the transfers and trying to hold the conductors to rules.

J. F. Ohmer, Ohmer Fare Register Company, stated that the advantage of a transfer printed by a machine on the spot over one previously printed and punched was obvious, and that the saving to the conductor through the former transfers was also obvious. Manufacturers were trying to produce machines that would meet all requirements, but it was necessary that the requirements be brought to their notice. For this reason he asked that the transfer machines on exhibition at the convention be carefully examined and criticized.

The report of the committee was thereupon accepted as rendered.

#### DISCUSSION ON PREPAYMENT SYSTEMS

The discussion on prepayment systems was opened by J. W. Brown, Public Service Railway, Newark, N. J., who, after describing the origin of the prepayment system, stated that the orderly movement of passengers and the business-like collection of fares under this system constituted a great improvement over the results of the old method. The prepayment principle on city lines was an undoubted success. Experience had indicated an increase in gross of from 5 to 12 per cent, and the public generally agreed that the plan was meritorious. Mr. Brown also spoke in favor of the use of fare boxes on prepayment cars. J. E. Gibson, Kansas City Railways, presented a historical review of the development of prepayment operation in Kansas City and stated that the plan was satisfactory to the public and the employees. He also described the success of front end collection in Kansas City as regards time saving in loading. He thought that the prepayment idea could be further developed along the line of perfecting a system of registration for all classes of fares.

A. Gaboury, Montreal Tramways, stated that the first modern pay-as-you-enter car was put in service in Montreal in 1904 on the St. Catherine Street route. In his opinion, if the company should to-day wish to return to the old system of the conductor going through the car, it would not be permitted to do so. After experimenting with long platforms, some as long as 9 ft., his company had found the ordinary platform quite suitable for all ordinary requirements, and had suffered delay through congestion only in exceptional cases, such as at ball games or at extraordinary places where large crowds had to be handled at once. It was interesting to note, however, that the large loading platform was again being brought forward in some cities, notably Cleveland, where the whole front half of the car was being used as a loading platform to speed up the car.

According to Mr. Gaboury, experience had shown that the benefits derived from pay-as-you-enter cars were far-reaching both to the companies and to the traveling public. They had done much toward eliminating missed fares, facilitated loading, helped to speed up the service, contributed to the comfort of patrons and created a revolution in the prevention of accidents. As to the elimination of lost fares, the increase in earnings when these cars were put on the road was marked and is on record, not to be disputed. Some improvements had been made since the first cars came out and others would doubtless be thought of, one of which would be to narrow the passage past the conductor, so that only one person could pass at a time, and rushing the conductor would be prevented. Mr. Gaboury had prepared sets of photographs, showing the evolution of pay-as-you-enter cars in Montreal.

N. H. Brown, International Railway, Buffalo, N. Y., firmly believed that the adoption of the prepayment idea ranked with the adoption of electrical energy for car operation. Revenue thereby had been increased 10 per cent through the elimination of fare dodgers, the avoidance of skipped fares in crowded cars and the control of dishonest employees. He believed that the system was the best one in use at present, although some time there would probably be developed a scheme for paying fares and receiving transfers before entrance to the cars in order to expedite traffic. In reply to a query as to the relative efficiency of center-entrance cars and rear-entrance cars, A. H. Woodward, International Register Company, stated that in Los Angeles seventy-five coin boxes had been placed in center-entrance cars, but

that owing to the loss of fares through the arrangement of exit railings no gain was shown over end-entrance cars. The railings had been changed and the loss avoided, but there had been no time since to make a check as to the relative efficiency of the two types.

#### EXPRESS AND FREIGHT TRAFFIC

The committee on express and freight traffic subdivided its work between two sub-committees, to one of which was assigned the study of contracts with old-line express companies, the subject for the other being "Handling of Freight."

The first sub-committee was to endeavor to ascertain which style of contract is the most favorable from a revenue standpoint from old-line express companies: "A tonnage basis," "a mileage basis," or "a prorate of the rates," and to secure a form of contract which the committee may recommend for the use of traction lines in executing traffic agreements with the old-line express companies.

In reply to queries from the committee it was learned from twenty-six companies that of these all but one have contracts with one or more old-line express companies. Fifteen have contracts with Wells, Fargo & Company, six with the American Express Company, five with the Adams Express Company and one with the Dominion Express Company. One company has contracts with two old-line express companies and one company has contracts with three old-line express companies. Of these companies sixteen have entered into contracts on a rate prorate basis, eight on a tonnage basis and one company provides service, for which it receives a certain stipulated amount each month. Twenty of the companies have entered into exclusive contracts, that is, contracts which prevent doing business with any other express company than the one contracted with. Five have non-exclusive contracts. In addition to carrying old-line express, seventeen of the member companies handle local express on passenger trains, receiving for this service a higher compensation than that provided by the regular freight rates. The term local express here used refers to that class of service which provides for the carrying of certain commodities covered by classification on regular passenger cars. In other words, it is non-pickup or delivery express service. Nine companies do not render service of this class. In general, it is the practice of the electric railways to handle old-line express on regular passenger cars, which are provided with baggage compartments. A number of the member companies are obliged, on account of the large volume of business offered by the express companies, to furnish one or more trains a day for their exclusive use.

From data received and tabulated by the committee it was learned that in practically all cases the rate prorate basis of settlement produces the best financial returns to the contracting electric carrier. This is due to the fact that the minimum short-haul charge used in the basis of rate making is in favor of the short line. To illustrate this point, in one case the local rate for carrying 100 lb. 99 miles is 75 cents and for carrying 100 lb. 25 miles is 40 cents and 100 lb. 20 miles is 40 cents, and for carrying 100 lb. 150 miles is \$1. This shows a variation from 2 cents per mile per 100 lb. to two-thirds of 1 cent per mile per 100 lb.

With respect to the compensation received by the carriers, there is a considerable range. Seven companies furnishing data receive 50 per cent, five companies receive 45 per cent, one company receives 40 per cent and one company 15 per cent of the gross revenue accruing to the express company from the carrying of express over the electric company's lines.

There is no established practice as to the furnishing of terminal facilities by the electric companies for the express companies. In some of the contracts these facilities are provided for without extra compensation to the electric company and in other cases the electric company furnishes these facilities, receiving therefor stipulated rentals. The same is true with respect to furnishing of extra equipment for the exclusive use of the express company and with respect to furnishing the services of trainmen to look after the handling of express on the passenger trains, when same is not accompanied by express messengers.

It is the general practice of the express companies to employ as their agents, in small towns, the agents of the electric companies. Such services are usually paid for upon the basis of 10 per cent of the business originating at or delivered to the point at which the agent is so employed. It must be borne in mind that in order to ascertain which style of contract is most favorable to the electric railway companies, a thorough study of local conditions must be made. If the member company's mileage is sufficiently long so that it may expect, by reason of such mileage, to secure a proper proportion of the gross operating revenues, by reason of the handling of express over its line as either originating or intermediate carrier it might safely enter into a contract on mileage basis. It was the opinion of the committee that the average electric railway will fare better by rate prorate style of contract.

A recommended form of contract was included with the report.

On the subject of handling freight some valuable data were collected by the sub-committee. These show that about 95 per cent of the lines replying are handling freight locally and a majority of them also handle inter-line business. The use of trail cars is also becoming more general, supplementing the motor freight car, or being operated in trains with electric locomotives. Where the volume of tonnage will justify this mode of operation, it materially reduces the cost per ton. A large number of the lines have adopted the steam line scale of freight rates, while a few carry individual scales to meet local conditions. About half the lines interchange carload and less than carload business with their interurban and steam line connections on the basis of through rates with audit office settlements; a number interchange on the basis of sums of locals, or proportional rates, and a few have different methods with different connections.

Eleven lines report an increase and ten a decrease in tonnage for the year 1915. The report of gross revenue shows an increase for fourteen lines and a decrease for twenty-one, while twenty lines show an increase in freight revenue as compared with a decrease on seventeen. With the conditions existing in 1915, this showing would seem to demonstrate the fact that the freight business of interurban lines has not yet reached the fullest development, but may be still further expanded, furnishing another source of income without an excessive increase in operating expenses.

Nine lines report additional traffic arrangements with steam lines consummated during the year 1915, which shows a tendency toward the elimination of the barrier between steam and interurban railways.

A further investigation of the freight situation developed a new phase which threatens to be a very perplexing question in future freight rates. Prior to the Cummins amendment of the act to regulate commerce, railroads carried what has commonly become known as "released rates"; however, with the above amendment in lieu of "released rates" the act as it now stands permits the use of graded rates—to cover "different

valuation" increased bulk with no increase in weight, and like conditions on like or analogous articles. This principle seems to be fully recognized in recent decisions. While a classification covering rates based on this plan would entail a vast amount of labor and expense, it is undoubtedly the only intelligent way of making rates on a parallel with valuation and liability. This plan, in the last official classification, has been recognized, especially in the handling of household goods and of livestock. And while it seems that the commission on one hand, and the railroads on the other, have a fair understanding as to the end to be arrived at, they have as yet apparently been unable to arrive at a common ground (except in a few instances, *i.e.*, baggage, household goods, and livestock) in the application of this principle.

The question has been before the courts, and in recent decisions the courts have been inclined to interpret the act favorable to and recognizing graded rates. In other words, if any freight, regardless of its liability of damage or its valuation, is accepted for transportation by a carrier, that carrier is liable for any loss or damage up to the full invoiced value of such article, its only relief being in some form of a graded rate adequate to cover increased or excessive carrier insurance.

The question of graded rates for handling baggage, covering weight value and bulk, has been established for about eighteen months, being in force by practically all steam carriers throughout the United States, and very largely used by electric lines, especially in the Central States.

There has been a vast amount of work investigating the question of livestock, which now seems to be fairly well settled by Case No. 6825 (40 I. C. C. 347-357), National Society of Record Associations et al. vs. Aberdeen & Rockfish Railroad et al., submitted May 24, 1915. Opinion No. 3816. This decision practically places equalization and carrying charges on such commodities in western, southern and official classification territories with the same graded increase for value in "rates on higher values to go up only 2 per cent on 50 per cent increase in value."

This report was signed by F. D. Norviel, chairman, H. J. Clark, W. S. Whitney, W. J. Whiteside, A. R. Piper and C. J. Munton.

#### DISCUSSION OF EXPRESS AND FREIGHT TRAFFIC

In discussing this report, J. H. Crall, Terre Haute, Indianapolis & Eastern Traction Company, was of the opinion that companies in the future would have to look to freight for an increase in revenues. He mentioned varying opinions as to whether electric railway freight rates should be higher than corresponding steam railroad rates, but said that there were indications in commission opinions and other sources that electric railways should meet the steam railroad rates. E. H. Hyman, Cleveland Railway, stated that it was a serious thing for any electric railway to enter into an agreement with an express company for the handling of purely local business, although a contract might be all right from points on the electric line to points beyond and vice versa. As regards the compensation to electric railways, he believed that a tonnage basis had an advantage over a pro-rata basis, inasmuch as under it all the money earned by the electric line could be secured within thirty days and the traffic could be checked. The report was accepted and ordered filed.

The last item on the program was the paper by Professor King, which is abstracted elsewhere in this issue. After its submission a rising vote of thanks was voted to him and the joint session was declared ended.

## Thursday's Session

The session of the Transportation & Traffic Association, held on Thursday afternoon, was opened by the presentation of the report of the committee on rules. Owing to the absence of the chairman of this committee, C. E. Morgan, Michigan Railway, Jackson, Mich., the report was presented by J. E. Duffy, New York State Railways, Syracuse, N. Y., a member of the committee. The report was adopted by the association without discussion.

### COMMITTEE ON RULES

The committee on rules presented a progress report in which it was recommended that the subject of signal rules be given further consideration by the incoming committee. The committee expressed the opinion that the existing standard rules are sufficient to cover the operation of trains of two or more cars, since it has been found that practically all member companies are using standard signals, although they are employing different mechanical methods for communicating such signals to the motormen.

The report stated that two questions involving interpretation of rules had been submitted to the committee during the year, and that action had been taken upon these prior to references to the executive committee for its approval. The report was signed by C. E. Morgan, chairman; Samuel Riddle, J. E. Duffy, M. S. Sloan, U. W. Berry, F. M. Hill and S. W. Greenland.

### COMPANY PUBLICATIONS

Following the presentation of this report there was a symposium on company publications in the form of written papers by F. W. Hild, general manager Denver Tramway Company; T. S. Wheelwright, president Virginia Railway & Power Company, Richmond, Va.; Leake Carraway, director of publicity Southern Public Utilities Company, Charlotte, N. C., and James H. Braden, general agent Northern Ohio Traction & Light Company, Akron, Ohio. In addition Mr. Hild read a suggestion on standardization of company publications prepared by Mr. Davis, editor of the *Tramway Bulletin*, which is published by the Denver Tramway Company.

An abstract of these papers appears elsewhere in this issue.

The discussion on company publications was opened by A. D. B. Van Zandt, Detroit United Railway, who said that the publicity man is not one to suppress news and that publicity is not to be started in days of war. Preparedness is necessary in this field and the department of publicity should be as well organized as other departments, so that it can anticipate the pulse of the public. The association should assist in the organization of publicity departments as in other branches of the electric railway field. The man responsible for publicity work should not lay down rules which are too rigid as to material and size of publications and publicity work should have a wide range. He should be a trained newspaper man who has learned electric railway work or vice versa. In Detroit, the public seems to look upon the company publication, *Electric Railway Service*, as if it were independently published. Mr. Van Zandt thought that no company should refrain from the publication of periodicals on account of the cost, and that the company would be justified in carrying appropriate advertising if necessary.

H. A. Bullock, Brooklyn Rapid Transit System, said that in approaching this subject it was important to

have in mind the principles outlined by Mr. Lee in his American Association paper. The principles must be sound, as no amount of attractiveness in appearance of material will take the place of such soundness. Publicity material should be divided into two parts, that which is suitable for publication in a company organ and that which should be published elsewhere. Newspaper advertisements, car cards, etc., have their place. When dry facts have to be presented lucidly, display type in newspapers is valuable.

Regarding company publications Mr. Bullock said that there are two radical divisions of these, those for distribution on cars and those for employees. It has been questioned whether the periodical is the best medium, or whether irregular although possibly frequently issued circulars on special topics are best. Conditions differ in different communities, and each situation demands a careful analysis to determine the most effective ways. Irregular publication might be best for a metropolitan district where ground is raked carefully by the newspapers.

Mr. Bullock did not agree with Mr. Wheelwright in believing that controversial questions should be avoided in these publications. Ambitious politicians are apt to pre-empt newspapers and it is difficult for a corporation to get facts before the public through ordinary channels. Special bulletins afford an opportunity to tell the facts. When a bulletin is not needed for special questions it can discuss safety, welfare, insurance, suggestions regarding co-operation, etc. The *Brooklyn Rapid Transit Monthly* is made up of several parts. The covers carry an attractive design and bulletins, there is an editorial by the president and feature articles or write-ups. The balance is filled with news of departments, safety, benefit fund data, etc. Twenty-five thousand copies are printed.

G. T. Seely, Metropolitan West Side Elevated Railroad, Chicago, stated that his company has two publications, one for employees and one for the public. These are used partly for publishing commendatory letters and the effects upon the employees are excellent. A newspaper man is engaged to prepare material for these papers which are each of about eight pages.

Mr. Carraway moved that the executive committee consider the matter of company publications with a view to encouraging a co-operative spirit, and the motion was passed. After votes of thanks for these papers and resolutions of appreciation for the efforts which had been made to render the convention a success, the following were elected on nomination by the nominating committee:

President, L. C. Bradley, assistant district manager Stone & Webster Companies, Houston, Tex.

First vice-president, W. H. Collins, general manager Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.

Second vice-president, R. P. Stebens, president Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.

Third vice-president, L. H. Palmer, acting general manager Eastern Pennsylvania Railways, Pottsville, Pa.

Executive committee: R. B. Stearns, vice-president Milwaukee Electric Railway & Light Company; H. C. Donecker, assistant general manager Public Service Railway, Newark, N. J.; J. J. Dempsey, superintendent elevated transportation Brooklyn Rapid Transit System, and H. B. Potter, assistant to vice-president Boston Elevated Railway.

After the president-elect had been escorted to the chair by L. H. Palmer and R. P. Stevens, he accepted the responsibilities of his office, stated the closing convention was the best in the history of the association and declared the meeting adjourned.

## The 1916-1917 Association Presidents

**L**UCIUS S. STORRS, last year first vice-president of the American Association, was elected its president at the Atlantic City meeting. He was similarly promoted from the vice-presidency of the Connecticut Company, New Haven, Conn., to the presidency of that company in December, 1913, the position which he now holds.

Mr. Storrs takes up the presidency of the Association at the age of forty-seven years, after long experience in the work of the Association and of the industry which it represents. He is an alumnus of the University of Nebraska, class of 1890, and while in college followed a scientific course. He is entitled to append the letters "A.M." to his name should he care to do so. For about seven years after graduation he was on the staff of the Colorado Fuel & Iron Company with the title of geologist, leaving this company for a position with the Northern Pacific Railroad.

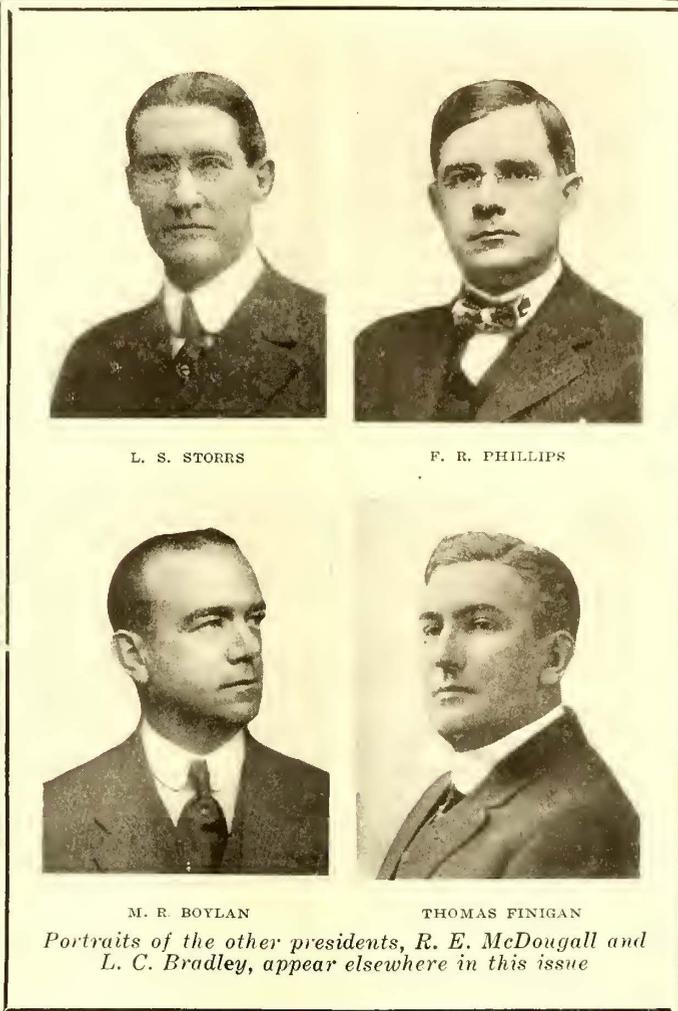
Mr. Storrs' occupancy of his present position is the direct and logical outcome of the step which he took in 1906, in entering the organization of the New York, New Haven & Hartford Railroad, as he was made vice-president of the New England Investment & Security Company, a New Haven subsidiary, with headquarters in Boston, the following year. Soon thereafter he became president of the company. In 1908 he established headquarters in Springfield, Mass., having charge of the administration of a number of electric railway properties, with particular interest in the development in the central Massachusetts territory of both passenger and express service and the coordination of several systems into an organization of improved earning power and efficiency. In June, 1911, he was elected vice-president of the Connecticut Company and of the New York, New Haven & Hartford Railroad the following year. In December, 1913, he became president of the Connecticut Company.

Mr. Storrs is a member of numerous scientific and professional organizations, including the Sigma Xi Society and the American Institute of Mining Engineers.

**M**ATHEW R. BOYLAN, the newly-elected president of the Accountants' Association, has served on many important committees of the Association. He was its first vice-president in 1910, and since 1912 has been its secretary-treasurer. His promotion to the presidency is in accordance with the plan suggested by President Kilfoyle, of putting into the responsible positions

those whose work has most thoroughly familiarized them with the details of the Association's problems.

Mr. Boylan is at present general auditor Public Service Railway, Newark, N. J. For twenty-four years he has been continuously connected with the New Jersey railways. He began his work as stenographer and clerk in the office of C. B. Thurston, president Jersey City & Bergen Railroad when it was a horse-car line. After the road was electrified he served in the transportation department, the shops and the power generating stations of the company. In 1899 Mr. Boylan entered the general auditors' department of the Consolidated Traction Company, which had absorbed the Jersey City & Bergen Company and was leased to the North Jersey Street Railway. He served as voucher clerk, bookkeeper, chief clerk and assistant auditor in this department. The North Jersey Street Railway was acquired by the Public Service Railway in 1903, and since 1904 Mr. Boylan has been the general auditor of the latter company, with headquarters at Newark, N. J.



**F**RANK R. PHILLIPS, the new president of the Engineering Association, is one of the pioneers in the design of light-weight cars and equipment, and has developed numerous labor-saving devices in repair-shop equipment. He is superintendent of equipment of the Pittsburgh Railways, having taken this position on Jan. 1, 1910.

Mr. Phillips was born in Cleveland, Ohio, Oct. 29, 1876, and obtained his early railway experience in that city. He was first employed by the Cleve-

land City Railway in 1894 as clerk in the transportation department, and later served successively as rodman in the way department, switchboard operator, boiler fireman, shop electrician, mechanical draftsman and inspector, and general foreman of shops. While engaged in this work he took up the study of mechanical engineering by private instruction, attending lectures at night. In addition to the general apprenticeship mentioned, Mr. Phillips has held the positions of master mechanic of the South Covington & Cincinnati Street Railway, chief engineer of the Michigan United Railways and engineer in charge of railway work for the Ohio Brass Company.

In connection with his work Mr. Phillips is an advocate of the co-operative system of training for engineering students as promulgated by Dean Herman Schneider of the University of Cincinnati. He believes with Dean Schneider that the application of theory to practical

uses during college training tends better to fit the student for life work at the time of graduation. His particular hobbies are production efficiency and the development of uses for waste materials. He has served as member of a number of association committees and as chairman of the committee on equipment for several years. He is most particularly interested in the work of the committee on standards.

**R.** E. MCDUGALL, the newly-elected president of the Claims Association, has been its acting president since the mid-year meeting of the Association held in Chicago, Ill., on Feb. 4, 1916. At that time the executive committee elected him to fill the position left vacant by George C. Carson, claim agent Puget Sound Traction, Light & Power Company who, having severed his connections with the company, was no longer eligible.

Mr. MacDougall has been prominently connected with the association for several years and has been on important committees. He served as vice-president from 1913 until he was made acting president last winter. Prior to his work in the railway industry, Mr. MacDougall was a lawyer with Kernan & Kernan, attorneys, Utica, N. Y. He severed his connection with this law firm to become claim agent for the Utica & Mohawk Railroad and the Oneida Railway. After several years' service with these lines, he went to Rochester to take the position of claim agent of the New York State Railways, Rochester Lines, with which he has been associated for about four years. He is a member of the Rochester Club, the Oak Hill Country Club, the Rotary Club of Rochester and the Rochester Chamber of Commerce. A portrait of Mr. MacDougall will be found elsewhere in this issue.

**L**UKE C. BRADLEY, the new president of the Transportation & Traffic Association, is an engineer of wide experience secured on properties scattered

widely throughout the United States. This has come about through his association with Stone & Webster and J. G. White & Company particularly. In the several cities where he has resided he has taken an active part in civic affairs.

The important positions which Mr. Bradley has occupied before his present one are: General superintendent Puget Sound Electric Railway, Seattle, Wash.; general manager Key West Mining & Railway Company, Salt Lake City, Utah; general superintendent Tennessee Northern Railway, Knoxville, Tenn.; general manager Scioto Valley Traction Company, Columbus, Ohio; general manager of the J. G. White railway, lighting and gas properties at Pottsville, Pa.; manager Galveston (Tex.) Electric Company, and vice-president Houston (Tex.) Electric Company and Galveston-Houston Electric Railway. Since 1913 he has been assistant district manager Stone & Webster Companies, Texas District, with headquarters at Dallas. In this position he has control over the street railways and other corporations in Galveston, Dallas, Fort Worth, Beaumont, Port Arthur, Houston and El Paso, and several inter-urban railways.

**T**HOMAS FINIGAN, manager sales department American Brakeshoe & Foundry Company, San Francisco, Cal., who was re-elected president of the Manufacturers' Association, was formerly in railway operating work, having entered the employ of the Consolidated Traction Company, Newark, N. J., in 1898. He soon became assistant master mechanic, and in 1903 entered the mechanical department of the United Railroads of San Francisco. He became purchasing agent for the same company in 1907 but resigned in 1913 to enter commercial work.

A biographical sketch of Mr. Finigan was published in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 9, 1915, page 786.

## Manufacturers' Association Activities

After an Analysis of the Situation by a Committee and Discussion by the Manufacturers' Association at Atlantic City, It Was Decided to Continue This Association for the Present

**M**ORE than 100 members of the American Electric Railway Manufacturers' Association attended the annual meeting held on Oct. 11 in the Park Avenue Hall of the Marlborough-Blenheim Hotel at Atlantic City. At this meeting a committee report of great interest was favorably considered and adopted, routine business was transacted, new officers were elected, and the manufacturers listened to a talk by Charles L. Henry, president of the American Electric Railway Association. Thomas Finigan, president of the Manufacturers' Association, presided.

After routine business had been transacted, President Finigan spoke of the events that had transpired since the San Francisco convention. At the San Francisco convention C. Loomis Allen, the then retiring president of the American Electric Railway Association, in his annual address had stated that the condition of the industry made it necessary to have the closest co-operation of all in order to obtain the best results. He further stated that the status of the Manufacturers' Association precluded the possibility of obtaining the necessary co-operation, and he recommended that manufacturers be admitted as members of the parent association on the same basis as railway company members.

Mr. Allen's successor, President Henry, in accord

with this suggestion, Mr. Finigan said, appointed a committee to formulate plans for obtaining the desired results. This committee was unable to formulate any definite plans, but at the mid-winter meeting in Chicago the constitution and by-laws of the American Electric Railway Association were so modified that manufacturers, as companies and individuals, could become members of the parent association. At that time Mr. Henry agreed with members of the executive committee of the Manufacturers' Association on a plan for jointly carrying on the work of the 1916 convention. Later, the parent association stated that it would undertake this work itself.

Mr. Finigan further stated that as this took out of the jurisdiction of the Manufacturers' Association the functions ordinarily performed by that association, the Manufacturers' Association for the first time in its history was deprived of the privilege of participating in the activities of the 1916 convention as an association, and the question then arose as to whether or not there was any necessity for continuing the Manufacturers' Association in its present form. After a full and free discussion of this subject at a meeting of the manufacturers' executive committee in New York on March 8, it was the sense of the members present, Mr. Finigan

said, that perhaps there was a work, aside from looking after the exhibits and entertainments at the convention, which this association could perform to promote the welfare of the electric railway industry, and that President Finigan, by resolution, had been authorized to appoint a committee of four to consider this phase of the situation and to report at the Atlantic City meeting. This committee accordingly had been appointed. It consisted of Messrs. B. A. Hegeman, Jr., chairman; James H. McGraw, M. B. Lambert and W. F. Cutler.

President Finigan told the manufacturers that Mr. Hegeman's committee had reported to the Manufacturers' Association executive committee and that it was the sense of the executive committee that the report be submitted to the annual meeting of the association with the recommendation that it be adopted. President Finigan then called upon Mr. Hegeman to present the report of the committee.

#### REPORT ON CONTINUING MANUFACTURERS' ASSOCIATION

Before reading the report Mr. Hegeman stated that at the meetings of the committee when the report was being formulated the committee members had industriously studied the question of just what the manufacturers could do to render service of greatest value to the American Electric Railway Association and likewise to the manufacturing companies. The subject had been approached with the spirit of good feeling, and, in accordance with the original resolution, Mr. Hegeman had consulted with the president of the Railway Business Association to learn whether its functions as performed by the steam railroads might similarly be performed by the Manufacturers' Association for the electric railways. It was thought, however, that because of the differences in the character of the steam and electric railways, one being interstate and the other largely local, that it would be impossible and impracticable to carry on similar work.

Mr. Hegeman then read the committee's report, an abstract of which follows:

"Your committee, appointed by our president at the meeting of the committee held at the Waldorf-Astoria, New York, March 8, 1916, for the purpose of considering the advisability of continuing the association, and, further, to formulate plans, if possible, looking to the use of our association to promote the interests of the electric railway industry, begs to report as follows:

"At a meeting of the committee held at the Shelburne Hotel Oct. 8, 1916, at which our president and all members of the committee were present excepting Mr. Cutler, and after a full and free discussion of the subject under consideration it was decided as the sense of the committee that the association should continue its existence for another year at least, as it is found the balance now in the association's treasury is sufficient to meet our expenses.

"The reasons that led your committee to recommend the action above outlined were:

"First—This is the first time that manufacturers and sellers of electric railway supplies have not participated as an organization in the activities of the electric railway convention. This is due to the action of the American Electric Railway Association at the meeting in Chicago, February last (1916), when they altered the constitution and by-laws so as to admit to full membership manufacturers as company members with all the rights and standing of railway companies.

"Second—That although manufacturing concerns are now members of the railway association their exact status has not yet been determined and its seems therefore desirable to preserve the organization at least one year."

After the reading of the report the president called upon Messrs. McGraw and Lambert for discussion. Mr. McGraw said that he believed in the principle that was adopted by the American Association at Chicago and that it was proper and fitting for manufacturers to become members of the American Association as they saw fit. He was, however, not in entire accord with the hastiness of the Chicago action. There were problems connected with the plan of the amalgamation in membership that still had to be solved. The manufacturers should be willing to work at these problems until the light appeared. He knew that they would work in the interest of the industry as a whole and in the right spirit. Already 208 manufacturers had joined the American Association.

It seemed desirable to retain the organization of the Manufacturers' Association, however, so that it could continue to voice the sentiment of the manufacturers to the parent association, and so that it could do any other work that might arise. There was reason for congratulation that every manufacturer could be a member of the American Electric Railway Association.

Mr. Lambert said that someone had raised the question as to the need for an independent Manufacturers' Association; why should there be two organizations? This question he answered by stating that there were frequently subjects of common manufacturing interest that were presented for discussion only from the manufacturers' standpoint. The plan of organization of the American Association did not provide the machinery for meetings on subjects purely of manufacturing interest. The report of the committee had been formulated only after discussions with many railway officials, practically all of whom thought it best to continue the Manufacturers' Association.

After short remarks by the president, the Association unanimously adopted the report of Mr. Hegeman's committee, thus determining to continue the American Electric Railway Manufacturers' Association on its present basis.

#### REPORT ON FINANCES

The chair then called upon L. E. Gould, vice-president in charge of finance for a report. Mr. Gould stated that because of the reduced association operating expenses in 1915, since there was no exhibit at San Francisco Convention, the annual dues had been reduced from \$30 a year to \$10 a year, and in 1915, no dues had been collected since the railway association had handled the exhibit and entertainment features. Mr. Gould abstracted the audit of the association books made as of Oct. 1, 1916. This showed that all bills had been paid, and that the Manufacturers' Association had a balance of \$1,679.72.

#### ELECTION

President Finigan announced that the following members automatically retired from the executive committee at that meeting: Messrs. L. J. Drake, F. A. Elmquist, Thomas Farmer, Jr., Bertram Berry and Thomas Finigan. The following nominating committee was then appointed: Messrs. McGraw, Lambert, Wickwire, Estep and Archbold. This committee after deliberation nominated and the association unanimously elected the following new members to the executive committee: Thomas Finigan, American Brake Shoe & Foundry Co., and L. J. Drake, Galena Signal Oil Co., to succeed themselves, and B. A. Hegeman, Jr., U. S. Metal & Mfg. Co., Dwight B. Dean, G. C. Kuhlman Car Co., and Edwin B. Meissner, St. Louis Car Co.

The new executive committee members were installed later in the day and they re-elected Thomas Finigan president and the following vice-presidents: Charles C.

Peirce, Daniel W. Smith, L. E. Gould and E. F. Wickwire. Fred C. Dell was elected secretary and L. E. Gould treasurer.

#### MR. HENRY ADDRESSES MANUFACTURERS

The Manufacturers' Association unanimously voted to request President Henry to address them on subjects of mutual interest. Mr. Henry spoke with much emphasis on the subject of the union of interests between manufacturers and railway men. These interests were now united, he said, in the work for the common good. Mr. Henry thanked the representatives of the manufacturers for the work that they had done for him as president in planning and executing the convention and entertainment details. He spoke of the reasons underlying the Chicago amendments and said that when he retired as president he could carry with him the highest regard for the manufacturers.

When considering how the new manufacturing members of the American Association could best assist in the work Mr. Henry had first thought that some plan might be suggested to the manufacturers as a group, but after continued study he had come to the conclusion that the manufacturers were the ones to decide what to do to complete the amalgamation. He announced, however, that the parent association would at once increase its executive committee membership by the addition of two or three representative manufacturers who would work with the president of the American Association, the four vice-presidents and the presidents of the four affiliated associations towards a final plan for amalgamation. Mr. Henry also said that if the manufacturers thought it desirable to organize an affiliated manufacturers' association, the president of that association, ex-officio, would be a member of the parent association of the executive committee.

## Other Features of the Convention

#### ANNUAL RECEPTION A GAY AFFAIR

The annual reception which from a social standpoint formally opened the convention was held Monday night on the convention pier and was largely attended.

In the receiving line were the officers of the several associations, namely Messrs. Henry, Storrs, Stanley, Kilfoyle, Lindell, Palmer, Nicholl and Burritt, with their ladies.

After the reception, an informal dance was given which lasted until a late hour. The music for the dancing, which was rendered by Caravana's Viennese orchestra under the guidance of Conductor Amorisi, and the tropical Marimba band, was delightful.

#### RED SPECIAL DINNER

Sixty-four of the party which traveled to the San Francisco convention last year on the famous Red Special train, sat down to dinner Thursday evening at the Shelburne grill room. The menu was printed in red; Red Special acquaintances were renewed and Red Special songs were sung. Speeches recalling different experiences of the trip were made by C. L. Henry, C. C. Peirce and C. Loomis Allen. The dinner lasted until about 9 o'clock, when the party adjourned to go to the ball.

#### MARDI GRAS BALL

One of the most enjoyable events in the social calendar was a Mardi Gras ball, given Wednesday night on the convention pier. As the delegates entered, they

were presented with paper hats, and they found the hall decorated with innumerable paper flags and lanterns, characteristic of the carnival spirit. The evening began with dancing, which was continued for half an hour, when an extraordinarily exciting game of polo was put on, the crowd being kept in order by four comedy cops. At the conclusion of the game, which was won by the Reds or Blues, no one knows which, there was a general dance. This was followed by a brief but very amusing skit on the presidential election, the actors being obviously home talent, but hardly distinguishable. After this came an especially graceful and interesting professional act, and then more general dancing, serpentine streamers being thrown from the balconies to make, with the shafts of colored lights thrown upon the floor, a remarkable picture for the onlookers. While the dance was going on, three Italian singers came on the floor and rendered a number of characteristic songs. Subsequently, dancing was continued until after midnight, concluding a most entertaining evening.

#### ANNUAL PROMENADE CONCERT AND BALL

The annual promenade concert and ball, which was the formal event of the week, was well attended and the program, which contained many delightful features which had been arranged by the entertainment committee, was carried out successfully. The festivities began with a grand march led by President Henry and other association officers. There were eighteen dances and numerous encores. The music was furnished by Caravana's Viennese orchestra and Tropical Marimba band. At this affair, as at other affairs earlier in the week, the enjoyment was heightened by specialties introduced between the dances. These specialties were high-class society circus attractions. The first one was a comedy act on the bounding mat. Later there was a special prize dance, in which Mr. and Mrs. Scott Crane figured. And last but not least came roller skating bears.

#### MILITARY BRIDGE PARTY A SUCCESS

The Solarium of the Marlborough-Blenheim presented a festive appearance Tuesday afternoon on the occasion of the military bridge tournament for the ladies, which was scheduled for 2.30 p. m. Altogether there were twenty-two tables and eighty-eight participants, all of whom hoped to win the prizes which had been offered by the entertainment committee. During the game refreshments were provided by the Marlborough-Blenheim. At the close of the contest eight bottles of La Bohème perfume were awarded as prizes to the same number of winners.

#### RESULTS AT THE TRAPS

Henry Lee, vice-president of the Railway Electrical Engineer, won the championship trap shooting contest at the end of the pier Wednesday, by scoring forty-six out of the fifty clay pigeons. Mr. Lee's exhibition was a most excellent one in this contest of one-barrel shooting, and it needed to be, since he was closely followed by L. M. Cargo, district manager of the Westinghouse Electric & Manufacturing Company, who finished second prize winner with forty-five to his credit.

#### INDOOR GOLF FESTIVITIES

During each morning of the week the indoor golf links at the Garden Pier were used by the ladies. These links have nine holes with hazards, tees and all of the other accompaniments of regular links, but are under cover. The course was greatly enjoyed, not only by those who played, but by those who acted as a gallery.

## NEWS OF ELECTRIC RAILWAYS

### SEVEN-CENT FARE UNIT AUTHORIZED

#### New Hampshire Commission Hands Down Decision in Manchester & Nashua Street Railway Case

In a finding dated Oct. 9 the Public Service Commission of New Hampshire authorized the establishment of a 7-cent fare unit by the Manchester & Nashua Street Railway in place of the existing 5-cent unit. The commission suggested the retention of the present fares for school children, together with a commutation ticket on a 5-cent basis in order that workmen might not suffer hardship by the general increase, although the board pointed out that it did not order the establishment of these reduced rates. The new 7-cent unit took effect on Oct. 16.

The line is divided into three fare limits of about 4 miles each, the middle zone being about 0.5 mile longer than the others and covering the principal residential district of the town of Litchfield. The capitalization of the Manchester & Nashua Company is \$240,000 in common stock and \$200,000 in 5 per cent bonds, the entire proceeds from the sale of the securities being expended in construction. To March 31, 1916, in nine years and three months' operation, the company had paid no dividends on its stock and had made no specific reserve for depreciation, but had accumulated a surplus of \$24,508. In the fiscal year 1915 the operating revenues were \$49,087; operating expenses, \$29,399; net revenue, \$19,688, and bond interest, \$10,000, leaving the net income of the company \$9,688.

As in the Manchester & Derry case recently decided, it was claimed by the company that operating expenses should be increased by much larger expenditures for maintenance, which it was testified should amount to \$500 annually per mile of track. In 1915 this standard would have involved the expenditure of \$6,187 additional on this item, reducing to \$3,501 the net income available for depreciation and dividends. This standard of maintenance is not considered unreasonably high, and the commission points out that if the standard were maintained, the depreciation requirements would be correspondingly reduced. Even with so high a maintenance rate, 1 per cent would not be a large depreciation allowance, and the net income remaining is insufficient to provide even 1 per cent on the investment, wholly apart from making provision for accrued depreciation.

The company has never paid taxes, but next year will come in for taxation, which the commission estimates at not less than \$6,000. It is also entitled to a fair return on its investment, if that can be earned at rates not unreasonable in themselves. A 6 per cent return has been used as the minimum to which the company should be restricted. On the principle laid down in the Manchester Street Railway rate case, this return is to be calculated on the whole investment, whether represented by stock or bonds, the company having been unable through deficiency of income to make adequate provision for depreciation. On a 6 per cent basis the company is entitled to receive \$16,400 in addition to the present return upon its investment, or \$22,400 above present revenue to meet all expenses including taxes, and to pay a 6 per cent return, with a small sum also added though not named, for depreciation reserve.

In addition to all this, the commission points out that the company "is constitutionally entitled to a fair return from the beginning of operation," and that this deficiency of nearly 60 per cent on \$240,000 must be taken into account, either by treating it as a cost of developing the business, and so increasing the amount of the investment upon which the return is to be computed, or by permitting a higher rate of return until the deficiency has been made good. The increase of fares from 5 to 7 cents, on the 1915 traffic, would produce an increase in revenue

of \$18,583, which the commission states is inadequate to provide for depreciation, taxes and a return of 6 per cent on the original investment, taking no account of the deficiency in return from operations hitherto. The commission says: "It is clear that we cannot justly, legally or constitutionally forbid the proposed increase unless the new rates are such as to be clearly unreasonable in themselves, as being more than the service is worth."

The road is occupied almost entirely with interurban service. Its local business is small and it is operating in active competition with the Boston & Maine, rendering a service which in point of speed is hardly inferior and in frequency is greatly superior. The commission states that the track and equipment are good and the service excellent and entirely satisfactory to the patrons of the company.

There is hourly service each way between Manchester and Nashua, increased to half-hourly in July and August afternoons. The trip of about 18 miles from Manchester City Hall to Main Street, Nashua, is made in 55 minutes. The trip between the same points by the Boston & Maine, involving two changes, from electric car to train and from train to trolley, can hardly be made in less time and often requires more. The cost of operation is less on the electric road and the accommodations not so commodious, but the board states that the difference is not such as to warrant any great disparity in rates. For the casual traveler, unless he walks about 0.5 mile in Manchester and nearly a mile in Nashua, the trip by train would cost 52 cents between the same points, or 48 cents by using a mileage book, against 31 cents by the electric road. The board states that "with these comparisons in mind it is impossible to say that the proposed new rates are unreasonable in themselves."

It is held that if school fares were increased, other means of transportation, less expensive and less satisfactory, probably would be provided, putting the townspeople to inconvenience and causing the company to lose such revenue. There is evidence that the running of a jitney bus for the accommodation of workmen is contemplated, and the cutting off of school and workmen's patronage would be clear loss to the company, as it would result in no reduction of service or diminution of operating expenses.

The finding states that there is at least grave doubt of the authority of the commission under any circumstances to order the giving of special rates to any special class of patrons where the cost of service is no less than for others, and it is certain that no such power exists where the proposed fares cannot at best produce the revenue to which the company normally would be entitled. It is, however, recommended that the company make no increase in school fares and that it sell commutation tickets, good for one ride in each direction, on every week day, on a 5-cent fare basis.

### PREPARATIONS BEING MADE FOR CONSTRUCTING NEW 130-MILE LINE

The Oklahoma & Northern Traction Company has been incorporated to build an electric railway from Bartlesville east to Miami and thence to Joplin, with a branch from Miami to Columbus, Kan., and another to Baxter Springs, where connection will be made to the lines of the Southwest Missouri Railroad into Joplin. The line will be from 130 to 135 miles in length, and the final locations and surveys are now going on and specifications are being prepared. Mason & Overlees, Bartlesville, Okla., have charge of the local work. W. K. Palmer & Company, consulting engineers, Kansas City, Mo., are in charge of the engineering and business matters connected with the enterprise and are the ones to be addressed on matters connected with the undertaking.

### MAYOR ADDRESSES PHILADELPHIA COUNCIL ON RAPID TRANSIT

Mayor Smith of Philadelphia, Pa., addressed a special session of Councils on Oct. 10, on the transit question in that city. The Mayor, in his address, said in part:

"I sought all the light available to have presented to you a complete and tangible working agreement, which, in turn, could be submitted to the Philadelphia Rapid Transit Company for the equipment and operation of the new lines, with the massive maps and data submitted to me was the draft of the agreement prepared some time in 1914 by the Director of Transit, the parties to which were the city of Philadelphia, the Philadelphia Rapid Transit Company and the Market Street Elevated & Passenger Company.

"I resolved that if the 1914 draft had, in that year, been formulated as a basis of negotiation for the equipment and operation of city-built lines, there was no apparent reason why it should not act in a similar capacity in 1916. I therefore instructed my director to bring the 1914 draft down to date, so as to include the new lines authorized by the 1916 ordinance and omit therefrom all reference to the Camden tube. This the director has done and the revised draft is incorporated in the proposed ordinance hereto attached. I would respectfully urge upon you that public opportunity be given for a full and free discussion of the terms so that the greatest problem facing the citizens and officials of the city may be honestly and equitably solved."

The ordinance introduced at the request of the Mayor provided for the construction by the city of the complete Taylor plan, and for the equipment and operation of this system by the Philadelphia Rapid Transit Company. The ordinance incorporated all the terms of the Taylor plan, including the straight 5-cent fare from any section of the city to any other section in a forward direction and for the abolition of exchange tickets in the various sections of the city on a graduated scale of time. The number of years, however, was left blank in the ordinance.

The conclusion of the ordinance read: "The Mayor is hereby authorized to submit said contract to the Philadelphia Rapid Transit Company, the Union Traction Company and the Market Street Elevated Passenger Railway, and upon their acceptance to execute, acknowledge and deliver the said contract on behalf of the city."

Fewer than one-half the members of Common Council were in their seats when the special session to hear the Mayor's transit message was called, but the clerk declared a quorum present. William M. Lewis, of the Thirty-second Ward, moved to adjourn because the chamber had waited two hours after the time set for the meeting, but his motion was lost. Under the rules, one-half of the membership constitutes a quorum. Thirty-five Councilmen out of eighty-seven were present.

### HUDSON & MANHATTAN RAILROAD ADJUSTS DIFFERENCES WITH EMPLOYEES

The differences that existed between the Hudson & Manhattan Railroads, operating under the Hudson River between New York and New Jersey, and its employees were adjusted on the night of Oct. 4 at a four-hour conference attended by G. W. W. Hanger, commissioner of the United States Board of Mediation & Conciliation; Wilbur C. Fisk, president of the Hudson & Manhattan Railroad Company; G. H. Sims, vice-president of the Brotherhood of Railway Trainmen; L. G. Griffing, third assistant chief of the Brotherhood of Locomotive Engineers; William Clark, of the Order of Railroad Conductors, and representatives of the local unions affiliated with the national brotherhoods. The conference was held in the office of Mr. Fisk in the Hudson Terminal Building. Mr. Fisk issued this statement:

"A most satisfactory conference was had with the representatives of the union. A compromise was reached which seems to appeal to all. The thirty-two discharged employes will be at once reinstated and the Brotherhood of Railroad Trainmen will be recognized by the company. All differences have been amicably settled to the satisfaction of both sides."

### BOSTON ELEVATED APPEAL FOR FINANCIAL RELIEF WELL RECEIVED

The statement of the Boston (Mass.) Elevated Railway, submitted to the special legislative commission on Sept. 25 at Boston in connection with the latter's inquiry into the company's financial condition, has been exceedingly well received by the local dailies. The soundness of the company's case has received editorial recognition. Some of the more significant comments are quoted below in part:

*Boston Herald*: "Judging from the comment in the newspapers, some of which we have reproduced, press and public are convinced that the Boston Elevated Railway must be allowed to charge a little more for its services, either directly to its patrons or indirectly through its relation to public taxation. There never was a time when the public had become so accustomed to increased charges. This was a good time for the company to appeal. When the railroads, not many months ago, changed their mileage books from the 2-cent rate at which they had stood for decades to 2½ cents, there was hardly a ripple of complaint, and yet this was an increase of 12½ per cent in passenger transportation, a change which individual fares also reflected.

"Everybody seems to acknowledge that the Elevated is economically and effectively run—too economically if anything. The public would like less crowding in the cars, but this obviously means a larger scale of expenditures. The wages of operatives are already the result of arbitration in which public authority—and so the voice of the people—has ultimate control. The supposedly high salaries paid to officials, even if unnecessary to retain their services, are but the merest drop in the bucket; and yet the Elevated can get no new money, under the terms which the statute prescribes, for additions and extensions. It is up to the commission now sitting to find a way out. And from the evidence which public discussion affords, the commission will find public sentiment behind them, in some liberalization of existing conditions."

*Boston Advertiser*: "Even if it were honest for the public to expect public service at less than actual cost, it is not to the public's best interests to have it: for in the long run that means poor public service, unsatisfactory facilities. Unless a sufficient margin of profit is allowed, to permit keeping the whole plant in satisfactory shape, the public must suffer with the corporation. . . . The release of the \$500,000 guarantee fund, deposited with the State nearly twenty years ago, is one of these (feasible) suggestions. . . . Then, too, the road is fully justified in asking that the abuse of the transfer privileges be stopped. . . . The purchase of the Cambridge subway by the State and a rental to the company, also, is worth considering. In time the enterprise will be profitable, although it is not so to-day."

*Boston Transcript*: "The company's difficulties were at least clearly and ably stated. It was shown to be up against the stone wall of a great increase in operating costs due to the price of labor and of materials, street railway rentals, subway rentals, taxation, the requirement of additional facilities, and what not. . . . The company is able to make it appear quite clearly that it must be helped out of a situation where it is giving more than it gets. . . . The Boston public, and particularly the Boston suburban public, has rather more privileges of extended travel on a single fare than any other large city."

*Boston Post*: "The Boston Elevated Railway's case, as regards its need of greater revenues in order to make a fair return on investment, is excellently made out. . . . It requires little argument to show that the company needs more revenue than it can get at present under its limitations, some of which have been fixed by law and some of which have been voluntarily assumed. Its expenses—and legitimate ones—have increased much faster than its receipts. . . . It is a well-run road, so that little criticism can come in respect to extravagance. It needs more money and it ought to have it. No other street railway in the country gives so much for a nickel as it does. . . . It is not unreasonable to suppose that out of these suggestions and others that will doubtless be made by men not of the company some measure of relief will be found with justice to all concerned."

### RAILWAY MAIL ON SPACE BASIS

On Nov. 1 the Post-office Department will place practically all the railways in the country on a space basis of pay instead of weight as at present. The only exception will be in the case of the closed pouch business, which will go by weight.

The new method of shipment will include 90 per cent of the postal service. It is understood that the arrangement is experimental and that the Interstate Commerce Commission, whose consent has been obtained for the experiment, will decide after the trial whether the new method should be permanent. Second Assistant Postmaster General Praeger said on Sept. 28:

"The authority which the Interstate Commerce Commission has given to the Postmaster General to place practically the entire railroad mail service on a space basis experimentally will enable the Post-office Department to demonstrate to the commission the fairness of the contention in its long fight before Congress that the space basis is the only practicable, definite, and equitable measure of service in the complex mail transportation problem. Canadian officials have assured us that, after three years' trial, Canada will never change from the space back to the weight basis, and I believe it will be entirely possible to administer the railway mail transportation service of the United States in a manner so just and so practicable from a transportation standpoint that the space basis now authorized experimentally will in the end prove acceptable to the Interstate Commerce Commission and to the railroads."

### ARBITRATION OF CLEVELAND POWER CONTROVERSY DEMANDED

The street railway committee of the City Council of Cleveland, Ohio, having indicated that it will not approve an eighteen-year power contract between the Cleveland Railway and the Cleveland Electric Illuminating Company, the railway has demanded arbitration of the question. At its meeting on Oct. 9 the Council was advised that it would doubtless be necessary to submit the matter to arbitration.

A few days previously, Secretary of War Newton D. Baker, former Mayor of Cleveland, met with the committee and advised that it refuse to approve any contract. J. J. Stanley, president of the Cleveland Railway, said that it would be preposterous for the Illuminating Company to spend \$1,000,000 in preparation for furnishing power without a contract.

Secretary Baker said he would return to Cleveland to aid in the campaign for the approval of the proposed \$1,750,000 bond issue for the municipal light plant by the voters at the November election.

While the proposed contract provides an opportunity for submitting new bids at the end of five years, it requires that if the bid of any competitor be 10 per cent lower than the present proposed figures, the Illuminating Company shall have the option of submitting a new contract, and if its new proposal is as favorable as that submitted by the competitor, the railway shall make a new contract with the power company. Opponents of the plan claim that this will force any other competitor to make a reduction of 10 per cent and virtually result in the retention of the contract by the Illuminating Company for eighteen years.

### FULL SERVICE IN ATLANTA

On the night of Oct. 7, exactly one week after the general riots in downtown Atlanta were fomented by agitators in behalf of the Amalgamated Association against the loyal car crews of the Georgia Railway & Power Company, the company resumed normal schedules on all lines in its system except two. These two, however, were operated normally in daylight.

No open rioting occurred after the morning of Oct. 1, the indignation meeting of citizens with the city police board on the afternoon of that day apparently having impressed the police with the law abiding majority's determination to tolerate no more such disorder. The sole case of disorder reported on Oct. 9 was that of two strikers who manhandled and threatened a conductor. The agitators were arrested.

The fact that normal night schedules were resumed on Sept. 7 was accepted generally as indicating that the at-

tempt to stampede the men had degenerated into a campaign of malicious mischief. Oct. 8 passed almost without incident. Oct. 9, the first of two circus days, with a parade in the forenoon, passed without incident of any kind, save for the one referred to previously.

The citizens' committee, which started meeting at noon each day in the Chamber of Commerce, was visited and addressed on Oct. 4 by representatives of organized labor. The labor men were informed that the sole interest of the committee was the preservation of law and order in the community and that it would not discuss any other question. On Oct. 5 a second attempt was made by local representatives of organized labor to secure interference by the committee between the company and those of its employees who had been disloyal. The general committee intrusted further developments to the executive committee, which conferred on Oct. 6 with representatives of organized labor and adopted on Oct. 7 a resolution not only declaring for the preservation of order, but also recommending a conference between the company and a committee of nine, three of the latter to be striking employees. Without directly answering this, the company addressed a bulletin to its employees, warning them that suggestions of conferences would come from many sources, but assuring them that no matter whence these suggestions emanated the company would not alter its refusal to discuss the agitation with anyone who was responsible for it. Simultaneously the organized labor representatives declared the committee as suggested was not acceptable. They asked to be permitted to name not only three but six members. Thereupon the Superior Court Judge, who had been suggested by the citizen's committee as the proper person to name the committee of nine, declared his purpose to have nothing at all to do with the matter.

**Ontario Hydro Radial Railway Vote.**—On Sept. 28 the Ontario Government passed an order-in-council, at the request of the Ontario Hydroelectric Power Commission, authorizing twenty-five Ontario municipalities to submit by-laws on Jan. 1, 1917, to the ratepayers for the purpose of securing their sanction to the proposed construction of the portion of the Ontario hydro-radial railway system from Port Credit (near Toronto) to Niagara Falls. The road as projected will consist of 100 miles of line. The cost is estimated at approximately \$40,000 per mile.

**Experience Ordinance Eliminated from New City Code.**—The City Council of Indianapolis, Ind., sitting as a committee of the whole to consider an ordinance providing for the revision and codification of city ordinances, struck out a measure which was passed at the time of the threatened strike in Indianapolis about two years ago, providing that motormen and conductors must have thirty days' experience before they may be employed by the Indianapolis Traction & Terminal Company to operate cars. The ordinance has been held unconstitutional by a Marion County court.

**Action on Removal of Kansas City Tracks.**—The City Council of Kansas City, Mo., has killed an ordinance providing for the removal of tracks of the Kansas City Railway from part of McGee Street. The particular significance of the action is that it seems to add to the probability that the interurban passenger station may be located near Tenth and McGee Streets. The City Council is considering measures for the establishment of a traffic way on Oak Street, one block east of McGee. The actions heretofore in behalf of a trafficway have designated McGee Street.

**Contract Awarded for New York Storage Yard.**—The Public Service Commission for the First District of New York has awarded to the Thomas J. Buckley Construction Company, the low bidder, at \$372,893, the contract for the construction of a railroad yard for the storage of subway cars in connection with the White Plains Road extension of the first subway. The yard is officially designated as the 239th Street yard, although it will cover an area approximating several city blocks, beginning a short distance east of White Plains Road and north of 239th Street. Another yard is also under construction by the same contractor at 180th Street and Bronx Park. The 239th Street Yard will provide accommodations for approximately 580 subway cars. Adjoining it on a part of the same plot the Interborough Rapid Transit Company will later construct a yard having a capacity for about 350 elevated cars.

# Financial and Corporate

## ANNUAL REPORT

### Albany Southern Railroad

The comparative income statement of the Albany (N. Y.) Southern Railroad for the years ended June 30, 1915 and 1916, follows:

	1916		1915	
	Amount	Per Cent	Amount	Per Cent
Gross operating revenue:				
Railroad department.....	\$323,737	62.1	\$325,445	65.6
Electric department.....	152,253	29.2	129,729	25.9
Gas department.....	45,326	8.7	44,491	9.0
Total.....	\$521,316	100.0	\$499,665	100.0
Operating expenses, including taxes.	376,667	72.2	366,083	73.3
Net operating revenue.....	\$144,649	27.8	\$133,582	26.7
Other income.....	2,347	0.4	3,110	0.6
Total corporate income.....	\$146,996	28.2	\$136,692	27.3
Deductions from income.....	95,217	18.3	91,719	18.3
Net corporate income.....	\$51,779	9.9	\$44,973	9.0

The gross operating revenue of all departments for the last fiscal year showed an increase of 4.3 per cent, while the operating expenses, including taxes and sinking fund charges, increased 2.8 per cent, thereby causing an increase of 8.3 per cent in the net operating revenue. The total corporate income showed an increase of 7.5 per cent, and the net corporate income an increase of 15.1 per cent. The operating ratio for the last fiscal year was 62.8 per cent, as compared to 64.5 per cent in 1915 and 67 per cent in 1914. Retirements and replacements and other surplus adjustments during the year amounted to \$32,430.

In the railway department the improved revenue for the latter half of the year almost made up for the decrease during the first half, the gross operating revenue being \$323,737 in 1916 and \$325,444 in 1915. The operating expenses of this department showed an increase of \$4,851, owing almost entirely to the sinking fund accrual. The following statistics will give an idea of the improvement in operating conditions in the railway department:

	1916	1915
Revenue passengers carried.....	1,475,423	1,452,739
Revenue passenger car miles.....	662,155	706,781
Revenue passenger car hours.....	50,946	50,227
Passenger revenue per passenger car mile....	\$0.268	\$0.260
Tons of freight carried.....	64,809	60,962
Power used, kilowatt hours.....	4,221,886	4,566,818
Maintenance of way and structures per mile of road operated.....	\$980	\$746
Maintenance of equipment per mile of road operated.....	\$600	\$507
Crew expense per passenger car mile.....	\$0.049	\$0.044

The annual report of the company states that it had suffered so much from accidents that most unusual care was taken to prevent them. Owing to the relatively large number of grade crossings and the greatly increased use of automobiles and the carelessness of their drivers, the company considered it expedient to put into effect a number of slow orders which necessarily lengthened the running time of the trains, but this action was met with general approval by the patrons, who appreciated the efforts of the management in eliminating hazards.

The report also notes that the electric express business is showing a most gratifying increase, it having been necessary to purchase two additional express cars. Under the new three-year agreement made with the employees on Feb. 28, 1916, the aggregate amount of increase in wages for each year will be about \$4,000. The amount spent on construction and new work in the railway department amounted to \$36,386, of which the largest item was \$16,283 for increasing the capacity of the Albany bridge floor.

The gross operating revenue of the electric department showed an increase of \$22,524 or 17.4 per cent, while the operating expenses increased only \$976. The gross operating revenue of the gas department increased \$834 or 1.9 per cent, and the operating expenses increased \$856.

The amount set aside for depreciation at the present time is 2.6 per cent of the value of the railway property, 1.3 per cent of the value of the electric property and 2 per cent of

the value of the gas property. Based on the physical values as of June 30, 1916, the total amount now being set aside to cover all provisions for maintenance and depreciation charges is \$97,365.

## BENEFITS OF CUSTOMER OWNERSHIP

### Mutualization of Public Utilities Will Help Public Relations —Broad Local Distribution Possible in from Three to Five Years

Inducing the consumers of a public utility to become financial partners of the enterprise is a movement which has made considerable progress during the last year and one-third at the properties under the general direction of H. M. Bylesby & Company, Chicago, Ill. The general practices of this organization in offering securities of utilities to citizens of the communities served was described in an article in the ELECTRIC RAILWAY JOURNAL of Aug. 12. In a paper presented on Sept. 22 before the Colorado Electric Light, Power & Railway Association, William H. Hodge, manager, publicity department of H. M. Bylesby & Company, described the work of his company along this line and summarized the situation in the following words, which will undoubtedly be of interest in connection with the article previously published in these pages:

"It has been demonstrated to our satisfaction that a broad distribution of the securities of a utility may be secured among the company's own customers by serious, careful and persistent effort over a reasonable time, say a period of from three to five years. It is not sensible to expect a new movement involving the constant savings of the people to accomplish fastest headway.

"The benefits to the utility and the public which assuredly will follow a wide distribution of a company's securities among its patrons warrant the effort and initial expense. The objects falling within range include the most vital things in the relations between the utility and the people. Achievement will go a long way toward solving controversial difficulties which have marred these relations in the past.

"Customer ownership will not mean a license for excessive profits or indifferent service. It will not permit a corporation to obtain undue favors from the legislative bodies of State and city. It will not give a company political security unless it keeps itself modern and efficient. Customer ownership, however, will establish friendly connections with a large number of citizens and voters, will share with them the earnings of the business and will so modify destructive criticism as to approach within reasonable distance of the equation which means peace, prosperity and recognition of useful service well performed. It is in line with the broadening trend of economics as understood today. It provides a simple and workable means to preserve the needful equilibrium between the producer and consumer—the natural and economical monopoly and the people. Customer ownership will humanize the utility corporation and give the people a true understanding of corporate affairs. It will do the corporation just as much good as it does the public, and no more."

Alton, Jerseyville & Peoria Interurban Railroad, Alton, Ill.—The County Court at Jerseyville, Ill., was to hear testimony on Oct. 7 in the suit asking for the appointment of a receiver for the Alton, Jerseyville & Peoria Interurban Railroad. The petition for a receiver is signed by the St. Paul Fire & Marine Insurance Company, the Hearne Timber Company, Jacob Kohlmiller, G. J. Gromme and others.

California Railway & Power Company, San Francisco, Cal.—The current dividend payment of 1 per cent on the prior preference stock of the California Railway & Power Company payable on Oct. 2 to stockholders of record on Sept. 20, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 7, constituted a reduction from the last regular quarterly dividend of 1¼ per cent paid on July 1. An official statement issued by the company says that while the United Railroads of San Francisco has heretofore punctually paid the interest upon its notes held by the California Railway & Power Company, it is apparent, in view of the prospective reorganization of this subsidiary company, that it is not likely to be able to make remittances during the period of such reorganization

As the parent company had the money on hand to pay the above dividend now, however, the board of directors decided to make the payment, calling attention to the fact that the dividends are cumulative.

Cape May, Delaware Bay & Sewell's Point Railroad, Cape May, N. J.—Vice-Chancellor Beaming in the New Jersey Court at Camden recently appointed Alfred M. Cooper of Cape May as receiver for the Cape May, Delaware Bay & Sewell's Point Railroad.

Cities Service Company, New York.—Montgomery, Clothier & Tyler; J. & W. Seligman & Company; Kissel, Kinnicut & Company and Henry L. Doherty & Company have purchased the \$8,000,000 of 6 per cent cumulative preferred stock of the Cities Service Company, the authorization of which by the board of directors was noted in the ELECTRIC RAILWAY JOURNAL of Oct. 7. This stock is being offered by the above-named banking houses at \$93 a share. It is preferred as to both assets and dividends, is not redeemable and makes monthly dividend payments.

Northern Ohio Traction & Light Company, Akron, Ohio.—The stockholders of the Northern Ohio Traction & Light Company voted on Oct. 2 to increase the authorized amount of 6 per cent cumulative preferred stock from \$5,000,000, of which \$4,600,000 is outstanding, to \$10,000,000. The National City Company, New York, is offering \$4,000,000 of first lien and refunding mortgage 5 per cent gold bonds of this company at 94 and interest to yield 5.36 per cent. Reference to the new financing of this company in connection with the change of control to Hodenpyl, Hardy & Company, New York, N. Y., and E. W. Clark & Company, Philadelphia, Pa., had previously been made in these pages.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—A. B. Conant & Company, Boston, Mass, is offering privately, if, when and as issued, \$826,000 of first and refunding mortgage 5 per cent sinking-fund gold bonds of the St. Joseph Railway, Light, Heat & Power Company. The price is 94.5 and interest. The bonds are dated July 1, 1916, and mature on July 1, 1964. They are redeemable on any interest date at 102.5 and interest. A reference to the execution of a mortgage covering these bonds was made in the ELECTRIC RAILWAY JOURNAL of Oct. 7.

Sheboygan (Wis.) Electric Company.—Paine, Webber & Company, Chicago, Ill., having sold the greater part of the issue, are offering the unsold portion of the outstanding \$350,000 of 7 per cent cumulative preferred stock of the Sheboygan Electric Company at par and dividends. The stock is preferred as to assets and dividends. This company was formerly the Sheboygan Railway & Electric Company.

Union Traction Company, Philadelphia.—James G. Balfour and John C. Gilpin have been elected directors of the Union Traction Company to succeed George W. Elkins, resigned, and Jacob S. Disston, deceased.

**DIVIDENDS DECLARED**

Brooklyn (N. Y.) City Railroad, quarterly, 2 per cent.  
 California Railway & Power Company, San Francisco, Cal., quarterly, 1 per cent, preferred.  
 Cleveland & Eastern Traction Company, Cleveland, Ohio, quarterly, one-half of 1 per cent, preferred.  
 Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., quarterly, 1½ per cent, preferred; quarterly 1 per cent, common.  
 Dayton & Troy Electric Railway, Dayton, Ohio, quarterly, 1¼ per cent, preferred and common.  
 Monongahela Valley Traction Company, Fairmont, W. Va., quarterly, 1 per cent, common.  
 Nashville Railway & Light Company, Nashville, Tenn., quarterly, 1¼ per cent, preferred.  
 Ottawa (Ont.) Traction Company, Ltd., quarterly, 1 per cent.  
 Ottumwa Railway & Light Company, Ottumwa, Iowa, quarterly, 1¼ per cent, preferred.  
 Puget Sound Traction, Light & Power Company, Seattle, Wash., quarterly, 75 cents, preferred.  
 Rome Railway & Light Company, Rome, Ga., quarterly, 1 per cent.  
 West Penn Railways, Pittsburgh, Pa., quarterly, 1¼ per cent, preferred.  
 West Penn Traction Company, Pittsburgh, Pa., quarterly, 1½ per cent, preferred.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

**BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, MAINE**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$74,805	\$42,000	\$32,805	\$17,884	\$14,921
1 " " '15	73,221	*36,822	36,399	17,610	18,789
12 " " '16	806,971	*438,398	368,573	211,851	156,722
12 " " '15	781,405	*380,869	400,536	211,843	188,693

**CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$100,238	*\$67,335	\$32,903	\$29,962	\$2,941
1 " " '15	91,213	*63,039	28,174	30,289	\$2,115
12 " " '16	1,204,145	*754,506	449,639	356,744	92,895
12 " " '15	1,039,701	*713,423	326,278	353,565	†27,287

**CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$46,303	*\$24,925	\$21,378	\$11,467	\$9,910
1 " " '15	45,407	*21,002	24,405	10,974	13,071
8 " " '16	307,896	*171,642	136,254	91,098	45,156
8 " " '15	281,139	*155,787	125,352	87,785	37,567

**COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$290,082	*\$176,785	\$113,297	\$42,863	\$70,434
1 " " '15	242,299	*153,572	88,727	40,232	48,495
12 " " '16	3,402,472	*1,984,418	1,418,054	506,995	911,059
12 " " '15	3,056,293	*1,813,726	1,242,567	470,899	771,668

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

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$1,358,867	*\$765,087	\$593,780	\$419,647	\$174,133
1 " " '15	1,181,948	*649,007	532,941	372,679	160,262
12 " " '16	16,152,529	*8,629,990	7,522,539	4,926,315	2,596,224
12 " " '15	14,088,122	*7,552,322	6,535,800	4,346,834	2,188,966

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

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$251,981	*\$150,445	\$101,536	\$62,886	\$38,650
1 " " '15	205,259	*121,539	83,720	62,421	21,299
12 " " '16	2,807,253	*1,671,118	1,136,135	752,407	383,728
12 " " '15	2,434,872	*1,449,601	985,271	761,017	224,254

**GRAND RAPIDS (MICH.) RAILWAY**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$106,497	*\$73,977	\$32,520	\$16,838	\$15,682
1 " " '15	101,207	*73,136	28,071	13,966	14,105
12 " " '16	1,269,110	*835,957	433,153	174,750	258,373
12 " " '15	1,202,935	*831,178	371,757	163,970	207,787

**HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '16	\$21,808	*\$15,966	\$5,842	\$5,241	\$10,601
1 " " '15	26,177	*13,297	12,880	5,523	7,357
12 " " '16	310,051	*172,408	137,643	65,324	72,319
12 " " '15	263,166	*164,693	98,473	66,965	31,508

**JACKSONVILLE (FLA.) TRACTION COMPANY**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '16	\$50,981	*\$35,285	\$15,696	\$15,408	\$288
1 " " '15	50,097	*34,890	15,207	14,597	610
12 " " '16	616,065	*420,410	195,655	179,084	15,571
12 " " '15	637,938	*445,116	192,822	168,165	24,657

**LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$167,567	*\$89,799	\$77,768	\$36,455	\$41,313
1 " " '15	144,479	*81,032	63,447	36,209	27,238
8 " " '16	1,054,483	*663,977	390,506	290,972	99,534
8 " " '15	906,050	*594,433	311,617	288,706	22,911

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

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$87,115	*\$53,180	\$33,935	\$15,075	\$18,860
1 " " '15	79,359	*43,415	35,944	15,962	19,982
12 " " '16	779,888	*518,633	261,255	190,633	70,622
12 " " '15	709,775	*465,555	244,220	188,455	55,765

**NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$199,574	*\$122,736	\$76,838	\$42,236	\$34,602
1 " " '15	166,467	*108,536	57,931	43,140	14,791
12 " " '16	2,316,748	*1,423,419	893,329	513,635	379,644
12 " " '15	2,149,747	*1,281,951	867,796	494,828	372,968

**NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$473,434	*\$291,304	\$182,130	\$47,995	\$134,135
1 " " '15	360,054	*214,559	145,495	53,318	92,177
8 " " '16	3,334,077	*2,011,571	1,322,506	403,001	919,505
8 " " '15	2,488,442	*1,535,909	952,533	413,588	538,945

**PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '16	\$26,379	*\$18,087	\$8,292	\$7,161	\$1,131
1 " " '15	23,196	*14,400	8,796	7,538	1,258
12 " " '16	304,669	*194,841	109,828	88,063	21,765
12 " " '15	291,458	*184,201	107,257	91,807	15,450

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

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '16	\$447,502	*\$255,342	\$192,160	\$181,701	\$10,459
1 " " '15	460,861	*257,583	203,278	186,507	16,771
12 " " '16	5,423,882	*3,067,277	2,356,605	2,185,086	171,519
12 " " '15	5,668,404	*3,084,826	2,583,578	2,210,856	372,722

**PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.**

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '16	\$663,746	*\$418,230	\$245,516	\$184,645	\$60,871
1 " " '15	664,564	*402,137	262,427	181,542	80,885
12 " " '16	7,709,641	*4,954,027	2,755,614	2,202,477	553,137
12 " " '15	7,846,587	*4,804,798	3,041,789	2,155,431	886,358

\*Includes taxes. †Deficit.

## Traffic and Transportation

### SUMMARY OF FINDING IN "OWL" FARE CASE

#### Pennsylvania Commission Decides That Increase in "Owl" Fare in Pittsburgh Was Not Properly Advertised

As noted briefly in the *ELECTRIC RAILWAY JOURNAL* of Sept. 30, page 699, the Public Service Commission of Pennsylvania in an opinion rendered on Sept. 28 held that the Pittsburgh Railways acted in violation of both the spirit and the letter of the Public Service Company Law of that State in the way in which it proceeded to give notice of the doubling of its "owl" or night fares, and in an order supplementary to the opinion directed the company to cease from collecting any rates or enforcing any rules or regulations except those contained in its original tariff filed on July 17, 1914, and further ordered the company to make reparation to its patrons for excess fares upon presentation of certificates of excess payment issued under order of the commission since June 23.

The opinion was based on the complaints of William Jacoby and the city of Pittsburgh against the Pittsburgh Railways, alleging that the proposed increase of rate of fare for night car service in Pittsburgh was unjust, unreasonable and excessive. A complete review of the case is contained in the opinion, which was written by Commissioner Michael J. Ryan and acted upon by the entire body in executive session. In reviewing the filing of the proposed change in rates the commissioner's report says:

"The company contends that this folder (two typewritten pages containing rates which it claims to be a change in the original tariff) is a supplement to the original schedule and the sending of it to the Public Service Commission and the placing of a copy thereof in the general offices of the company at Pittsburgh and its dispatchers' offices in various carhouses of the company constitute ample notice to the public and is sufficient and adequate compliance with the Public Service Company Law to warrant its doubling its charges for night service upon the cars operated by it in and about Pittsburgh."

The displaying of the notice of the increase in the company's cars on June 21, the night of the day preceding the date on which the increased fares were to become effective is then mentioned, together with the insertion of full page advertisements calling attention to the proposed change in all the daily papers of Pittsburgh. Next is reviewed the filing of the complaints by W. M. Jacoby and the city of Pittsburgh, the preliminary public hearing held at the Capitol on June 23, and the issuing of the order directing the company to issue certificates in excess of the former rates pending the determination of the matters alleged. Next is reviewed the public hearing held June 30, when testimony anent the notice to the public was heard. Commissioner Ryan continues:

"The Public Service Company Law distinctly requires that no change in the rates of fare shall be effective 'except after thirty days' notice to the commission and to the public.' It is required that a public service company shall plainly state the exact changes proposed in the tariffs or schedules then in force and whether an increase or decrease and the time when the proposed changes will go into effect. Although the paper filed with the commission has the sub-division 'night fares' on page two in darker ink than the rest of the page, it is admitted that all copies filed by the company at any place in Pittsburgh or adjacent territory are merely photographic copies and that there is no difference whatever in the coloring and that there is no 'black type' on those to put any inquirer upon notice. The only place (other than with the commission at Harrisburg) where the alleged supplement was filed were the general offices of the company in Pittsburgh and various dispatchers' offices and carhouses of the company.

"When the Pittsburgh Railways determined that a change in its rates of fare was desirable it could have done either of two things in accordance with law: First, filed, posted

and published new tariffs or schedules; this admittedly it has not done; or secondly, it could have indicated the proposed changes plainly upon the tariffs or schedules now in force and kept open to public inspection. It seems to the commission that the methods followed by the respondent company do not comply with the law. There is nothing whatsoever in the supplement filed which plainly states the exact changes proposed to be made. There is nothing in the supplement filed that indicates whether or not there is to be an increase or decrease in fare. That the company itself did not believe the folder and inclosure and the placing of it in its office and carhouses would impart knowledge of the proposed increase in fare to the public, is shown by its own conduct on the day the proposed changes in the rates were to take place when it caused to be posted the large lettered announcement of the increase, and by advertising in the daily papers in the city the full page notice of the change in rates.

"The posters put up in the cars carried information in letters 2 in. in height so that all could know, but up until then there was not the plain statement of the exact changes proposed to be made, nor was notice properly given. We are of the opinion that the action of the company is in violation of both the spirit and the letter of the law.

"Public service companies are public servants—subject to the control of and regulation by the Commonwealth. They may increase their rates and charges when sanctioned by the authority which gives them life and in accordance with the law and that there can be no doubt that openness, fairness of dealing with and confidence in that public which they serve are the best methods to be employed to more certainly obtain that justice to which not only public service companies but the people are alike entitled."

Commissioner Ryan then states that no opinion is expressed with regard to the authorization of an increase in rates. In this connection he says: "When that matter comes before us in the regular way and after full hearing shall be had, this commission will decide." He concludes by saying: "The commission finds that the supplement is not a legally filed, posted and published tariff of the Pittsburgh Railways and that the only tariff or schedules of said company in effect on June 21 or at any time subsequent is the original tariff of June 17, 1914.

The order to cease collecting the excess fare and to make restitution of the excess fares paid by patrons is then affixed.

### "AN AUTOIST APPLIES THE GOLDEN RULE"

Under the caption "An Autoist Applies the Golden Rule" the Hot Springs (Ark.) Street Railway published in the local papers in that city recently the following fable in the form of a full page advertisement addressed "Fellow Automobile Owners":

"I live at the extreme end of one of the street car lines and make the morning, noon and night trips between my home and place of business in my automobile.

"Shortly after purchasing the auto, and feeling confident of my ability to operate it safely, I acquired the habit of picking up acquaintances whom I found at street corners intending to board street cars. The first morning I stopped to pick up my friend Jones. I had plenty of room and hated like the mischief to pass him up. I thought he would vote me selfish and stuck-up since I purchased my auto. On the way down town Jones said to me, 'Now let me off any place; don't go out of your way for me.' But it did not seem the right thing to put Jones off at any place except his exact destination. So I insisted that he tell me where he was going and the result was that I went four blocks out of my way to be nice to him.

"The next morning it was my luck to find Jones on the corner waiting for his street car. He had two friends with him. I had plenty of room. I sounded my auto horn to indicate I was coming and I called out, 'Going down? Jump in!' So they did. I wanted to be just as big and broad as the day before and took Jones to his destination, four blocks out of my way. His two friends seemed anxious to cause me as little trouble as possible and wanted to jump out with Jones, but I would have none of that, and the discussion finally ended by my taking both to their destination.

They felt ill at ease but I owned an automobile, and they did not, and I was bound to be a good fellow.

"So things went on until I found myself operating a free service line to and from town. Jones and his friends would frequently look the other way when they saw me coming down the street. Often they would plead they wanted to walk for the exercise but I would go to the expense of stopping my car for them and was so insistent they finally would give in. At times I would have my wife and children along and did not care to have company in the car, but if I saw Jones and his friends I did not have the courage to pass them by.

"Recently I met an official of the street railway. In our talk about business he gave me an insight to the street railway conditions of to-day that opened my eyes. I will repeat to you the statements he made to me: 'He stated there were more than 375 privately owned automobiles in the city, and by reason of the practice of the owners picking up friends along the streets it was conservatively estimated the street car company was losing an average of 50 cents an automobile a day. This in addition to the loss of patronage of the owners and families which the street car company enjoyed before the purchase of the automobile. He called attention to the fact that the owners of the street car company were the heaviest investors of outside capital in this city; that they were the heaviest taxpayers; that one-third of all the paving in this city was at the street railway company's expense; that many thousands of dollars were paid to men in the company's employ who had homes in this city and families to support; that additional thousands of dollars were expended with our merchants annually in the purchase of supplies and material, preference being given to home merchants even though the goods could be purchased at a less cost outside the city; that the company was among the heaviest contributors to advertising, State Fair and other funds necessary to create business for the welfare of our citizens; that it took part in all movements for the upbuilding of the city; that it contributes and pays taxes toward good roads which you and I enjoy in our automobiles; that it maintains training grounds at a loss and furnishes free transportation for the baseball teams visiting this city for their spring practice; that car tickets can be purchased in book form twenty-five for \$1 or 4 cents each, and that school tickets are sold in book form at 2½ cents each; that it operates its cars about twenty hours a day under a schedule which for frequency of trips is seldom enjoyed by other cities.

"Fellow Autoists, when I take Jones and his friends in my automobile in the future, it will be on a pleasure trip, not competitive to our own street railway.

"Note—It will be the aim and pleasure of this company to continue to be a factor in the upbuilding of Hot Springs, and we hope our friends will be lenient should we fail at times to do all that we should desire. Bear in mind that our only revenue is secured from passengers picked up along our lines. This little fable is printed to acquaint you with new conditions that are confronting street railways in all small cities, due to the advent of the automobile, which we believe has come among us to stay."

#### SEATTLE BUS BILL DEFEATED

The City Council of Seattle, Wash., by a vote of five to four defeated the passage of the Dale ordinance for the regulation of jitney buses in Seattle, and went on record as opposing the submission of the question of regulation to the voters at the general election on Nov. 7. Councilman Dale, in Council, asked that some action be taken upon the measure to regulate the jitneys, saying the city's inaction on the subject had caused the State Legislature to act, and that he feared the certificate of public necessity act, which will be voted upon in November, if not defeated would empower the Public Service Commission to eliminate jitney competition altogether. Rejection of the Dale bill means that the regulation of the motor buses will be undertaken by the Council itself, and will not be submitted to the voters. The special committee appointed more than a month ago composed of Councilmen Moore, Hanna and Hesketh, to report upon the question will prepare a bill for passage by the Council.

#### JITNEYS AS STEAM RAILWAY COMPETITORS

A further examination of the reduced passenger service on the Spokane, Portland & Seattle Railway, which was announced in the *ELECTRIC RAILWAY JOURNAL* for Sept. 16, page 515, brings out some interesting side lights on the case. It develops that the railroad, as the largest taxpayer, has been the largest contributor toward the finely paved highway, which has been finished and opened to jitney travel gratis, and without which the jitney service would never have sprung up there.

There are five road districts in Clatsop County, and the railroad pays taxes in each, amounting to a total of 5.5 cents on each dollar of assessed value of its properties. Thus, under the county laws the railroad has been paying \$10.55 a day in taxes toward the construction of the new highway and when the interest on the bonds for the paving begins to accrue, the company may expect an increase in the rate of the taxes used for this purpose.

Several other western steam lines have reduced train service, and the effect of jitney competition has been severe wherever the highway parallels the tracks. On the occasion of a recent convention in western Washington for which steam line excursion rates were offered, 2700 people came into town from points distant 18 miles or more, and of this number only 350 traveled by train. To attend this same convention, ninety delegates had to travel 275 miles, and fifty others 250 miles across the mountains.

**Relief for Traffic Congestion in Kansas City.**—After several months' study of traffic conditions, the legal department of Kansas City, Mo., has prepared an ordinance for relieving traffic congestion in the business district. The ordinance eliminates parking of motor cars on the streets of the downtown district, where many streets are narrow and the parking of cars requires vehicular traffic to follow the street cars in the busy hours.

**Newspaper Train from Chicago Loop to Waukegan.**—The first through service to the North Shore district via the Chicago Elevated Railways and the Chicago, North Shore & Milwaukee Electric Railway was begun on Oct. 1. This service consists at the present time of an express car carrying Chicago newspapers. This train leaves the Metropolitan terminal station on Fifth Avenue, between Jackson Boulevard and Van Buren Street, and runs to Waukegan, Ill. Britton I. Budd, president of both companies, inaugurated this service for the benefit of the Chicago newspapers in distributing to the North Shore district.

**Railway Participates in Fire and Accident Prevention Celebration.**—The Kansas City (Mo.) Railways took an active part in the celebration of fire and accident prevention day on Oct. 9. J. H. Harvey, superintendent of efficiency, of the company, is president of the Local Safety Council, which assisted in the work, and is chairman of the committee on distribution of literature. The committee on celebration provided the literature, largely prepared by Mr. Harvey, and the railway company distributes it, 40,000 pieces going to the schools on Friday, Oct. 6. The company also had one of the eighteen floats in the parade. In addition to the floats there were trucks or cars by the various city departments, and seventeen pieces of apparatus by the fire department. Many local organizations were represented by cars carrying the members of their fire or accident prevention committees.

**Vehicle Drivers Reported for Indifference.**—A recent incident in Kansas City, Mo., indicates the ease with which a general movement for improving traffic conditions can be stimulated. The Kansas City Railways has been having its trainmen note the drivers for retail and other establishments who most often interfere with the prompt moving of traffic. The trainmen were already largely familiar with the offending drivers, and reports came quickly. The officers of the railway company reported the drivers to the merchants. In most cases the latter expressed gratitude at the suggestion, and many asked the railway for further assistance in this manner. In some cases the merchants established new rules, and issued special instructions as to watchfulness of the interests of others by their drivers, taking the position that with everybody trying to keep all the traffic moving, the general good results would be shared by all.

## Personal Mention

H. O. Swoboda, Pittsburgh, Pa., has been appointed in a consulting capacity by the Pittsburgh & Butler Railway, Butler, Pa., to take care of its interests in connection with the agreements which it made with the West Penn Power Company.

Alston Green has been elected vice-president of the Alabama City, Gadsden & Attalla Railway, Gadsden, Ala. Mr. Green will have charge of the office of the company and of the sale of current. He has lived in Gadsden all his life and has a wide acquaintance in the city and county.

James G. Wray, chief engineer of the central group, Bell Telephone Companies, has resigned to become associated with the firm of Hagenah & Erickson, public utility engineers, First National Bank Building, Chicago, specializing in appraisals, cost analyses and rate investigations.

H. L. Brown, who succeeds E. M. Haas as Western editorial representative of this paper, was graduated from the electrical engineering department of the University of Michigan in 1912, and during his senior year there was assistant to Professor de Muralt, then head of the department. After two years spent in technical journalism, Mr. Brown became connected with the Chicago Telephone Company's engineering department and remained with this company for about a year, when he joined the editorial staff of the *Electrical World*.

Exum M. Haas, who for the last five years has been Western editorial representative of the *ELECTRIC RAILWAY JOURNAL*, has resigned from this paper to accept the office of manager of sales of the International Steel Tie Company. He will be succeeded by H. L. Brown, who for the last year has been assistant editor of the *Electrical World* in Chicago. Mr. Haas, after graduation from the civil engineering course of Purdue University in 1905, was resident engineer for the Chicago & Eastern Illinois Railway in the construction of a 6000-car capacity freight yard in Dalton, Ill. In 1906 he was appointed assistant engineer of maintenance of way for the Illinois Traction System, where he helped to organize the maintenance of way department and served as locating and constructing engineer for the company in charge of building extensions for the system. In 1909, when work on the track extensions had practically ceased, his title was changed to superintendent of bridges and buildings, and while he served in this capacity most of this company's standard way stations and substations and the terminal stations in St. Louis, Mo., were built. He has been a member of the 1915 and 1916 way committee of the American Electric Railway Engineering Association.

Dean Treat, assistant general manager of the Wisconsin Public Service Company at Green Bay, has been promoted to the position of general manager of the Wisconsin Railway, Light & Power Company at LaCrosse, Wis., one of the Clement C. Smith properties. Mr. Treat began his railway career as timekeeper for Westinghouse, Church, Kerr & Company during the construction of the Grand Rapids, Grand Haven & Muskegon Interurban Railway, and remained with that company until 1907, when he was promoted to the position of assistant trainmaster. He resigned from the last-mentioned company to become assistant superintendent of construction of the Milwaukee & Northern Railway and remained with that company until 1910 as superintendent of transportation. He then became superintendent of the Sterling, Dixon & Eastern Electric Railway, and in 1912 was made manager of the Lee County Light Company. On the sale of that property to the Samuel Insull interests Mr. Treat was made district superintendent of District "D," where he remained until January, 1913, when he resigned to become superintendent of railways of the Wisconsin Public Service Company at Green Bay, Wis. He was subsequently promoted at Green Bay to assistant general superintendent, then to assistant general manager and from that position he was finally promoted to LaCrosse as general manager at that place.

## Construction News

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

### FRANCHISES

Harvard, Ill.—The Chicago, Harvard & Geneva Lake Railway has asked the Council for permission to abandon its trackage on North Division, West Diggins and North Eastman Streets entering the city over its freight line through the Logue and Brainard farms, thence to the city limits and along West Front Street to Eastman and thence to the Chicago & Northwestern Railway depot.

Bowling Green, Ohio.—The City Council of Bowling Green has adopted a resolution granting the Toledo, Fostoria & Findlay Railroad a fifteen-year franchise if it will buy the property of the Lake Erie, Bowling Green & Napoleon Electric Railroad, which the owners have decided to sell for junk.

San Angelo, Tex.—The City Commission of San Angelo has refused the petition of J. E. Willis of Abilene for a franchise for a street railway system in San Angelo. The reason for this refusal, as given by the commission, was that they had under consideration a proposition submitted by the Interstate Electric Corporation of New York, which they will probably accept.

### TRACK AND ROADWAY

Calgary (Alta.) Municipal Railway.—It is reported that the Calgary Municipal Railway will construct a mile of track over the West Center Street bridge, now under construction.

Capital Traction Company, Washington, D. D.—With the dual purpose of affording transportation facilities to Potomac Park and relieving street car congestion at Fifteenth Street and New York Avenue, the Capital Traction Company has applied to the Public Utilities Commission for permission to extend its lines south on Eighteenth Street to C Street, where it is proposed to construct a terminal loop around the triangle between Eighteenth Street, C Street and Virginia Avenue. The improvement calls for an expenditure of about \$100,000. If authorized by the commission, work on the project will start early next year, and effort will be made to complete it by July. Under the plans submitted the company would place additional special work at the intersection of Fifteenth Street and New York Avenue, providing a double-track connection between the present tracks of the Fourteenth Street line on New York Avenue and the present tracks on Pennsylvania Avenue west of Fifteenth Street. It is proposed to operate Fourteenth Street cars in the new Eighteenth Street service. The company also applied for permission to build a connecting track between the proposed southbound track on Eighteenth Street and the existing track on F Street. With this connection installed, cars from the Fourteenth Street service proceeding down Eighteenth Street would be able to return either by way of the suggested loop terminal at Eighteenth Street, C Street and Virginia Avenue, or by making a loop via F and Seventeenth Streets.

Chicago, North Shore & Milwaukee Electric Railway, Highwood, Ill.—B. J. Fallon, chief engineer of the Chicago, North Shore & Milwaukee Electric Railway, has announced that the company will lay 350 tons of new rails this fall; also it will double track some single track sections and will replace a 100-ft. pile-bent trestle by a large concrete box and fill. The company has recently purchased fifteen sets of crossing gates, and also twelve Bryant Zinc Company highway crossing signals. Inquiries are out for a considerable number of additional highway crossing signals to be installed at crossings between Evanston and Milwaukee.

Mason City & Clear Lake Railroad, Mason City, Iowa.—This company reports that it expects to build 1½ miles of new city track in Mason City.

**St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.**—This company has authorized a \$15,000,000 refunding bond issue for the retirement of its present outstanding bonded indebtedness of \$5,000,000 and for improvements and extensions. The extension will be in the direction of Atchison or northeast of Maryville, Mo.

**\*Ardmore, Okla.**—Plans are being made at Ardmore for the organization of a company with local capital which will build an electric interurban railway from Ardmore to the newly discovered Fox oil field. It is stated that the Ardmore Railway Company is interested in the project. Surveyors will take the field at once for the purpose of making preliminary surveys. The plans in contemplation include an extension to the Washita River and the development of water power from that stream.

**Dominion Power & Transmission Company, Ltd., Hamilton, Ont.**—About 1 mile of track has been practically completed by the Hamilton Street Railway, a subsidiary of the Dominion Power & Transmission Company, on Wentworth Avenue between Barton and Burlington Streets.

**Williamsport (Pa.) Passenger Railway.**—Plans are being considered by the Williamsport Passenger Railway for the construction of an extension into Newberry.

**Dallas (Tex.) Consolidated Street Railway.**—The City Commission has revoked its order to the Dallas Consolidated Street Railway Company requiring the company to lay 103-lb. girder rails on Tremont Street from Beacon to the City Limits. The new order requires the company to lay 80-lb. T rails. The change in order of the commission was made on petition of the company, which claimed that to carry out the commission's original order would mean bankruptcy for the company.

#### SHOPS AND BUILDINGS

**Boston (Mass.) Elevated Railway.**—Plans for extensive changes at the Forest Hills station of the Boston Elevated Railway, for the purpose of relieving congestion on the street surface platforms during rush hours, have been submitted to the Public Service Commission by L. S. Cowles, engineer. Mr. Cowles explained that it is proposed to lay another track on the westerly side of the southbound platform, thus creating an island but increasing the loading facilities to an extent that would care for the heavy traffic during the morning and evening rushes. The portion of the station it is designed to use for the new tracks is now devoted to vehicular traffic, but there is plenty of room outside for street-widening purposes.

**Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio.**—It is reported that this company will construct a combined passenger and freight depot, together with sufficient switching facilities, at the corner of North Court and Friendship Streets, Medina.

**Portsmouth Street Railroad & Light Company, Portsmouth, Ohio.**—The Ohio Valley Traction Company, a subsidiary of the Portsmouth Street Railroad & Light Company, will construct a carhouse, at the corner of Third and Lawrence Streets, Ironton.

**Three Rivers (Que.) Traction Company.**—This company has completed an 85-ft. extension of its carhouse and shop building, doubling the car capacity.

#### POWER HOUSES AND SUBSTATIONS

**Louisville & Northern Railway & Lighting Company, New Albany, Ind.**—Preparations are being made by the Louisville & Northern Railway & Lighting Company for the installation of a new street lighting system in Charlestown.

**Columbus Railway, Power & Light Company, Columbus, Ohio.**—A 1300-volt transmission line is being erected by this company to the plant of the Brunt Tile & Porcelain Company, which formerly operated an isolated power plant. New motors and equipment will be installed when the transmission line is completed.

**Republic Railway & Light Company, Youngstown, Ohio.**—Plans have been made by the Republic Railway & Light Company for the addition of a third 20,000-hp. generating unit to its Lowellville power station, but it is stated that, owing to present conditions in the electrical industry, it will not be installed for some time.

## Manufactures and Supplies

### CAR PAINTING MATERIALS ARE HIGH

Enameling Process Gains in Favor—Deliveries Normal, Except for Reds

Trade conditions in the paint, oil and varnish field have been moderately active during the summer. The comparatively large number of cars ordered during the first six months of the year stimulated buying to a point considerably above the average of 1915. Prices now are high. Linseed oil has been as high as 82 cents a gallon. Zinc oxide has touched 35 cents a pound, and the imported brilliant reds have been exceptionally high with prices very unstable. White enamel, such as is most commonly used, and which was formerly priced at \$2.50 to \$2.75 a gallon, is now \$4 a gallon, and reds that were \$3 a gallon are now \$4.50 a gallon and higher. With zinc oxide at 35 cents a pound, and 5 lb. required in the composition of a gallon of white enamel, it is easily seen why the price for the mixed product is now especially high.

Master painters used to hold to the opinion that white lead as such must be "pure" white lead, but now a substantial number of painters in car construction and maintenance fields think that for some purposes it is desirable to add zinc to a white lead mixture.

There is a growing tendency among the electric railway lines to change the outside painting of cars from paint and oil coats with varnishes to enamel. The idea of producing a piano finish is giving way to more practical plans of reducing the number of coats by applying enamel. Back of this movement is the idea that there will be a reduction, not only in the first cost but in the renewal cost. This is particularly true with steel cars. If a wooden car becomes badly marked it is necessary to scrape off the paint down to the wood and build up the several coats with especial care in order to match the colors and then to finish with the varnish coat. With enamel, the injured parts can be quickly filled in at less cost and with better results than when oil coats and varnish are used.

One reason for the increasing use of car enamel is the availability of improved products, resulting from greater attention having been given to enamels by manufacturers. As now ground in the paint factories, the enamels give much better finish than when the painters themselves used to grind their own color into varnish. It is pointed out by the manufacturers that a larger use of enamel for car exteriors will reduce the demand for varnish. On some roads, however, it is the practice to varnish over the enamel.

With regard to the orders placed during the last few months, none of these have been especially large. In the North Central States Kansas City has probably bought as much painting material in proportion to the size of the property as any road. That property has been changing its standard color from dark green to a light yellow with white trim and so has been doing an especially large amount of painting.

On most of the medium-sized roads that have formerly maintained revarnishing and repainting schedules, it is noted that during the past two years these schedules have not been followed, but rather it has been the practice to delay two or three months on the renewal work.

Except for the venetian reds, deliveries on paints, varnishes and enamels are practically normal.

### PACKING MATERIALS HOLD UP DELIVERIES

Lumber, Cardboard, Fiber and Other Materials Are Difficult to Obtain and Prices Are Greatly Advanced

In addition to a scarcity of raw materials for their products manufacturers are face to face with a serious shipping problem in the matter of packing materials. These materials are scarce and in some instances are holding up deliveries. Lumber, fluted cardboard, fiber and other packing materials are difficult to obtain, and prices have advanced materially.

The amount of lumber used each year in crating machinery and for packing boxes in the industry is enormous. In many electrical lines it has been superseded by fluted cardboard, but events of the last year or so, it is understood, have disturbed this supply also.

#### NEW LUMBER ASSOCIATION STANDS FOR UNIFORM GRADES

A new national association has been formed, under the name of the National Retail Lumber Dealers' Association, whose object it is to establish uniform grades of lumber in all parts of the country. The purpose intended is that a customer may know what he will receive when he places an order for a specific grade. The association indorses the extensive branding of lumber as a means of guarantee to the consumer that he will get the quality of lumber he desires as well as the use of trademarks and of extensive advertising of lumber.

#### ROLLING STOCK

Jackson Light & Traction Company, Jackson, Miss., has ordered two cars from the Southern Car Company.

Chicago (Ill.) Surface Lines are in the market for thirty cars similar to those purchased in 1914. These are for replacement of equipment destroyed by fire and damaged in the service.

#### TRADE NOTES

Consolidated Car-Heating Company, Albany, N. Y., has received an order from the Bay State Street Railway for 436 car equipments of Consolidated buzzers.

Roller-Smith Company, New York, has appointed as its representative in Birmingham, Ala., Jonathan Haralson, Brown-Marx Building, who will handle Roller-Smith instruments, circuit breakers and Columbia meters.

Hess-Bright Manufacturing Company, Philadelphia, Pa., at a meeting of the board of directors on Oct. 6 elected B. D. Gray president to succeed F. E. Bright, who remains identified with the company as chairman of the board.

H. W. Johns-Manville Company, New York, N. Y., has just opened a new branch office at Great Falls, Montana, in the Ford Building, Room 418, in charge of J. H. Roe. With the opening of the Great Falls office the Johns-Manville Company increases its number of branches to fifty-five.

H. W. Finnell was recently elected vice-president of Templeton-Kenly & Company, Ltd., Chicago, manufacturer of Simplex jacks for industrial and railroad purposes, and also for automobile use. He assumed his duties with that company on Oct. 1. Just prior to his present affiliation, Mr. Finnell was general manager of the Henry Giessel Company, in which concern he still retains his interests. He has been intimately connected with the railway supply industry for more than ten years.

Cooper Heater Company, Carlisle, Pa., has recently shipped the following orders for hot air heaters: Cincinnati Traction Company, 100 No. B-2; Johnstown Traction Company, forty-seven No. B-2; Northern Ohio Traction & Light Company, thirty-six; Pittsburgh Railways, 112; Beaver Valley Traction Company, twelve; Omaha & Council Bluffs Street Railway, twenty-five; Evanston Railway, twenty-seven; Steubenville & East Liverpool Railway, five; Muskegon Traction & Light Company, four; Cumberland & Westernport Railway, seven; South Covington & Cincinnati Traction Company, twenty-five; of the No. B-4 type: Lehigh Valley Transit Company, twelve; Stark Electric Railroad, seven; London & Port Stanley Railway, three; of the No. B-5 type. Also the following orders for No. 15 hot water heaters: Easton Transit Company, six; General Electric Company, four; Milwaukee Northern Railway, ten; Shamokin & Mount Carmel Railway, two; Missouri & Kansas Interurban Railway, two.

#### ADVERTISING LITERATURE

Ohio Brass Company, Mansfield, Ohio, is distributing an illustrated circular describing the O-B emergency fire hose bridge.

American Catalogs to Be Distributed at Lyons Fair.—The Annual Fair at Lyons, France, will be held from March 1 to 15, 1917, inclusive. Buyers from all parts of the world will be present, and it is desired to have as large a representation of American manufactures as possible. The State Department has placed \$500 at the disposal of the American Consul, which will enable him to distribute the catalogs and other literature of American manufacturers who are interested. The catalogs of those interested should be forwarded direct to the consul at Lyons.

Holden & White, Chicago, Ill., have issued a new catalog on Perry-Hartmann side and center bearings, which are manufactured by the Joliet Railway Supply Company. This catalog describes and illustrates the Perry double-roller, roller-bearing side bearings and the Hartmann self-centering ball center plate. It includes a chart showing the wheel flange pressure of a friction center plate compared with that of the Hartmann centering center plate. It illustrates in cross section the means for obtaining a surface contact on the centering plate balls to carry the load and, at the same time, operate in inclined pockets. Dimension drawings of the bearings are shown and also six full-page drawings of various applications of these side and center bearings to car trucks. The reading matter includes chapters on the necessity for roller side bearings and the advantages to be obtained by centering center plates.

#### NEW PUBLICATIONS

European Economic Alliances. National Foreign Trade Council, New York, N. Y. 117 pages. Paper, 25 cents.

This pamphlet is a compilation of information on international commercial policies after the European war and their effect upon the foreign trade of the United States, as well as an analysis of European and United States commercial interdependence and treaty relations. Expository rather than argumentative, the book is simply part of the work done by the National Foreign Trade Council in investigating the problems arising in foreign trade, and it offers in convenient form essential information on this subject of such present importance.

Manual of American Railway Engineering Association.—Edition of 1915 published by the American Railway Engineering Association, Chicago, Ill.

This is a volume containing the standards and recommendations of the various committees of the American Railway Engineering Association. With the various subjects reference is given to the volume of the proceedings for the full context of the committee reports and discussions. The 1915 edition is the fourth revision of this association's manual, which was first published in 1905. The subject matter includes the recommended standards on roadway, ballast, ties, rail, track, buildings, wooden bridges and trestles, masonry, signs, fences and crossings, signals and interlocking, records and accounts, rules and organizations, water service, yards and terminals, iron and steel structures, economics of railway location, wood preservation, electricity and conservation of natural resources. Standards recommended by special committees on the classification of railways, grading of lumber and uniform general contract forms have also been included in this manual. In order to make this volume as useful as possible for reference purposes, a complete index of the various subjects treated by the American Railway Engineering Association's standing committees has been prepared. The manual contains 680 pages and is intended for distribution among the members of this association.

The Earnings Power of Railroads. 1916 edition. James H. Oliphant & Company, 61 Broadway, New York, N. Y. 514 pages. Leather.

This is the latest edition of the valuable financial reference book presented to investors by the above-named banking houses. There are the usual introductory chapters explaining the fundamental principles to be used in the analysis of stock and bond values; tables giving vital statistics regarding earnings, mileage, capitalization, tonnage, etc., and notes presenting information as to dividends and other points of direct interest to investors. Those interested in steam railroad securities find this book both handy and valuable.