





usually by the strength of the highway bridges over which it must travel, and which are generally much lighter in weight than those for steam railroad service. These facts and other limiting conditions which need not be mentioned here, but many of which were clearly brought out in the paper and discussion, also affect the business, as well as the speed which these lines can attain.

Referring now to the subject of wheels, the city track is usually built for light cars, and wheels with narrow flanges and treads. The interurban car wheels tend to approach the dimensions adopted by the Master Car Builders as the standard for steam roads, although there are very few interurban roads as yet which have adopted the Master Car Builders' standard wheel tread and flange. They usually employ something of less dimensions. Mr. McCormack refers to the discrepancy between city and interurban wheels, and the havoc resulting to curves and switches from running cars with deeper flanges than originally intended over the city tracks. He suggests that for future practice the Master Car Builders' standard wheel-tread and flange be adopted, basing this suggestion on the argument that if the interurban lines are to make steam-road speed, as some expect to do, they must employ in the way of wheels what has been best for steam roads. This suggestion is one that will be very difficult to follow on many having city termini. For the majority of interurbans a jump to a wheel flange  $1\frac{1}{8}$ -in. x  $1\frac{3}{8}$ -in., and to a  $3\frac{5}{8}$ -in. tread, is too much to be accepted at once, although it may be ultimately adopted. Master Car Builders' standards, representing, as they do, the consensus of opinion of the majority of those skilled in the art of car construction, are hardly to be criticised for the purpose for which they are intended to be used. The Master Car Builders' standard was, however, when adopted, a compromise, adjusted to fit varying track conditions, particularly as to gages. As such variations in track conditions do not prevail on connecting city and interurban electric lines, there is not the same reason for their adoption on such roads. It may broadly be said that, so far as safety is concerned, the average electric interurban car, running at speeds of from 35 miles to 40 miles per hour, does not need a wheel flange more than  $\frac{3}{4}$  in. in depth and 1 in. thick. Many roads are using less, and while some roads employ wheels with flanges from 1 in. to  $1\frac{1}{8}$  ins. deep, and  $1\frac{1}{4}$  ins. to  $1\frac{3}{8}$  ins. thick, it is under conditions of traffic which are exceptional. Even the size specified above as a conservative one will usually give trouble on city tracks and special work, the grooves in which are often such as to call for a depth of flange of not over 9-16 in., and a thickness of  $\frac{3}{4}$  in. There does not seem to be any great advantage, either, in using a tread of more than  $2\frac{1}{2}$  ins., as a greater width invites the formation of a double tread and will create trouble with the paving in the city streets.

The subject is one, however, which is of the greatest importance, and Mr. McCormack deserves the thanks of all for bringing the subject so prominently to the attention of the association. If we are going to have deeper flanges, and certainly more roads err on the side of having them too shallow rather than too deep, the rail mills must be prepared to supply grooved and girder rails to accommodate the extra depth, and all new special work, where there is a possibility of its use for interurban cars, should leave flangeways to admit the new wheel. The special work so designed will probably not last as long, under city wheel service, as if made for smaller flanges, on account of the greater hammering effect of the wheels in jumping wide flangeways on frogs and crossings, but the possibility of interurban traffic with car wheels having deeper flanges, possibly even of those of Master Car Builders' standard, would be provided for.

### T-Rail in City Streets

In considering the question of interurban cars using city tracks, in his convention paper, Mr. McCormack favors the use of T-rail on the city lines, because of the flange room it allows, and its general suitability for the purpose. The employment of the T-rail for

street railway service has been growing more general during the past six years. The use of this rail for street railway purposes is now so extensive as to leave no doubt as to its entire suitability in paved streets, although on the part of many city authorities, who have not traveled extensively, and seen the T-rail in use, there is still much opposition to its employment. It has been adopted in numerous large and small Western cities, where traditions and customs do not have as hampering effect as in the East. As shown in Mr. McCormack's paper, there is no difficulty in paving to the T-rail, and it has made some entering wedges in the East, as evidenced by its adoption for two prominent lines in Brooklyn, and for all city streets in New Haven, Conn., and Sandusky, Ohio. West of Ohio plenty of examples can be found. Not the least attractive feature of T-rail is the fact that teams do not drive in the street car tracks as much as with girder rail, and hence faster and better car service can be given the public. There was no debate upon this feature of the paper, but we believe that if a determined effort was made to get the T-rail into cities, the step might often prove successful.

### Convertible Cars

The best type of car is a subject which is always a live one, as nothing yet evolved is satisfactory under all conditions. There is a general tendency in car construction, however, toward a certain type which is gaining popularity among street railway companies the country over, *i. e.*, a car with low stationary panels and deep sash, which can be used for both an "open" and "closed" car. The new form of this convertible car, described by Eugene Chamberlin in his paper before the American Street Railway Association, published elsewhere in this issue, and which is being tried in Brooklyn, follows the general trend of the practice of those who are working toward a car suited to all seasons, although presenting some interesting new details. Speaking broadly, the general type of convertible car, referred to as used elsewhere, is a closed car in which cross seats with center aisles are employed. By having low window sills and dropping the windows in hot weather nearly all the advantages of an ordinary open car, as to light and air, are secured, and the passenger also faces forward, a point which has much to do with the pleasure of riding in open cars. This form has certain advantages for summer service over the ordinary open car, the principal one being that the windows can be put up on short notice, and so the car can be made much more comfortable and dry, during storms, than an ordinary open car with its curtains as the only protection against the weather. In New Orleans, for instance, where, if anywhere, one would expect the open car would be used extensively on account of the heat, the frequent sudden drenching summer rains have prevented entirely the employment of this type in spite of the hot climate. In that city the closed car with large windows, center aisles and cross seats, has proved just the thing. Some of the lines in St. Louis were among the first to adopt this kind of summer and winter car.

Various modifications of this general type of combination car have been adopted by different railway companies. One of the changes is the removal of the window sash entirely during the summer, as in Mr. Chamberlin's cars. This gives a little more light and air, but at the expense of less security from wet in severe storms.

The substitution in an open car of a center aisle and end steps for the runningboard of the open car undoubtedly removes a device that is responsible for many accidents. This is shown by the figures in Mr. Chamberlin's paper. Indeed, a number of roads which operate open cars have done away with the runningboard entirely, and allow only one or two places of entrance. To do this it is necessary, of course, to cut down, by one-fifth, the seating capacity, but the presence of the aisles makes it much more comfortable for passengers and conductors, especially when there is a standing load or when it rains, runningboard or no runningboard. The Chicago Union Traction Company has had



for a number of years a type of car which is open and provided with runningboards, but also has a center aisle. That has, in fact, been its standard. The convenience of this car in rush hours and in storms is very pronounced. The mention of this is somewhat aside from the question of convertible cars, but it is cited as showing the advantages of a center-aisle type of car, and brings out another point in favor of the convertible car toward which practice is trending.

On the other hand, the ordinary open car has undoubted merits, particularly as regards the ease of discharging and receiving passengers, and in giving the maximum seating capacity per square foot of floor space. In pleasant weather there is no more popular car for summer riding than the ordinary open type, and if it was not for the necessity of storing these cars in winter and providing a double equipment, we believe that very few railway managers would consider the adoption of any other type of car for summer service, except for long interurban lines and Northern cities where the summer is very short. In certain cities of this kind there seems to be a preference for a center-aisle car of the convertible type, but we believe that in most cities further South, where the summers are longer, the ordinary open car will hold its own for a long time.

The combination open and closed car, as used almost to the exclusion of all others in California, was designed for the warm days and cool mornings and evenings of California climate. It is crowded outside during the day and inside at night, and is always sure to be half right. It is now a question in the minds of some California managers whether the closed cross-seat center-aisle car, which can be quickly opened up, will not serve better even in that climate.

Probably the most novel feature of the new car suggested by Mr. Chamberlin is in the seating arrangement. Chairs have before been substituted for benches, but in a few instances only, and the way in which the position of these chairs can be quickly varied to suit operating conditions is entirely new, so far as we are aware. The method of mounting the heaters so as to give plenty of storage room under the seats is also very ingenious, as are many of the other features connected with the car. The criterion of success depends, of course, on the popularity of the car with the traveling public, and this is a matter upon which it is very difficult to predict with certainty. We have known many positive improvements which have had to be rejected simply because they did not meet the passing whim of the average passenger and were looked upon by them with suspicion as another attempt of the railway company to save money. Again, other improvements, no more radical or better, have been immediately accepted, while still a third class has passed through a period of opprobrium, only to be adopted at last with entire satisfaction by all concerned. It is this test which the new Brooklyn car will have to pass, though the verdict given there will by no means hold for other cities, for it is one of the curiosities of the railway transportation business that methods of operation which are entirely satisfactory in one city often meet with unanimous denunciation in another, and vice versa.

#### **Alternating vs. Direct-Current Distribution**

The state of the art of polyphase alternating-current power distribution on electric railways has reached the point where much more definite and satisfactory information is obtainable as to efficiency and cost than a few years ago. In our Souvenir issue of Oct. 5 we were able to present some very valuable figures on the polyphase distribution system and power house of the Metropolitan Street Railway Company, of New York. M. S. Hopkins in his paper before the American Street Railway Association on "Alternating and Direct-Current Transmission On City Lines," printed this week in another column, does more than recite the glittering generalities to which we are often treated on the advantages of alternating as compared to direct-current transmission. He takes a specific case of direct-current distribution,

with which he has good reason to be very familiar, and shows the enormous loss actually taking place in the direct-current feeders (which, by the way, is not any more than on the average road in the United States) and then shows the saving made possible by the use of alternating-current transmission to the outlying portions of the system. Although concrete examples of financial saving of this kind tell the engineer only what he knew before to be true, they serve to convince less technical minds of the value of the latest methods of distributing large quantities of energy.

#### **The Purposes of and the Benefits Conferred by the American Street Railway Association**

Although conventions of the American Street Railway Association have been held annually now for twenty years, it is a long time since the association itself, its purposes and the benefits accruing to street railway companies by membership, have been selected as a topic for a paper. This was the subject assigned to Mr. Baumhoff, and although the paper was read by title only, and was not discussed, his enumeration of the advantages to the street railway industry of the meetings of the association were well chosen, and all absolutely true. It has come to be an almost universal custom for those engaged in any particular industry to form an association, to hold annual meetings and discuss subjects pertinent to their different lines of work. We doubt, however, whether there are many of these bodies which have been established as long as the American Street Railway Association, and do not know of any convention or gathering of this kind which attracts such a large number of attendants or is conducted on so extensive a scale. The founders of the association certainly builded wisely, and in forming the association established a foundation which has been of inestimable value in the advance and progress of the industry. Too much credit cannot be given them for their wise forethought, although at the time the association was organized no one, not even the organizers, could have had any conception of the extension of the business or the possibilities which would accrue from the use of mechanical traction. It is somewhat curious, and to the highest degree fortunate, that the association should have been founded at about the time cable traction was being introduced, and shortly before the street railway industry received its great impetus from developments in electrical apparatus. The result, however, was that when these broader subjects forced themselves for consideration on the attention of street railway managers, a body representing the best knowledge in the country, so far as street railway conditions were concerned, was ready to consider them and disseminate the knowledge acquired.

It has been a characteristic of the American Street Railway Association that it has always commanded the loyalty and support of nearly all the leading companies engaged in the street railway business. This support has often required the devotion of considerable time to the purposes of the association, in the way of preparation of papers and trips once a year nearly across the Continent for at least one-half of the members. Nevertheless, the conventions have always been well attended, and the delegates present have always been ready, not only to enter into discussions on the topics treated, but to give unreservedly the benefits of the experience acquired by them in different branches of railway work. Never has a policy of secretiveness characterized a meeting of the association. This may be attributed by some to the fact that in a way peculiar to no other industry the business interests of the various members do not clash. This, we believe, however, to be only a minor reason. It would not explain the broad policy of open meetings, which has always been a feature of the various conventions of the association, and the perfect readiness with which the members have made public all details of their operation. As the association, and the industry which it represents, have grown rapidly, there has been a call for even more valuable results from its deliberations. These took form in the appointment last year of the committee on standards, whose re-



port is to be presented on Friday. From what we learn of this committee's labors, they seem to have been very painstaking, and to have established at least a foundation upon which the future work of the committee can be based. This is a most valuable result, and the report, as approved by the executive committee, and presented Friday, will be one of the most important features of that day's session. This committee, however, need be only one of a number which could be appointed to carry out investigations of equal value in other departments of operation.

#### A Review of the Past and a Forecast of the Future

Those who have entered the street railway industry during the last decade can hardly possess a correct conception of the character of the problems presented to the street railway operator of twenty years ago. Street railroading has grown so rapidly during the past two decades, and has been subject to so many radical changes, arising from the use of improved motive power, that it is now often referred to as one branch of electrical engineering. Nevertheless, there are many of the foremost authorities on street railroading in this country who have belonged to the old regime, and who, after witnessing the revolution which has been accomplished in their business within their experience, can give us an interesting account of the early horse railway. This is what was done by Captain McCulloch in his interesting paper, read by title, on Tuesday morning. It was unfortunate that the author was not able to be present, as he has a host of friends among the delegates, but his paper, when read, will bring back to many of the older members vivid memories of the bobtail car days, when the largest equipment used was of three-mule power. While reading this paper, and, in fact, often at a large and representative gathering of street railway officials of this kind, the thought has many times occurred to us, as it must undoubtedly have occurred to many of our readers, that it is a striking commentary on their progressiveness that so many of the most successful managers of to-day are graduates of the old horse railway. Certainly no higher testimony could be given of their receptivity to new ideas, their broad-mindedness and their ability that they should have been able, and even more than ready, to adopt the improvements which engineering science has so rapidly made available in their industry. In fact, it has been a notable characteristic that these same "older men" have often been the pioneers in introducing and standardizing what have proved to be most valuable improvements in the industry, a prominent example of this being furnished in the case of Captain McCulloch himself. But it should be borne in mind, and the paper in question brings this fact out most clearly, that while changes in methods of motive power have occurred, the general principles of railroading are the same now as always. While the railways and their officials have risen to the occasion, have built longer cars, have run them at higher speeds, have laid heavier rails and have substituted for horses the immense power stations of the present day with their networks of wires and motors for car propulsion, the natural ability to direct the operation of a modern transportation system is of the same character, though perhaps required to a larger degree, as it was when a 16-ft. car was the standard. In other words, the railway managers of 1870 and 1880 had to study the public requirements, use the same diplomacy in meeting objectors, and exercise the same ability in directing the operating forces as are needed to-day, so that it is not at all surprising that those who possessed these qualities in an eminent degree, and who also had the necessary mechanical training to decide questions relating to the new motive power, should be invaluable as managers of modern transportation systems. It is needless to say that the entire industry owes a debt of gratitude to these veterans in the harness, not only for the firm foundations which they laid originally for street railroading, but for the progressive spirit with which they met the modern conditions, joining their experience of the practical conditions with the theoretical knowledge of the electrical engineer until the vast superstructure, as we see it now, has been finally completed.

#### Street Railway Investments and the Public

"What greater benefit could be conferred upon our citizens than legislation of a character calculated to eliminate from street railway securities their speculative nature, and place them substantially upon the basis of the savings bank deposit." The above quotation from the able paper of C. S. Sergeant before the American Street Railway Association expresses not only the essence of the paper, but gives utterance to such an important truth that we cannot refrain from taking this opportunity to advertise it. In another place in the paper Mr. Sergeant mentions the often-heard argument in favor of municipal ownership, that municipalities can borrow money at lower rates of interest than private corporations. "Why not, then," he says, "have such laws as will make the credit of private corporations good enough to command the lowest rates of interest." As communities grow older there is a constant tendency, and a commendable one, toward laws and restrictions which tend to give permanence to investments, and security to investors in public corporations. Such laws have perhaps reached a higher state of perfection in Mr. Sergeant's State, Massachusetts, than in any other. Although it is a fact that may not be universally appreciated, it is, nevertheless, true that anything which tends toward the security of the individual small stockholders in any corporation is also a good thing for the public which that corporation serves. In the early days of electric railway enterprises, when the chances for profits were very questionable, and where there was a great deal of uncertainty as to whether the investment would prove a complete failure or not, none but speculators could be induced to embark in such enterprises. As conditions became more settled, the speculative nature of street railway investments decreased. There is, therefore, no reason why, aside from the uncertainty as to franchises and the burdens of taxation, street railway investments should not be in the nature of any other gilt-edge security. What the investors and the public most need is protection against legislation, which is likely to change the value of a street railway property, and protection against speculators who are ever ready to make abnormal profits through stock jobbing operations. These latter not only tend to cast discredit on the whole street railway industry by creating fictitious values, but by putting properties, which would otherwise be good dividend payers, into bad financial shape, they thereby force street railway managers to exercise the greatest economy in the improvement of the service and equipment, where otherwise handsome margins should be available for such purposes.

Mr. Sergeant does not go into details as to what laws should be enacted, and what general policy of legislation would be advisable for defining exactly the rights of street railway corporations, except that he makes the excellent suggestion that such legislation should cover street railway properties over large areas, rather than in municipalities. This is desirable, not only from the standpoint of the investor who may not be familiar with local conditions in various places, but because State and United States laws are not as easily tampered with by meddling politicians as are city ordinances. In small cities the value of a franchise is admitted to be practically nothing; that is, while it is possible to build roads and have them pay a fair return on the investment, there is no margin over and above the receipts. In the larger cities there is, of course, a greater possible profit, and the common cry at the present time is that the companies operating in such cities should be made to pay heavily for the franchises which they have enjoyed. The exact value of a franchise, or, in other words, the exact earning power of a company's property over and above the interest amount that has been actually expended on it, is a most difficult matter to determine. Indeed, growth and reconstruction have, up to the present time, been so rapid that it is questionable whether, if a street railway property is thoroughly maintained so as to provide for all the renewals and sinking fund necessary, there is much profit at all. This is a point upon which even the best financiers and street railway operators are at sea. Mr. Sergeant presents a plea in favor of freedom from taxation,



and the application of surplus earnings toward improvement in the service. Such a course certainly seems to be most just to all concerned, as it insures to the street railway investors that his investment should be unimpaired in value, while securing to the public the best service and equipment that the street railway earnings in any locality will warrant. Just how to arrive at this result, of course, is not an easy task. In general, it may be said that any plan which will cause investment in the property itself of all net earnings over and above a reasonable dividend on the money invested is to the benefit of both the investor and the public. That the rate of dividends on investments in street railway properties should be larger than from government bonds goes without saying, because it would be many years before the business security of street railway investments can be such as to make the risk as small as in the securities mentioned. Mr. Sergeant also calls attention to the advantages of our American system of charging one fare for all distances, as against the European system of charging in proportion to the distance traveled. The latter system tends to concentrate the poorest element near the center of a city, the moral effect of which can only be bad, as it tends to perpetuate the slums. The general lesson taught by the paper that financial burdens put upon street railway companies mean a restriction of transportation facilities cannot be too thoroughly emphasized. While the paper was not discussed by the association, it will form part of the proceedings, to which it will prove a most valuable addition.

#### The Report of the Convention

It has been our usual custom to publish the full report of the meetings of the American Street Railway Association in the monthly issue of the STREET RAILWAY JOURNAL following the convention. This, with one exception, has always been the November number, and it has been published near the first of the month, or within a week after the close of the convention. Owing to the fact that the association was not able to secure the Madison Square Garden this year at the usual time in October, the date of the convention has been advanced a full week. We have concluded, therefore, that our readers would prefer to have the news of the convention placed before them directly, rather than to wait for the publication of the larger number during the first week of November. This number, therefore, is devoted to the proceedings of the association on the first two days of the convention, that is Wednesday, Oct. 9, and Thursday, Oct. 10, together with a description of some of the most interesting exhibits presented in connection with the convention. It is placed in the hands of the attendants at the convention early Friday morning, so that they will have an opportunity of reviewing the principal events of the first two days of the convention, one day before the adjournment. Our issue of Oct. 19 will contain the report of the final day of the session, the banquet, the excursion to Bethlehem, and a description of the exhibits and other features which are not covered in this issue.

We take this occasion to express our thanks to the many attendants at the two conventions, as well as to the daily press, who have courteously expressed their congratulations and compliments to us on the appearance of our last week's issue. The idea of a monograph on the street railway situation in New York City seems to have been most popular, and to have been generally appreciated. Certainly no subject more replete with interest to a technical paper was ever before presented for discussion, and, so far as we know, no subject of this kind has ever been treated in one periodical by so many experts on their particular lines, or in so complete a way, as in our issue of Oct. 5. These articles, we understand, have been of great assistance to the many street railway visitors in this city during this last week in enabling them to appreciate the peculiar conditions under which the New York City roads operate, and in directing their attention to special subjects of investigation, while as a reference book the issue will long be kept, not only for its technical information on the New York roads, but as a classified index of the leading manufacturers of street railway apparatus.

#### Six Miles an Hour Unreasonably Slow

The street railway is a public servant; but, like every other servant, it has rights which not only ought to be respected, but which the courts, when appealed to, will enforce. These propositions have recently been illustrated in an equity action in the Supreme Court of New York. A street railway has the right to fix its rates of fare, except where it is limited by its charter, franchise or other contract. If it reduces them below the legal limit, it can afterward raise them to that limit. This is what the Union Traction Company, operating a street car line through the city of Watervliet, did, and, immediately, there was a vigorous protest. Various methods were discussed by the citizens who felt themselves abused. Finally, the Common Council passed an ordinance making it a misdemeanor to operate street cars within the city at a speed exceeding 6 miles an hour. Twelve miles had been allowed by the previously existing regulation. The company paid no attention to the new ordinance, and its motormen were arrested.

The law was appealed to, and the inference of the equity branch of the Supreme Court was invoked. There was no question but that the Common Council had the power to pass ordinances regulating the speed of street cars. The only resource left to the company was an appeal to a salutary principle, flexible in its application, but which is firmly imbedded in our equity jurisprudence, and allows the court to decide that a given ordinance or regulation is "unreasonable," and because unreasonable, void. This does not mean that the court is to take the place of the Common Council, or other legislative body, or to substitute its opinion in place of the opinion of the regularly constituted authorities, or even that it has a veto power like that often given an executive. But it does mean that, in a proper case, where property or personal rights are involved, and where the court can see that the ordinance, or other regulation, is oppressive, and has no ascertainable reason or excuse to palliate the injury it causes, the court may interfere, especially where ulterior motives are apparent, and no other efficient remedy is available to the party or parties who are suffering damage by its enforcement. To illustrate this more vividly, let us suppose the Watervliet Common Council had limited the speed of the cars to one-half a mile an hour. Any equity court would have granted an injunction against the enforcement of the ordinance without argument. It is important also to notice that this injunction was applied in the case of a *penal* ordinance, which, being "unreasonable," became confiscation or destruction of valuable rights without due process of law, and thus unconstitutional.

It is interesting to read the reasoning of Judge Chester in the Watervliet case, by which he arrives at the very reasonable conclusion that 6 miles an hour in the circumstances there existing was so unreasonably slow for the maximum rate of street cars that he could and would enjoin the police from arresting motormen who violated the ordinance. He says:

"It cannot be that any considerable number of the residents of Watervliet, who have occasion to use street cars, honestly desire to travel at only one-half the speed generally prevailing in neighboring communities, nor that their interests or convenience would be promoted by so doing.

"In each of the cities of Cohoes and Rensselaer, where the traffic on the streets is as great as in Watervliet, and also in the city of Albany, where the population and street traffic are much greater than in Watervliet, 12 miles per hour is permitted, except in some congested localities in Albany where the rate is 8 miles per hour. The streets through which the plaintiff operates its cars in Watervliet are wide, substantially straight and comparatively level. No impediment exists to the operation of cars there at a fair rate of speed, and at such a rate as will best serve the interests and convenience of the traveling public. It is clearly shown that cars can be, and have been, operated with reasonable safety at 12 miles per hour. This is the rate generally prevailing in this locality. A speed of 6 miles per hour will require a car to consume twenty minutes in passing over the 2 miles of the plaintiff's road in Watervliet. The same rate would require one hour in going from Albany



to Troy. That speed would have been no tax upon the energy of the average team doing service in the days of stages and horse cars, and will not satisfy the requirements or the convenience of travelers in cars propelled by electricity in 1901. If the plaintiff, and not the Common Council, had established this slow rate of speed the citizens of Watervliet would have been unanimous in raising their voices in protest.

"The proofs show that during the short time the plaintiff operated its cars at this slow speed, in obedience to the requirements of this ordinance, numerous complaints were made by passengers, and it suffered a large loss of patronage.

"I can come to no other conclusion on the papers submitted to me than that this ordinance is one materially impairing the property rights of the plaintiff; that it is subversive of the interests and convenience of the public, and that it is unreasonable, and, therefore, void."—(35 Misc., 392, 396.)

Not many years ago 6 miles was a reasonable maximum rate for interurban street traffic; now it is judicially decided to be wholly unreasonable. Is the time approaching when 12 miles will be unreasonably slow?

### The Committees

Nine different committees have in charge the perfection of arrangements for the convention of the American Street Railway Association. There is a general committee, entertainment committee, entertainment committee of ladies, transportation committee, exhibit committee, sub-committees of the exhibit committee, committee of rules governing exhibits, press committee, and reception committee. A list of the several committees follows:

#### GENERAL COMMITTEE

1. H. H. Vreeland, President Metropolitan Street Railway Company, 621 Broadway, New York.
2. J. L. Greatsinger, President Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn.
3. David Young, Vice-President North Jersey Street Railroad Company, 29 Exchange Place, Jersey City.
4. Col. N. H. Heft, New York, New Haven & Hartford Railroad Company, New Haven, Conn.
5. Edward A. Maher, President Union Railway Company, 204 East 128th Street, New York.
6. D. B. Hasbrouck, Vice-President Metropolitan Street Railway Company, 621 Broadway, New York.
7. A. M. Young, President Bridgeport Traction Company, 100 Broadway, New York.
8. J. R. Beetem, Vice-President New York & Queens County Railway Company, 7 Borden Avenue, Long Island City, New York.
9. E. P. Bryan, General Manager Subway, Park Row Building, New York.
10. Alfred Skitt, Vice-President Manhattan Railway Company, 195 Broadway, New York.
11. James H. McGraw, STREET RAILWAY JOURNAL, 120 Liberty Street, New York.
12. Gen. Eugene Griffin, General Electric Company, 44 Broad Street, New York.
13. B. H. Warren, Westinghouse Company, 120 Broadway, New York.
14. Henry Sanderson, President New York Electric Transportation Company, Forty-Ninth Street and Eighth Avenue, New York.
15. Frank J. Sprague, Sprague Electric Company, 20 Broad Street, New York.
16. Henry L. Shippy, Treasurer John A. Roebling Sons Company, 117 Liberty Street, New York.
17. John L. Heins, President Coney Island & Brooklyn Railroad Company, DeKalb Avenue and Central Avenue, Brooklyn.
18. Clinton L. Rossiter, MacGovern & Company, 141 Broadway, New York.

#### ENTERTAINMENT COMMITTEE

1. J. L. Greatsinger, President Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
2. H. D. Cooke, Compressed Air Company, 621 Broadway, New York.
3. Ralph H. Beach, General Electric Company, 44 Broad Street, New York.
4. Edward E. Higgins, STREET RAILWAY JOURNAL, 120 Liberty Street, New York.

5. W. Boardman Reed, Engineer Maintenance of Way, Metropolitan Street Railway Company, 621 Broadway, New York.
6. Major H. C. Evans, Lorain Steel Company, 71 Broadway, New York.
7. F. N. Taylor, Westinghouse Company, 120 Broadway, New York.
8. E. A. Merrill, McIntosh & Seymour Engineering Company, 26 Cortlandt Street, New York.
9. Thomas C. Wood, The Ball & Wood Company, 120 Liberty Street, New York.
10. James C. Barr, Weber Rail-Joint Company, 71 Broadway, New York.
11. H. Webster, Babcock & Wilcox Company, 29 Cortlandt Street, New York.
12. H. M. Littell, 30 Broad Street, New York.
13. D. M. Brady, President Brady Brass Company, Jersey City, N. J.
14. Charles F. Brocker, President Coe Brass Company, Torrington, Conn.
15. C. B. Fairchild, Jr., *Street Railway Review*, 39 Cortlandt Street, New York.
16. Col. H. G. Prout, *Railroad Gazette*, 32 Park Place, New York.
17. Henry Sanderson, New York Electric Vehicle Transportation Company, Eighth Avenue and Fiftieth Street, New York.
18. T. C. Martin, *Electrical World and Engineer*, 120 Liberty Street, New York.
19. James H. McGraw, STREET RAILWAY JOURNAL, 120 Liberty Street, New York.
20. H. F. J. Porter, Bethlehem Steel Company, 100 Broadway, New York.

#### SUBCOMMITTEE OF THE ENTERTAINMENT COMMITTEE

Henry Sanderson, New York Electric Vehicle Transportation Company, Eighth Avenue and Forty-Ninth Street, New York City.

James H. McGraw, STREET RAILWAY JOURNAL, 120 Liberty Street, New York City.

H. D. Cooke, New York Compressed Air Company, 621 Broadway, New York City.

Charles D. Meneely, Brooklyn Heights Railroad Company, 168 Montague Street, Brooklyn, N. Y.

T. C. Martin, *Electrical World and Engineer*, 120 Liberty Street,

#### ENTERTAINMENT COMMITTEE OF LADIES

1. Mrs. H. H. Vreeland.
2. Mrs. James H. McGraw.
3. Mrs. Henry Sanderson.
4. Mrs. Henry A. Robinson.
5. Mrs. Charles E. Warren.
6. Mrs. Milton G. Starrett.
7. Mrs. John T. Little.
8. Mrs. D. M. Brady.
9. Mrs. W. W. Wheatley.
10. Mrs. J. R. Beetem.
11. Mrs. T. S. Williams.
12. Mrs. D. C. Morehead.
13. Mrs. Ralph H. Beach.
14. Mrs. H. F. J. Porter.
15. Mrs. Frank B. Jackson.
16. Mrs. J. C. Brackenridge.
17. Mrs. Clinton L. Rossiter.
18. Mrs. R. L. MacDuffie.
19. Mrs. Walter A. Pearson.
20. Mrs. Eugene Griffin.
21. Mrs. Thomas Millen.
22. Mrs. Marvin W. Wynne.
23. Mrs. Daniel W. Patterson.
24. Mrs. Frederick G. Garrick.
25. Mrs. Sharon Graham.
26. Mrs. Theodore H. Lord.

#### TRANSPORTATION COMMITTEE

1. James H. McGraw, STREET RAILWAY JOURNAL, 120 Liberty Street, New York.
2. W. W. Wheatley, Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
3. Milton G. Beach, Agent, etc., New York Central & Hudson River Railroad Company, 1216 Broadway, New York.
4. W. E. Baker, General Superintendent Manhattan Railway Company, 32 Park Place, New York.
5. D. W. Cooke, General Passenger Agent Erie Railroad Company, 26 Cortlandt Street, New York.



## EXHIBIT COMMITTEE

1. Milton G. Starrett, Chief Engineer Metropolitan Street Railway Company, 621 Broadway, New York.
2. Oren Root, Jr., Assistant General Manager, Metropolitan Street Railway Company, 621 Broadway, N. Y.
3. C. D. Meneely, Secretary Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
4. Eugene Chamberlin, Superintendent of Equipment Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
5. Calvert Townley, Westinghouse Company, 120 Broadway, New York.
6. Charles N. Jarvis, Vice-President American Bridge Works, 100 Broadway, New York.
7. J. R. Lovejoy, General Electric Company, 44 Broad Street, New York.
8. Capt. L. Candee, Okonite Company, 263 Broadway, New York.
9. E. E. Gold, Gold Car Heating Company, Frankfort Street and Cliff Street, New York.
10. Peter H. Kling, General Manager John Stephenson Company, Elizabeth, N. J.
11. Frank MacGovern, Rossiter, MacGovern & Company, 141 Broadway, New York.
12. A. H. Berry, H. W. Johns Manufacturing Company, 100 William Street, New York.
13. R. L. MacDuffie, Wendell & MacDuffie, 26 Cortlandt Street, New York.
14. L. G. Read, Abendroth & Root Manufacturing Company, 99 John Street, New York.
15. Thomas Millen, Master Mechanic Metropolitan Street Railway Company, 621 Broadway, New York.
16. Col. A. C. Woodworth, General Manager Consolidated Car Fender Company, 39 Cortlandt Street, New York.
17. John T. McRoy, McRoy Clay Works, 302 Broadway, New York.

## SUBCOMMITTEES OF THE EXHIBIT COMMITTEE

## Classification Committee.

- Oren Root, Jr., Assistant General Manager, Metropolitan Street Railway Company, 621 Broadway, New York City.
- Eugene Chamberlin, Superintendent of Equipment, Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
- Thomas Millen, Master Mechanic, Metropolitan Street Railway Company, 621 Broadway, New York City.
- R. L. MacDuffie, Wendell & MacDuffie, 26 Cortlandt Street, New York City.
- A. N. Berry, H. W. Johns Manufacturing Company, 100 William Street, New York City.

## Allotment Committee.

- Oren Root, Jr., Assistant General Manager, Metropolitan Street Railway Company, 621 Broadway, New York City.
- Eugene Chamberlin, Superintendent of Equipment, Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
- R. L. MacDuffie, Wendell & MacDuffie, 26 Cortlandt Street, New York City.

## COMMITTEE ON RULES GOVERNING EXHIBITS

- Thomas Millen, Master Mechanic, Metropolitan Street Railway Company, 621 Broadway, New York City.
- A. N. Berry, H. W. Johns Manufacturing Company, 100 William Street, New York City.

## PRESS COMMITTEE

1. St. Clair McKelway, care Brooklyn *Eagle*, Brooklyn, N. Y.
2. Adolph S. Cohen, care New York *Times*, *Times* Building, New York.
3. Colin Armstrong, care New York *Sun*, *Sun* Building, New York.
4. Charles E. Miller, New York *Times*, *Times* Building, New York.
5. William Van Benthusen, care New York *World*, *World* Building, New York.
6. John Burke, care New York *Herald*, Broadway and Thirty-Fifth Street, New York.
7. H. B. Cosgrove, care New York *Tribune*, 154 Nassau Street, New York.
8. Henry L. Stoddard, *Mail and Express*, 203 Broadway, N. Y.

## RECEPTION COMMITTEE

1. Col. T. S. Williams, Vice-President Brooklyn Rapid Transit Company, 168 Montague Street, Brooklyn, N. Y.
2. A. S. Tulley, General Purchasing Agent, Metropolitan Street Railway Company, 106 West Thirty-First Street, New York.
3. Charles E. Warren, Secretary, Metropolitan Street Railway Company, 621 Broadway, New York.
4. E. H. Mullen, General Electric Company, 44 Broad Street, New York.
5. James H. Wakeman, Vice-President STREET RAILWAY JOURNAL, 120 Liberty Street, New York.
6. Henry W. Blake, STREET RAILWAY JOURNAL, 120 Liberty Street, New York.
7. E. C. Long, Peckham Company, 26 Cortlandt Street, New York.
8. L. B. Stillwell, Electrical Engineer, Manhattan Railway Company, 32 Park Place, New York.
9. Harold P. Brown, Plastic Rail-Bond Company, 120 Liberty Street, New York.
10. Giles S. Allison, 57 Broadway, New York.
11. Jacob Wendell, Jr., Wendell & MacDuffie, 26 Cortlandt Street, New York.
12. Charles W. Price, *Electrical Review*, 32 Park Row, New York.
13. H. A. Robinson, Solicitor Metropolitan Street Railway Company, 621 Broadway, New York.

## DIRECTOR OF EXHIBITS

Marcus Nathan, Grand Central Palace, New York.

---

**Convention Notes**


---

The very tasteful programme and guide book published by the local committee was extremely popular, especially with those who were unacquainted with New York City, as it contained an illustrated guide to the principal points of interest on Manhattan Island and in Brooklyn. The arrangement of maps, divided as these maps were so that the book could be carried in the pocket, although the maps were on quite a large scale, added to the popularity of the programme.

\* \* \*

This year the plan was followed of printing the papers to be presented in advance of sending copies to the different members of the association, so that they could have an opportunity of reading the papers and preparing comments on or questions about them. The result of this was certainly very satisfactorily reflected in the discussions which were much more complete than they have ever been before. We do not think that the printing of the papers in advance detracted in any respect from their interest, while the main value of meetings of this kind, that is, discussion, was greatly enhanced by this method. We trust that the plan, which has proved to be so successful, will be adopted in future meetings of the association.

\* \* \*

Much favorable comment on the courtesy of the New York Telephone Company was caused by the generous offer of that company to furnish free telephone service to New York exhibitors at the Madison Square Garden. About two weeks ago the company addressed a letter to all proposing exhibitors at the convention from New York City stating that it was the company's intention to install at the Garden a switchboard with a capacity sufficient to take care of this service. During the two days previous to the opening of the convention instruments of the desk type were placed in the different booths, and a great deal of use has already been made of this service. Many attendants have also found the main telephone booth at the Garden of great convenience, and the enterprise of the company in making the installation is to be commended.

\* \* \*

The "Hudson River Line," the popular name of the New Jersey & Hudson River Railway & Ferry Company, proffered a cordial invitation to all delegates to ride over the line of that company. This road starts from the foot of the Palisades in New Jersey, opposite West 130th Street Ferry, climbs this ancient and wonderful natural formation, and terminates in Englewood and Hackensack. The ascent of the Palisades shows some remarkable engineering work in overcoming the difficulties presented. The eastern terminal of the line is reached by taking the Boulevard or 125th Street Crosstown surface cars in New York, which run to West 130th Street Ferry, adjoining Claremont.



## PAPERS READ AT WEDNESDAY'S SESSION

### The Best Form of Car for City Service

BY EUGENE CHAMBERLIN

Superintendent of Equipment, Brooklyn Heights Railroad Company

The evident magnitude of the subject assigned and the ideal opportunity offered for criticism cause the writer to feel that any and all suggestions should be made with a certain degree of caution, and that they should, so far as possible, be sustained by facts. It is probable that traffic requirements in different cities vary to such an extent that a car designed to meet the conditions in one city would be but poorly adapted to meet those of another, and this, together with the fact brought out in the discussion at the Kansas City convention last October, that several electric railway systems were giving much attention to the development of the most advantageous vehicle for each particular road, makes it difficult to suggest a car that will prove uniformly satisfactory.

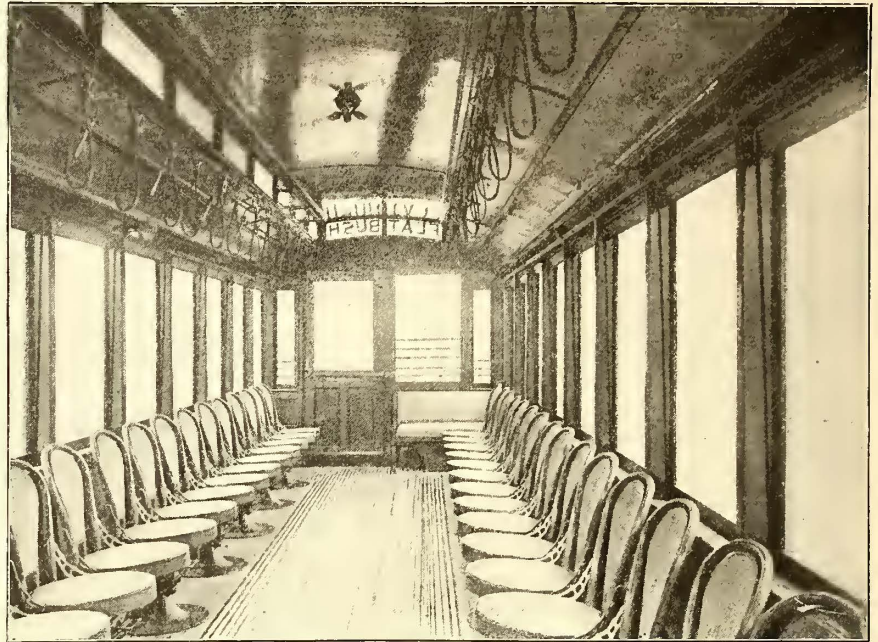
The double-truck car, having body of 25 ft. in length and upward, is usually selected for heavy continuous city traffic, while the single-truck car, with body, say, from 18 ft. to 21 ft., is usually operated on side lines where travel is fairly uniform, but not usually heavy. If this is a correct statement of the conditions, it is apparent that both the double and single-truck car has its particular function to perform, and each will for some time, at least, remain factors on electric roads in the handling of various classes of traffic.

It should be borne in mind that, for good and sufficient reasons, a number of electric roads do not provide a permanent equipment of trucks and motors for both summer and winter (open and closed) cars, but at indicated periods transfer such equipment from one class of cars to the other. This entails considerable expense, but presumably less than would be represented by the investment, interest and deterioration on a large number of trucks and motors permanently installed on cars stored

car in the summer), we would secure the following advantages:  
First—The shifting of truck and motor equipment would be avoided.

Second—The roads would be efficiently operated with a less total number of cars.

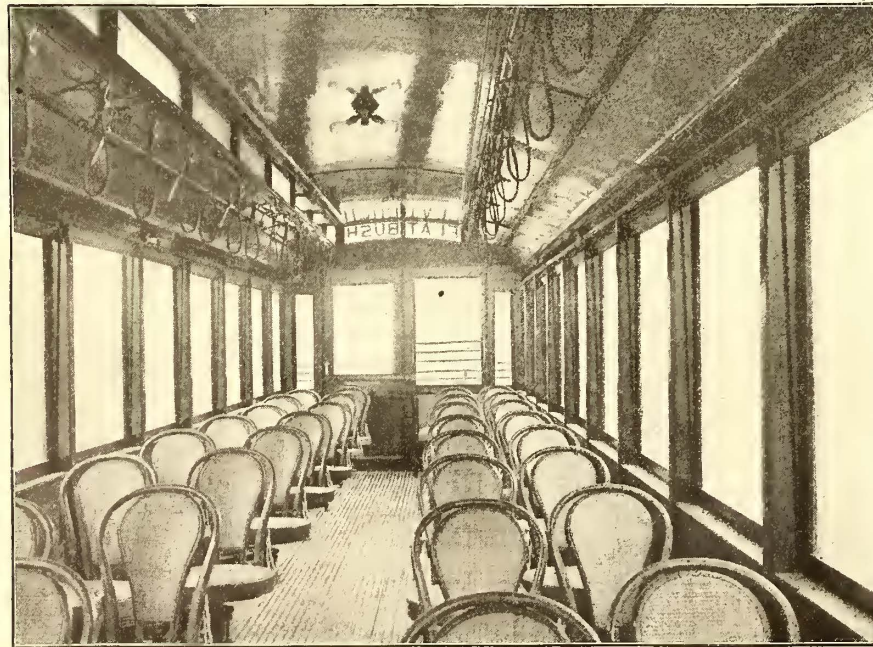
Third—Only a limited room would be required for the storage of cars not in service.



CAR WITH SEATS ARRANGED LONGITUDINALLY

These are all certainly desirable objects to attain, as they are based upon economical grounds.

It is proposed that a car as hereinafter described would meet the conditions referred to. This proposition is not advanced as a matter of theory, but, as "facts are stubborn things," it is based upon the actual operation of a number of cars of this type, extending over a period of several months, and showing increased earnings as against other so-called standard cars of nearly similar size. It is, moreover, emphasized by the very favorable comments of the press and public as to the comfort and convenience of this particular vehicle.



CAR WITH SEATS ARRANGED ACROSS CAR

for a part of each year, and the cost of purchase or rental and maintenance of large houses or barns for the storage of cars kept out of service; which is a very considerable factor in expenses of operation in large cities, where land is usually valuable and rents high.

It must, then, be obvious that with a car of the convertible type, designed to meet the conditions of traffic as regards seasons (that is, be operated as a closed car during the winter and as an open

The car in question may have any length over all consistent with clearances and the service desirable to perform. The one proposed herewith for general service is of the "combination" or convertible type, as illustrated in detail by drawings and photographs submitted with this paper, and in a general way has the following dimensions:

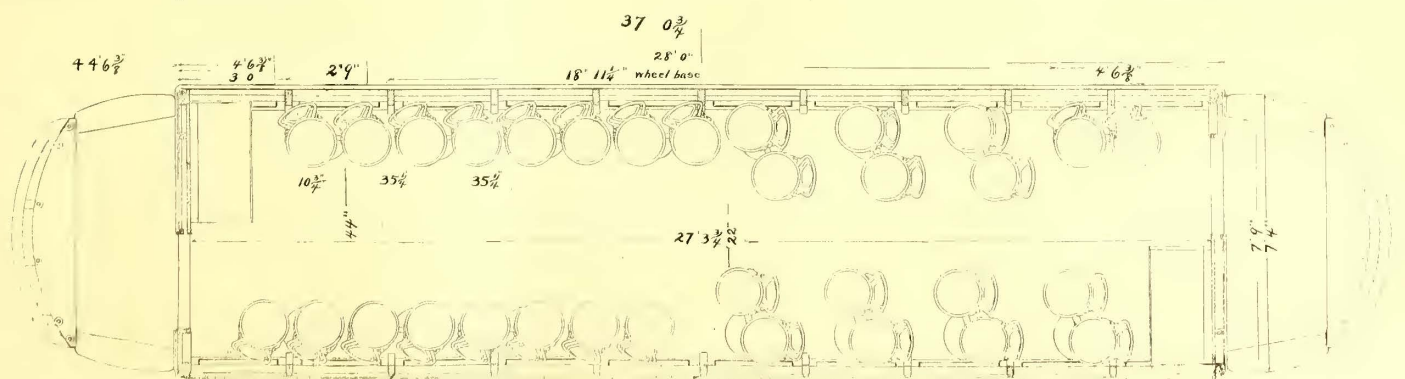
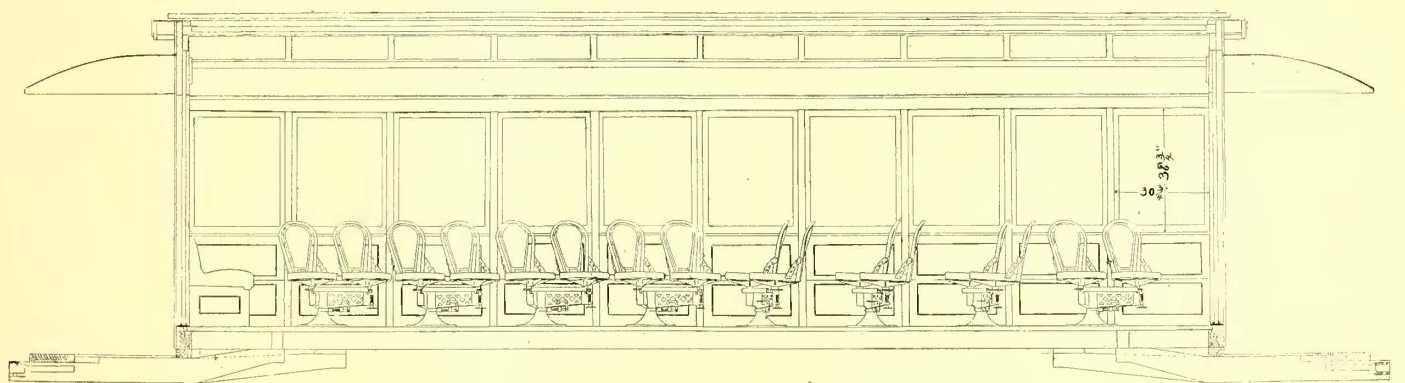
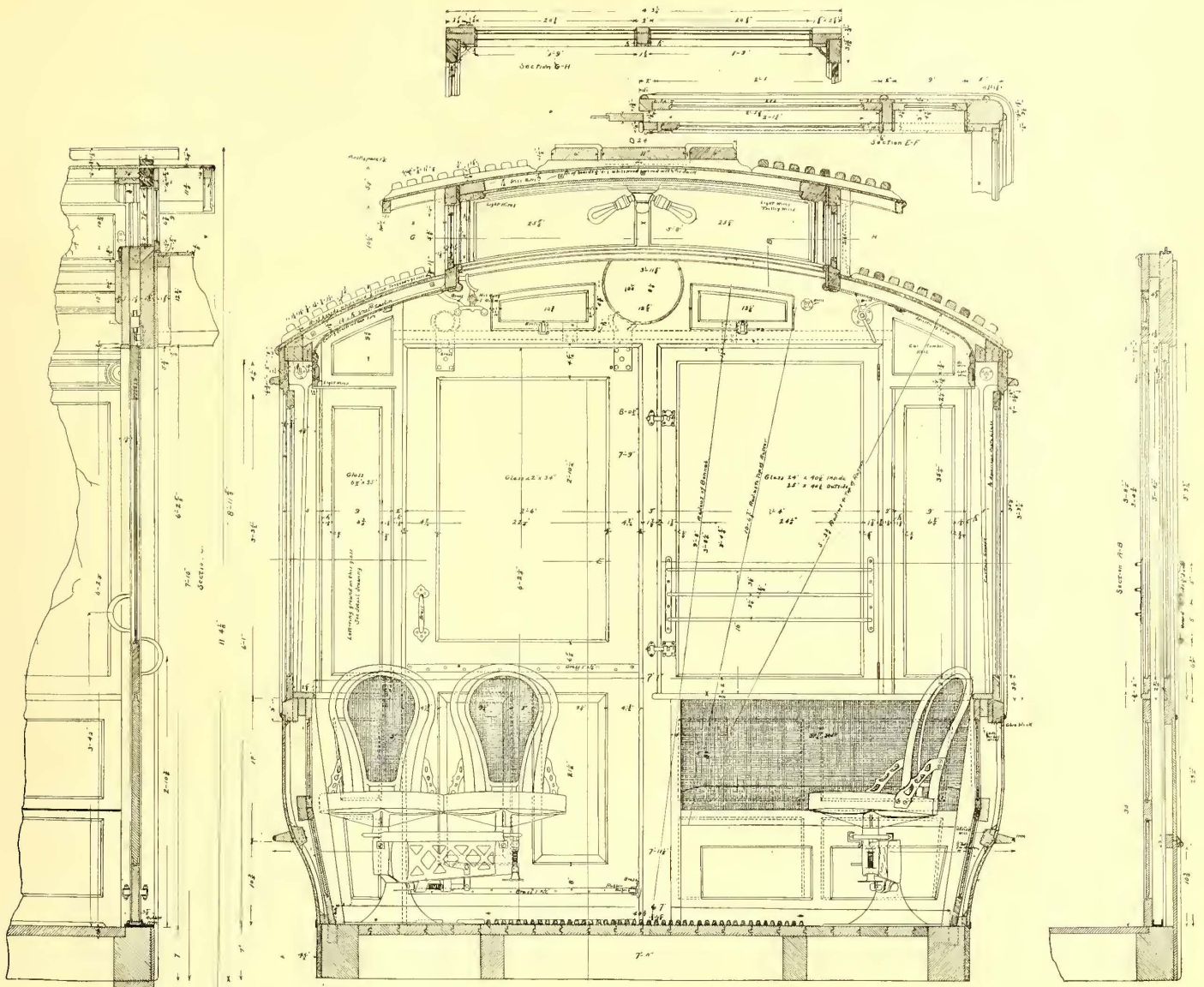
Length over all.....	37 ft.	$\frac{3}{4}$ ins.
Length over corner posts.....	28 ft.	0 ins.
Platforms .....	4 ft.	$6\frac{3}{8}$ ins.
Width over all at drip rail.....	8 ft.	$\frac{1}{2}$ ins.
Width over all at sills.....	7 ft.	0 ins.
Width over all at steps.....	7 ft.	4 ins.
Height from rail to top of trolley board .....	11 ft.	$4\frac{1}{8}$ ins.
Height from sill to top of trolley board .....	8 ft.	$11\frac{5}{8}$ ins.
Wheel base .....	18 ft.	$11\frac{1}{4}$ ins.
Floor clearance, inside (in length).....	27 ft.	$3\frac{3}{4}$ ins.
Floor clearance, inside (in width).....	6 ft.	7 ins.
Clear width inside at window sills.....	7 ft.	7 ins.

Twenty side window openings..... $30\frac{3}{4}$  ins. x  $38\frac{3}{4}$  ins.

No great novelty is claimed for the design of the car or framing of car body, but several features are introduced which we trust will meet approval.

The window sashes are removable, being held in position by three set screws passing through each side and tapping into bosses cast on metal strips in position on the outside face of the posts, and a change from closed to open car, by removal of sash, may be effected





SECTIONS AND PLANS OF NEW TYPE OF CAR



in about forty minutes. At the window openings grooves are cut diagonally from top to bottom on the sides of the posts to take cable curtain fixtures, so that when the sash are removed and the curtains are drawn down they incline outward, forming a satis-

The seats have a clearance underneath, giving ample room for the temporary storage of handbags or parcels, that so often obstruct the main aisle of a car in the case of the usual type of fixed side seat. The electric heaters are ranged along the wall of the car at convenient points, and when the seats are in longitudinal position the heaters are entirely out of way of contact with ladies' dresses. It is proposed to install electric heaters in the arms supporting the chairs as a more desirable location for bringing the heat nearer the center of the car.



CAR WITH SEATS FACING ONE WAY

factory watershed during storms. The curtains are also provided with a spring flap at the bottom. Inside panels are cut in between the side posts for the purpose of giving stiffness to the sides of the car, and also greater interior clearance.

The seats, of course, are quite an important factor. They are of the individual revolving type, either of cane with bent wood frames and backs, or upholstered, as fancy may dictate. They rest upon a movable arm carrying the seats in multiple, the arm in turn being pivoted out of center upon a fixed base secured to the car floor. This device allows the seats to shift in pairs from a transverse to a longitudinal position, giving in a car of the above dimensions an aisle 22 ins. in width while the seats are in a transverse position, and 44 ins. in width while the seats are in a longitudinal position, and the car is prepared for a standing load. In

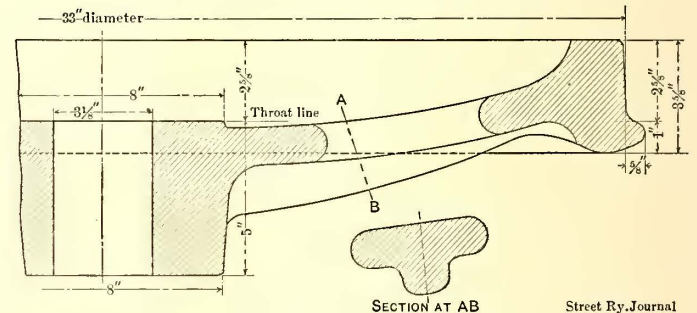


CAR WITH SEATS IN ARRANGEMENT OPPOSITE TO THAT ABOVE

either position the car will positively seat thirty-six passengers, thirty-four facing the direction in which the car is moving, and under no circumstances can a passenger, of whatever proportions, without discomfort to himself, occupy a space greater than allotted for one seat.

The electric lighting consists of three center clusters and five single incandescent lights ranged along each side of the car, with a lamp under each platform hood, and electric headlights. Maple floor strips, slightly beveled, are used for sanitary reasons and for ease in cleaning floors.

It is scarcely possible to advance a satisfactory argument in favor of side steps or running-boards on open cars as against the end steps usually installed upon the closed or convertible cars having center aisles. The former rather invite accident when persons enter or leave the car at any opening on the side, while the end step, being almost constantly under the supervision of the conductor, avoids to a great degree the danger to passengers boarding or alighting from the car. This fact is emphasized by the greater number of accidents shown by "reports of accidents to passengers when entering or leaving open cars," and is substantiated by a statement courteously furnished by a claim adjuster connected with a road of considerable



STANDARD WHEEL SECTION

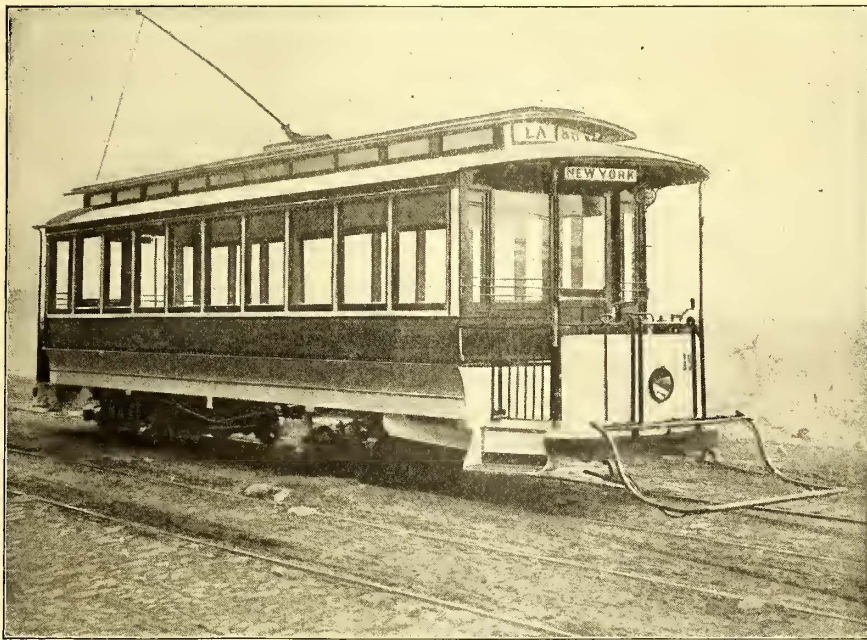
importance, and covering a period of six years, which shows the comparative immunity of closed, compared with open, cars from accidents occurring to passengers while boarding or alighting from cars. For purposes of comparison the adjuster selected three winter months in which closed cars are operated, as against three summer months in which open cars are used exclusively, it being his observation that the extreme of temperature during the months compared affected the question of accidents (that is, extreme cold benumbs and extreme heat dulls the faculties); therefore, that the cold of winter in this respect offsets the heat of summer, and renders a fair comparison possible. The result of the comparison was that the closed cars will perform from two to four times the mileage of open cars without accidents of the character described. In other words, the proportion of accidents to passengers boarding or alighting are about three on open as against one on closed cars.

There are also other classes of accidents analogous to, but not enumerated in, those included in the foregoing comparison, which occur constantly with the operation of open cars, but which do not occur on closed cars. Among them might be enumerated the following: Falling under guard rails, being brushed off the running or stepboard in passing a standing or moving object in the street, sudden jerk on starting car, running rapidly into curves, etc. All of these, added to the foregoing, entail an accident account of no mean proportions, and tend to confirm the suspicion that a convertible car with end steps and center aisle is a coming feature in the traction business.



In regard to the question of brakes, and eliminating all discussion as to whether the Elder, Hodge, Stevens, Tyler, or any other design of leverage is the most efficient, you will all probably agree that a power brake for electric car service is desirable from the standpoint of safety in operation and the avoidance of accidents where emergency stops are necessary. But of what shall it consist—an electric air-compressor or axle-driver compressor, fixed plants for charging air cylinders attached to the car body, a mechanical brake giving increased power or leverage, or what?

Unquestionably many street railway managers are to-day passing through the experimental state in testing the merits of each style of brake, and are endeavoring to determine which will meet the requirements in point of cost of maintenance and efficiency of operation; and it has occurred to the writer that advance opinions upon this subject would be a trifle undesirable and might be attended with unsatisfactory results; so, with your permission, we will proceed to touch briefly upon the subject of car wheels. You are undoubtedly familiar with the arguments advanced that less power is required to move a wheel of smaller diameter, but that advantages accrue from the use of the 33-in. wheel for the mounting of present-day motors by insuring clearance from obstructions. You have probably passed through the experience of originally using a wheel



EXTERIOR OF CAR

of 30 ins. diameter, with a weight of 300 lbs. each or less, and have found that, owing to the increased weight of cars, and also the increased speed desirable to attain, a wheel of greater weight has become necessary. Many city systems also operate suburban roads, where T-rails are laid instead of the usual girder rail, and where the derailment of the car from the usual height of the T-rail would result in disaster to the wheel. There is also the disposition on the part of the motorman at times to run at a high rate of speed through curves with trucks having a wheel base of 7 ft. or 8 ft. All this tends in the direction of requiring a wheel of sufficient section and strength at hub, spoke, rim, tread and flange to meet the above conditions. The experience of several roads has demonstrated quite satisfactorily that a 33-in. wheel weighing, say, 420 lbs., and designed in section as per drawings submitted, has given very excellent results and shows economy as to replacement.

The author of this paper fully realizes the task with which he has been honored, and understands that a device of any character, to have and retain merit, must be subjected to the most severe criticism, which is now fully and freely invited. He feels satisfied that, with a body of men of your recognized ability and standing, all "hobbies," if any such exist, will be for the time eliminated, and justness and fairness govern all criticisms of whatever character, and he believes that you, in common with himself, have an object to attain in determining the most satisfactory vehicle for electric roads in point of efficiency in service, economy in operation, and last, but not least, the convenience and comfort of the traveling public.

The Springfield Street Railway Company, of Springfield, Ohio, has secured franchises for extension to its city lines.

## The Public, the Operator and the Company

BY C. S. SERGEANT

Vice-President, Boston Elevated Railway Company.

It would be difficult, indeed, to indicate the entire essence and range of street railway operation in fewer words than has been so tersely done by your president in the title of this paper.

It is with diffidence that I shall try to present a few thoughts in its illustration, feeling it impossible, within the necessary limitations, to do justice to so comprehensive a theme. I assume that the intention of this title is to induce consideration, and perhaps discussion, of the relations of street railway companies to the public, and in particular those relations as concerned with the question of private or municipal ownership, or in connection with the conditions affixed to grants or franchises, or possibly as to the relations of the street railway company to the public in the matter of taxation. Urban and interurban transportation of passengers on the public streets and highways is, in its nature, so different from the movement of passengers by waterways or upon private rights of way, that it is not only very difficult for those not actually engaged in the business to appreciate its duties and responsibilities and its limitations, but it is natural as well that there should

be a sentiment in the public mind in relation to street railways somewhat different from that felt toward steam railroads, for the reason that the business of the street railway is transacted in the streets. Few, however, of those who are so ready to lay burdens upon the street railway realize, or have ever learned, that the streets are not the property of the municipality, but belong to the public. A citizen of any European country has the same right upon the streets of an American city that a resident in that city has. The care of the streets devolves, it is true, upon the municipality, but this, of itself, gives the municipality no right to sell privileges belonging to the public in connection with those streets. It is natural for citizens to assume that the street railway is a fair mark for the levying of taxes, ordinary and extraordinary, and the imposition of conditions, severe or otherwise, in granting franchises. From this sentiment and other causes results a great volume of special legislation, often ephemeral in its character, varying in different States, all calculated to impose burdens and regulations upon this business. The great variety of such legislation is continually changing character and minor legislation (if it may be so called) which originates in City Councils or with highway authorities, places the entire business of street transportation in a condition of uncertainty, to which few other investments, and none of like magnitude, are subjected.

In consequence of this condition of affairs the street railway corporations are constantly placed upon the defensive, and necessarily much of the time and attention of their managements is devoted to a struggle for a reasonable existence.

In this connection I desire to quote from an address delivered at Philadelphia in April, 1900, at the fourth annual meeting of the American Academy of Political and Social Science, by Senator William Lindsay, of Kentucky, this quotation showing that some of the evils of the present situation are appreciated by the public. The quotation is as follows:

"I may say, with reasonable confidence, that nine-tenths of the corporations now engaged in shaping public opinion would welcome the opportunity to abandon that policy and gladly confine their attention and devote their moneys to none other than the purposes of their creation. If they could be relieved from the annoyances and dangers attending the attacks of the place hunter and the professional agitator, and be protected against the demands of greedy party bosses in charge of party organizations, they would submit without remonstrance to all proper restraints and forget their past political affiliations in the more energetic prosecution of their corporate business."

The proposition which I wish to advance is the desirability of legislation substantially uniform in its character throughout our several States of the Union, which shall fairly, definitely and with reasonable permanency, establish equitable relations between street railway companies and municipal and State governments. The most ardent advocate for heavy franchise taxes or governmental ownership could not but admit the desirability of such a solution of this question from every point of view. Surely, there is no street railway company but would deem a permanent settle-



ment of this character most advantageous. The banker would be spared the long and careful consideration of the particular and special conditions in some small city and State before making his loan, and the patrons of the street railway company would receive the benefit of that improvement in service which would result from a fixed tenure and a lower rate of interest upon the money invested.

I can devote but little space to the question of municipal ownership. If the term "municipal ownership" includes municipal operation, which has usually been understood to be the case, I believe that the tendency of the experiments already made abroad, and the knowledge which will result from a fair-minded study of the subject, will be toward the abandonment of any such proposition. Not the least important reason for such a belief is the fact that street railways in this country, at least, have long since outgrown municipal boundaries in the sense of one company being confined to one municipality. Rapidly they are also outgrowing State boundaries. The natural tendencies of the business, therefore, are such as would greatly complicate the questions of ownership and operation by municipalities. Still further, the rate of interest which has been earned upon the money invested by municipalities in Great Britain in street railways has been extremely small, and the facilities afforded have been most inferior to those enjoyed in this country.

In general, aside from the question of municipal ownership, government restrictions upon the construction and the operation of tramways in Great Britain have been so severe that the citizens have been deprived, practically until the present time, of the benefits which have been enjoyed by the citizens in this country, growing out of the freer opportunities which have in the past been afforded investors to provide tramway facilities for cities and towns.

Unquestionably the most important social benefits, development of real estate, and increase of taxable property have resulted from the general policy which has been in vogue in the United States. Why, then, should our Legislatures and municipalities consider changes of a restrictive character, calculated to reduce the profits of tramway operation, and consequently restrain and dwarf its future development?

We are told by the so-called "economists" that such is the trend of thought. Why should there be such a trend of thought if a fair investigation is given the subject? Presumably it will be generally admitted that the only proper source which can be drawn upon for payment of taxes, rentals, assessments for paving, street cleaning and other similar burdens is the gross revenue, and consequently the net revenue of the street railway company; that this gross revenue is contributed by the public; that, therefore, all such burdens are taxes levied upon the public who use the cars. It must then follow that every burden of this character is one tending either to increase the fares, to maintain them at a high level, or to diminish the facilities afforded the public in the quality of cars and tracks, frequency of service and its general maintenance. A company, unfortunately, is regarded as an entity, rather than as an association of individuals. What ownership could be, in fact, more public than the ownership of a street railway corporation? Its shares can be purchased by everyone, and investigation will almost invariably show such ownership to be widely disseminated and largely among a class of citizens, male and female, who can ill afford the impairment of the anticipated revenue.

What greater benefit could be conferred upon our citizens than legislation of a character calculated to eliminate from street railway securities their speculative nature and place them substantially upon the basis of a savings bank deposit?

Many persons have pointed out the social benefits of street railways, especially electric street railways, and in particular due to the American system of a uniform fare, regardless of distance, within a reasonable radius from a center of population. Examination of this subject, especially in contrast to the European system, will show extraordinary advantages of the American system. The very small fare for the very short distances, which has been the general custom abroad, has neutralized the benefit which otherwise would have been experienced by the community in such large cities as are provided with good tramway facilities. The poorest element in the population, as a result of such system, is confined abnormally in centers of population, and the amount of expenditure for policies, lighting and the attention to the public health, is necessarily greatly enhanced, and the moral effect of such concentration of population is most serious. Uniformity of fare tends to break up the slums; gives the workmen and his children a home of their own in the suburbs, and the question of rates is therefore one in which the great majority of the people are vitally interested.

In the light of these facts, is it not unwise to so tax, in one

form or another, the tramway enterprises, that they are prevented from rendering that service in transportation which might otherwise be secured? In these days of extravagant expenditure by municipality and State it is doubtless a difficult matter to determine how the necessary funds are to be provided, and it is natural that the business of the street railway company, being always in the public eye, should seem a proper subject of assessment; but we should never lose sight of the fact that any such burden is in restraint of transportation facilities. A frequent argument for municipal ownership is that municipalities can borrow money at lower rates of interest than private corporations. Why not, then, pass such laws as will make the credit of private corporations good enough to command the lowest rates of interest? But it is also argued that great profits would result, therefore, great abatement of taxes upon others if the cities were in control of the tramway. As I have already pointed out, it seems reasonable to suppose that the greatest benefits to a community have accrued, and will continue to accrue, by private ownership.

The question as to whether the capital invested in street railways and their property should be exempted from all special taxation, in order that the greatest inducements may be afforded to investors to increase such facilities, or that the profits should be restricted by limitation of dividends, or division of surplus earnings with the public, or bearing additional burdens in the maintenance of street surface and otherwise, is a fair ground for discussion. Much may be said upon both sides of the argument, yet I am firmly of the belief that greater public benefit is to be had by the exemption from taxation than by other methods. It is not to be supposed that in any city or State capital should be permitted to conduct the affairs so vitally bound up with the private interests of every citizen without proper restriction and regulation, but the persons whose capital is invested have equal right to the protection of our laws, although that side of the question is too often overlooked.

The best service can never be secured when several corporations are intrusted with the duty of providing transportation for any center of population. A properly regulated monopoly undoubtedly conduces to the best of service, and with suitable provision for freedom of investment in its securities and suitable regulation of the service performed, the public good would be conserved, and the evils which arise from unnecessary investments, due to competitive enterprises, upon all of which (necessary or unnecessary) the public must pay interest or must suffer as patrons and investors, would be avoided.

Under the conditions usually existing the operator of a street railway is charged with duties and responsibilities of the most exacting nature. His work, in so far as it is manifest to the passenger, is of so public a character that there is little opportunity for a failure to provide proper service to go unremarked; and he is therefore held to so strict an accountability that the character of the service must necessarily be continually improved.

Probably the greatest misfortune attendant upon the conduct of a street railway is the inability to provide comfortable accommodations during the so-called, "rush hours" of the afternoon. It may almost be said that street railway traffic during rush hours increases as the square of the facilities provided. It is the constant endeavor of every operator to meet these conditions, but his efforts in the provision of extraordinary power supply, rolling stock and employees are seldom appreciated, for the reason that it is impossible to prevent the overcrowding of cars during such hours. This overcrowding tends to much loss of revenue, to minor accidents to passengers, and creates in the minds of the passengers a feeling of dissatisfaction toward the transportation company and a belief in its extraordinary profits. As a matter of fact, everything surrounding these conditions tends to diminish the company's profits and to increase its investments.

Erroneous ideas prevail in the public mind relative to the profits to be derived from street railway enterprises. Those who are engaged in the business realize that the utmost endeavors and watchfulness are necessary to secure a fair return upon the investment. When there are added burdens in the way of excessive taxation, or otherwise, then, indeed, is the operator in need of all his experience and skill to save a proper dividend from the net earnings.

Your association has been in existence for a considerable term of years, but it has not become feeble in its old age. It would seem to be within the power of the association and within the scope of its duties to take some action looking toward uniformity of legislation relative to street railway companies, and to aid in the correction of fallacies by dissemination of information upon many points as to which the general public is entirely ignorant. If, in the few thoughts which have been suggested, there is anything worthy of your consideration, my purpose in writing this paper will have been accomplished.



## Street Railways—a Review of the Past and a Forecast of the Future

BY ROBERT McCULLOCH  
General Manager, Chicago City Railway Company

Not until the latter part of the sixth decade of the nineteenth century did the failure of the rumbling omnibus to meet the requirements and demands for facilities for commercial and social transportation in the cities begin to force itself into public consideration and generate inquiry as to methods of betterment. The cities were spreading in their development beyond the limits of pedestrianism to those whose income justified the expenditure of the cost of the morning and evening ride, and as the distances became greater, the difficulties of existing efforts at accommodation increased. As the income of the merchant and manufacturer increased, so also grew the desire to separate the residence from the shop, and the suburban home followed. Then the time consumed in the journey at the two ends of the business day became a consideration, and next the discomfort of the long ride over streets so poorly paved that they were only, in many instances, badly-kept roads. The outgrowth of this casting about for a betterment was the street railway, and, almost without exception, the original railways were the successors of, and a transformation from, the bus line. The rails were laid in a fashion little akin to present style of construction. The "bob-tail" car was scarcely better in its accommodation facilities than its predecessor, but its speed was greater, its frequency of service much increased, and its extension beyond the former limits of the stage still increased the opportunity and desirability for border habitations. The same spirit which would allow Davy Crockett to be happy and contented only on the extreme borders of civilization is ever and always making new and extended limits to our cities.

These adventurous pioneers contributed a patronage which encouraged the new enterprise. Rails were laid on all the stage routes. The bus was housed forever, to the regret of the man who had sat so long on its boot, and who was so cheerfully greeted by its daily patrons, to all of whom he had grown to be a necessity in the daily routine of life. He took his place on the little platform on the front end of the car, and in the changes that have followed so rapidly in the development of street railway conditions, no man has been his equal as an expert driver or motorman or gripman, and in no hands has the safety of his passengers been so well considered.

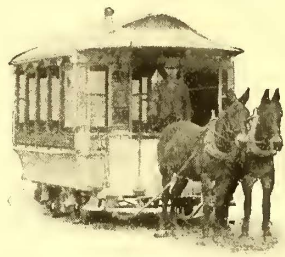
Immediately following the installation of the first railways came the war, which attracted the attention, the energy and the enterprise of the whole land. There was no thought then of else than methods and schemes of human destruction. The exciting and alluring and enticing pastime of war possessed the people of the entire land. No hero was so great as he who had stood in the midst of the greatest carnage, and no heritage is so prized as that left by him who unflinchingly met a hundred times his gallant and determined foe. When sheer exhaustion brought peace at last, there had been engendered a vigor and enterprise which, perhaps, would never have known existence but for the rugged experiences of four years of devotion and courage and manhood never equaled in the history of the world.

This vigor and enterprise found abundant opportunity. The good soldier became the useful citizen, and the street railway, claiming its share of attention, began to contribute its part toward rural development, which development has been made possible only through continued progress of methods and appliances and their application by men as tireless as the sun. Rails weighing 25 lbs. to the yard were considered ample in their strength and stiffness, and they were rolled in lengths little more than 20 ft. They were spiked to wooden stringers, which were held in gage and alignment by being notched into cross-ties, in which notches they were secured by dove-tailed keys. Cars were constructed with special view to lightness in weight, every piece of wood and iron being chamfered and worked down to the limit of prudent requirement for strength. Wheels were made of a weight as light as 140 lbs., 180 lbs. being a heavy wheel. With few exceptions, roads were originally equipped with the "bob-tail" car, the length

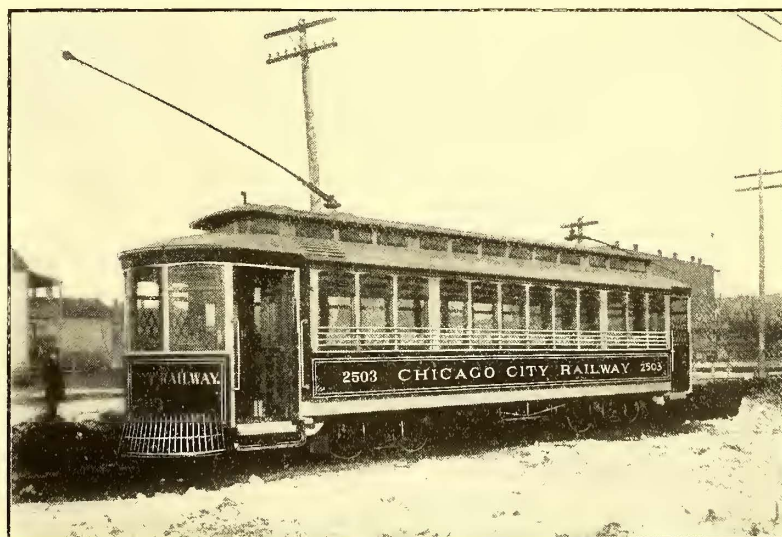
of the body being 10 ft. to 12 ft., the front end enclosed with a circular dash and a step on the rear, the passenger opening and closing the door as he passed through it. A fare box on the right of the front door was expected to have the respectful attention and the consideration of every passenger, even though in his anxiety for transportation he could find a lodgment for only one foot on the rear step, and, holding himself in that position by an outstretched arm to the door jamb, with his other hand he passed up his nickel or other money, the change was made, the nickel deposited and the balance returned by various reaches and through several hands. A great improvement consisted in the introduction of a mechanism by which the driver opened and closed the rear door, either by a rod and levers or an endless cord. Next followed a fare chute, having places of deposit at each window post and on the outside of the rear end. The nickel was dropped into this receptacle, the chute having an inclination to the front and ending in either side of the fare box, and thus the fare went up without the intervention of the fellow passenger. The stove was added in latitudes where the severity of the winter made it necessary, and then the little open car made its appearance during the summer months. This completed the luxury of metropolitan transportation, and the street railway became a recognized institution in the process of city development. The motive power of this vehicle was either a single horse or a pair of little fleet-footed mules, with a hill horse at the heavy grades.

The driver was necessarily a man of much capacity, endurance and versatility. He must be an expert in the handling of his horses and in controlling the car through the brake; he must watch in front that he did not run into other vehicles or over pedestrians; he must scan the side streets for the approach of intending passengers; he must closely observe the rear of the car that he might keep track of the passengers who had and who had not paid their fare, that he might always notice a signal to stop, and that the rear step might not be occupied by those who did not intend to pay the required fee for the privilege of a ride; he must make change as desired; he must answer questions and give desired information; he must open and close the rear door; he must in winter take care of the fire in the little stove, and at night care for and adjust his lamps. With all these duties he must stand exposed to the splashing of the mud, the beating of the rain and snow, with his lines in one hand and the other hand constantly on the brake. This work he performed during twelve to fourteen hours on his short day and sixteen to eighteen hours on the long one, and the long and short alternated.

The passenger, we would say to-day, was such through sheer necessity. If he lived five miles away he was an hour from his work, provided there were no mishaps or delays. If the car jumped the track he got out and lifted it on again. If the horse



THE OLD MULE CAR



THE MODERN ELECTRIC CAR

stopped on the upgrades to get his wind or by reason of the obstruction of snow or mud, the passenger "put his shoulder to the wheel" and helped to make the start. He dropped his nickel in the slot, he passed up that of his neighbor; with the driver he frowned on the man who ignored the fare box, and he seldom burned the midnight oil or wasted his postage stamps in writing and sending letters of complaint. Appliances for the clearing away of snow and ice were crude, entailing ceaseless labor and watchfulness throughout the winter, and the heat of the summer



brought equal burden in the care of the faithful animals, whose even gait must be maintained notwithstanding the relentless soaring of the thermometer.

But the "bob-tail" car had only a short-lived existence. It was replaced by a larger vehicle, drawn by two horses and manned by a conductor as well as a driver. In some instances this replacement was made in recognition of the necessity for better provision for an increasing patronage, and in others the angry protest of passengers against the performance of the duties of the conductor drove the last of the "bob-tails" from the street. In the meantime the weight of the rail had been increased, and tracks as well as cars were improved. Then came the girder rail, and about the same time the American Street Railway Association had its birth. This brought an era of fellowship and intercommunication among street railway men that had not previously existed. The method of treating colic in horses was no longer held as a trade secret, and the free interchange of experiences in the solution of common perplexities has contributed greatly to the rapid and wonderful developments which can only astound us when we look but a few years backward.

The demand for more extended and more rapid transportation by the man who insisted on living on the extreme border, as well as the driving of the tenement house from the heart of the city by the necessity of occupying this space for manufacturing and warehouse and office purposes, brought into use the cable, but its great cost and its lack of flexibility prohibited its adoption except under favored conditions.

Then, just as some higher and greater power, through human agency, had given us, only when there became extreme necessity for it, steam and the telegraph, and the reaper and the thresher, and the telephone, so there came the revelations that enabled the application of electricity to purposes of power for transportation.

The efforts at this application, in the beginning, were crude as compared with present practice. The motor was set up on the platform or in the body of the car and geared to the axle with chain and sprocket wheels. The wire conveying the power was on the side of the street and, through a traveling carriage and flexible wire, communicated the current to the motors. A 7½-hp motor was considered ample, because had not two real horses done the work? And engineers of real ability contended long and vigorously that this new-found power might do the work after a fashion on levels, but it could not climb a hill, however so slight the grade. But it did climb a hill, and it has climbed all the hills, either real or imaginary, which have seemed to obstruct its march of usefulness. As confidence came to those who had doubted or hesitated, the faithful horse was sent to the pasture, or to less considerate masters. The old horse car now had its motive power placed under it instead of in front, and the driver who had seemingly, only a short time previously left the boot of his omnibus, now exchanged his lines for the controller handle. A higher speed was attained, and the man who was content with living 4 miles from his business could not now be satisfied with less than 6 miles or 8 miles. Patronage was increasing rapidly, new and heavier and better tracks were laid, larger cars were built, and motors were doubled and trebled and multiplied again in power. Power-house machinery was changed again and again, improvements and betterments were so rapid that, appliances being ordered, they were almost obsolete before they could be installed.

And all this has come about in so short a time that many of us who have passed through the entire experience do not yet feel that our activity and usefulness have been at all impaired. In contemplation it seems the work of the magician, and still the betterments go on and on, and I am asked to prophesy for the future. That would seem better the task of some resourceful writer of fiction. Could any prediction as to what may yet be developed, however so bold, be held as unworthy of consideration in view of what has occurred during the last decade?

Electricity in its flexibility is adaptable to purposes so varied that, to enumerate them, would require a volume. It may be used as a toy and carried in the vest pocket to illuminate at will the tiniest personal ornament, while an enlargement of the same process gives us a searchlight rivaling the sun in brilliancy and extent. It runs the most delicate instrument the dentist can use, and just as readily runs the heaviest trains of railroad cars. It decorates the palace and lights the alley of the slums; it heats our houses when we have zero weather, and cools the same space when the thermometer relieves itself through the top of the tube. It furnishes illusions and delusions; it makes the hot sands of the desert, and it lights the way as we follow our guide without fear of danger. But in nothing does it affect so large a portion of humanity as in its street railways application.

The street car has ceased to be "the poor man's carriage." It is everybody's carriage. It has ceased to be purely a necessity, a large proportion of its revenue coming from travel induced by

pleasure alone. It has built and expanded and beautified the city, and with the growing of the city its institutions have multiplied and enlarged. The mercantile establishments of to-day could not have their patrons and their necessary force of employees carried to and fro by former means of transportation. The theaters owe their increased attendance to the speed and comfort with which the necessary journey is made. The former occupant of the tenement house no longer needs to live at the threshold of the factory or shop. The street railway has extended the time limit to the little cottage in the suburbs, and it has made the real estate man wonder if he really had an occupation in times gone by. In fact, the city of to-day is as unlike its former self as is the street railway little akin, in construction, equipment and operation, to its predecessor. And paralysis is a mild term to signify the condition into which the city is plunged by misfortunes that stop the revolution of its car wheels. Then is realized how great a part the street car has in all the affairs of city existence; then, in meek contrition, we remember and retract the ugly words which, in moments of unguarded impatience, we uttered concerning vehicles and men whom we would welcome now with gladsome smile; then, indeed, does "the stone which the builders has rejected become the head of the corner"; then we realize that, in our prosperity, "men may come and men may go, but the 'street railway' goes on forever." The labor and care and watchfulness of those who give it life and vigor and usefulness do not cease with the turning of the key in the door of the factory or shop or warehouse; their days are all of twenty-four hours' duration; in sunshine and in storm, when the world sleeps or is in turmoil, their duties are equally exacting; in their list is no place for the laggard or the drone, nor for him who does not always place the performance of duty first before thought or self.

The street railway has not hesitated in its progressive march at the line marking the border of the city; it has made an "all hands round" for the adjoining villages and settlements, and linked them in a community of interest; it has driven the steam road ignominiously from the field of short traffic, and, with a courageous confidence and irrepressible energy, which bring, usually, ultimate success, it reaches out for more extended distances. The man who contributes the nickel is the chief beneficiary of all this betterment and extension. His toll was a dime when the cumbersome bus jolted him scarcely more than a mile over the rough highway. Now, while the time consumed is of little greater duration, half that amount purchases the privilege of many miles of transportation with the allowance of transfer and retransfer, and still each year brings betterment and improvement, in smoother tracks, larger and more comfortable cars, greater speed and shorter interval.

The future of the street railway is linked indissolubly with the city in all its advancement and improvement, its extension and growth, its physical and moral betterment and its health and adornment. In all these is the city the follower and the dependent, and of vastly more importance to its people and their interests is it that it shall have good street railways, than that the entire railway revenues should revert to its treasury.

There is a popular clamor for municipal ownership, and whether or not this idea may materialize has much to do with continued progress. Looking back over the rapid and costly changes of the past few years, we must question the likelihood that municipalities would have been strong enough and bold enough to have so ventured in discarding the old and grasping for the new. Only the stimulating expectancy of success and reward could have nerved the individual determination and risk that have resulted in existing conditions. Municipal ownership has been made possible by the necessary legal authorization in perhaps only one State, and there it has utterly failed of fruition, seemingly, from the impossibility of agreement as to terms and conditions and the difficulty of financial provision. Because governmental control or ownership exists, or is being attempted, in a few foreign cities, is no rational justification for the conclusion that it would be wise or proper here. The requirements of the people, their customs and methods of business are vastly different, and no city of this country could have attained its present development had its transportation facilities been as limited as the best given by municipalities which we find in control of that important institution. That the ownership and control by the city of water and light supply have been found of advantage does not warrant that the same result would follow their operation of its street railways. While the former institutions may exist under the baneful political influences and incumbrances which we find embarrassing them, it is questionable if the daily transport of its people would be in safe or capable hands when intrusted to those whose terms of office and position rested on influences in which merit was no consideration. A healthy and vigorous competition bestows public benefit that all may enjoy, and a retirement of street railway



transportation from this field, through municipal ownership, could scarcely be doubtful of result, and the very spirit of paternalism and dependence which is fostered and encouraged by attempting to provide for a community is the spirit, a rebellion against which founded and prospered this mightiest of all nations. We are not yet ready for municipal ownership, existing franchises in most instances having a generation yet to run, so we may safely assume that the same energy and earnestness which have characterized the conduct of the street railway during its recent wonderful developments will continue to exercise the same healthful influence.

The man who directs the affairs of a street railway is aware that in the community he is a merchant selling his ware just as other tradesmen are bartering theirs. If he would succeed he must give his customer the best that skill and industry and perseverance can provide, and, like the other merchant, he is entitled to the benefits that come from honest, persevering and painstaking application. With this stimulus to continued and renewed exertion, the benefits and increased advantages to the public must continue with each succeeding year. The scientist and the manufacturer, the car builder and the machinist, the rollingmill and the foundry, can produce no appliance, however so costly and extensive, that the street railway of the present and the future will not readily adopt and place in immediate use, if it promises a betterment of the service rendered to its patrons. The prosecution of no business or enterprise has entailed so many or such costly changes and abandonment of previous methods. Tracks, cars and power houses are discarded and renewed.

The ever increasing prosperity of the agricultural interests of the country, with improved methods of tilling the soil and saving the crops, enriches the farmer and enables him to indulge in luxuries formerly unknown to him. The city, in supplying his demands, must increase its factories and its supply houses and its population, but population and manufacture and trade cannot increase without a corresponding growth of the street railway, and in its growth it must keep pace with the spirit of progress which pervades our land.

In track construction we have gone from a rail of 28 lbs. to the yard to one of 100 lbs., heavier than that required by the steam railway; 60-ft. lengths to decrease the number of joints are used, and, not content with that, the joint has been entirely obliterated by welding process; and still we are ready to adopt any improvement in these conditions which the ingenuity of our craft will devise and the manufacturer provide. The same builders of cars who, a few years ago, were executing orders for 10-ft. cars as light as possible to hold together in safety, are now busy with lengths of from 40 ft. to 60 ft., and still we have not reached the limit. The designer of the electrical equipment has gone from two motors of 7½ hp each to 40 hp or 50 hp each, and yet we are ready to encourage his further efforts by placing in use better productions whenever he will make them available. A modern electrical power-producing plant is a masterful combination of scientific design and the skill and handicraft of the artisan, but with all this excellence it perhaps bears as little resemblance to that which a few more years will develop, as to the delicate little machines which have scarcely had time to grow rusty since they were discarded. The street railway of the future must, and will, have every device and method and appliance that will tend to the rapid, safe and comfortable transport of its patrons. Tracks and cars and propulsion must and will be the best that money and skill can provide.

But there is no better work for the future, and none of so great importance to every interest that concerns the ownership and operation and patronage of the street railway, than the consideration of the army of men who, with ceaseless toil and watchful industry, give safe transit to the multitudes of the city, the men who stand at the levers throughout the endless day and guide the swiftly-moving and heavily-laden vehicles through streets teeming with life and bustle and activity, with countless other vehicles and pedestrians coming and going and crossing, each intent only on what concerns himself, leaving all the burden of care and watchfulness and promptness of discernment and action to rest on shoulders already bearing enough; and the men who, with equal attention and caution, care for the occupants of the car, watch for their safety, attend to their wants, reply to their inquiries, and with patience and good nature discharge their multiplicity of duties; and the men whose eyes watch with unrelenting constancy and whose hands are always at the throttle valves, that there may be no hindrance to the continuity of the rolling of the wheels; and all the various departments filled with men, who, like the vigilant "minute man" of colonial days, are ever ready to perform with earnest intelligence the duties which they have assumed. All these men, thoroughly imbued with the spirit of self-abnegation, hold the discharge of duty first in all the purposes of life. With industry and intelligence and loyalty they perform their obligations,

they represent us with the public, with persevering patience taking care of the annoyances and worries which, of necessity, constantly arise. They are our friends and helpers and coworkers in the accomplishment of the task to which we devote our lives. Our relations with them should stand on a solid foundation of honest fairness, kindly consideration, and appreciative confidence. The disturber should not be allowed to come between us, and there should be a community of feeling and interest that allows no separation of purpose or effort. There are lessons of the past for both of us, which, if we heed, will guide us in the open way between the Scylla and Charybdis of the future.

The street railway of the future stands in grand relief as an institution of all future progress and development. Its service is a concern of every member of the community; there is no work or undertaking that so permeates the home and life of all the people around us. Our responsibility is a burden to be safely borne only on herculean shoulders. Let us stand under it bravely and with persistent and determined manliness, so that our own conscience, at least, shall acquit us with the plaudit, "Well done, good and faithful servant."

### The Relation of Interurban Roads to City Roads

BY IRA A. McCORMACK

General Manager, Cleveland Electric Railway Company

It is the writer's opinion that the relations existing between a city road and an interurban road should closely resemble the relations existing between the members of a partnership firm. Both should exert their efforts with the same end in view, and should miss no opportunity of developing the mutual interests, although each may occasionally have individual interests which may not coincide. This rule should hold as good when the two roads are controlled by different people as when they are owned by the same interests.

In the case of the company with which the writer is identified, with but one exception the interurban roads radiating from the city are controlled largely by the same interests as those which own the city lines. The majority of the interurban roads have been bought up since they were built, but the original agreements as to city traffic still hold good, and the interurban managers are as anxious as ever to make a good showing, so that, while in many cases they are trivial matters, contingencies frequently arise which require careful handling to prevent the other fellow from getting ahead of us in matters which are not carefully stipulated in the text of the traffic agreement.

The arrangement known to street railway people as a traffic agreement is a comparatively new institution, dating from the introduction of interurban roads. In the more thickly settled Eastern States the majority of the suburban roads are simply extensions of the lines of the city companies, which quickly followed the development of electric propulsion because the suburban population demanded the new service; and, so far as can be learned, there are few instances where independent suburban companies enter on city tracks under a traffic agreement. In the West, however, the early history of the suburban, or rather interurban, roads appears to have been somewhat different. They operate from town to town, and in a great many cases the original promoters were parties who figured on giving the residents of their towns better communication with, or access to, the neighboring cities, and in entering the city they were obliged to apply to the city companies for some sort of arrangement whereby their passengers might be carried to the center of city. In numerous cases, either because of the city ordinances which it was thought would debar traffic arrangements, or because of the unwillingness of the city company to make such arrangements, the interurban cars were forced to stop at the city limits and transfer their passengers to the city cars. This arrangement is still in vogue in many places, but it has never proved satisfactory to any of the parties concerned, because it is not conducive to the full development of the interurban business, people generally prefer using the steam road to making the changes and running the risk of failure of making connections. Besides it is unquestionably a fact that the best advertisement for the suburban cars is to have them seen on the streets. One of the greatest arguments in favor of the new mode of traffic is that a person can take a car in front of his home and step down at his destination. For the above reasons the traffic arrangement has become an imperative necessity, and the time finds the progressive city company not only perfectly willing, but anxious, to enter into such an arrangement with outside companies, since the additional business brought into the city more than compensates for any trouble arising from handling the suburban cars.



The early traffic arrangements were comparatively simple agreements, generally setting forth the compensation required by the city company for permitting the outside cars to run over its tracks, an agreement as to the crews who were to handle the cars, an understanding as to responsibility in cases of accidents and other similar matters of detail. But it has been found that the rapid development of the interurban roads is presenting problems to the city companies which were never thought of in the earlier days. The question of weight, the question of wheels, the question of voltage, the question of type of cars, the question of mail, freight and express, and many other matters, present difficulties to the managements of both the city and suburban lines which are becoming more and more difficult to adjust to the satisfaction of both.

The question of unusual weights of cars is without doubt the most difficult one with which we are obliged to contend at the present time. The city tracks of five years ago were designed for single-truck cars, weighing from 8,000 lbs. to 14,000 lbs. To-day our smaller city cars weigh from 16,000 lbs. to 20,000 lbs., while the heavier double-truck cars weigh from 24,000 lbs. to 30,000 lbs. These are bad enough on tracks designed for the lighter cars, but the effects of the latest interurban cars weighing from 35,000 lbs. to 60,000 lbs., on rail-joints and special work, is doubtless becoming fully appreciated by many of those present.

Coincident with the increase in the weight of cars comes an increase in wheel dimensions, and this increase brings with it troubles which are almost as expensive as those caused by excessive weights. Our city wheels have a  $\frac{5}{8}$ -in. depth of flange compared with 1 in. for the interurban. The city wheel face is  $2\frac{3}{4}$  ins. compared with  $2\frac{3}{4}$  ins., and these differences not only play havoc with our special work, but greatly reduces the life of their wheels by tearing and chipping the flanges. Plainly, some sort of a standard of measurements should be adopted; but, which shall conform to the other and which shall bear the expense? are questions which will have to be settled by individual arbitration.

One thing is certain, if the interurban companies expect to continue increasing the size and speed of their cars, they should, as a matter of safety, equip their roads with trucks and tracks equal to those used by the steam trunk lines, and as a standard for future practice it is suggested that the Master Car Builders' standard wheel forms an excellent criterion to follow. The dimensions are: 33 ins. and 36 ins. in diameter,  $3\frac{3}{8}$ -in. tread,  $5\frac{1}{2}$ -in. width,  $1\frac{1}{8}$ -in. depth of flange.

It is understood that in some cities where new construction work is going on—Utica, N. Y., for instance—they have ordered all special work with sufficient clearance and depth and width of groove as will be acquired for the above standard. But in cities which are provided with the older equipments in good condition, such changes are out of the question for some time to come, and in the meantime, the interurban companies, the parties most benefited by the traffic arrangement, will either have to bide their time until the city companies can make the change or else they should bear the expense of making the improvement on the city line which they traverse. In some cities—Dayton, Ohio, for instance—the traffic arrangements specify that the interurban companies must make all changes in track or special work made necessary by the use of unusually heavy cars or extra wheel dimensions. Incidentally, it might be added that the above contingencies present one of the reasons why the city and interurban roads can most advantageously be operated under one management. Of course the only permanent remedy for rail troubles is the adoption by the city companies of a girder rail with high head, or, better still, the T-rail. The use of the Trilby rail appears to be on the wane. In an Ohio city, during the past month, the interurban company has obtained the permission of the City Council to remove its Trilby rails and curves, as it was shown that the grooves fill with mud and sand in summer and ice and snow in winter, rendering cars more liable to leave the tracks, besides chipping and otherwise damaging wheel flanges, thus rendering accidents liable when traveling at high speed. The thickness and depth of groove of the Trilby rail also greatly increases the amount of power required to propel the car.

Unquestionably the ideal rail for all-round use is the T-rail, but unfortunately the popular fallacy that it is wholly unsuited for city use is still deeply instilled in the minds of every layman—owners of vehicles in particular—as well as with the majority of city engineers, but the writer predicts that the day is not far distant when, by persistent effort, we shall be able to convince authorities to the contrary. Practically the only logical argument that can be advanced against the T-rail is that when laid without pavement, it is hard on vehicle wheels, but everyone here knows that with heavy pavement, tracks can be made nearly flush. Of course such a track can never be made as satisfactory to the driver of a tired horse, but if for no other reason than that the T-rail will

do away with such causes of lost time, damage suits and profanity, it will be a step in the right direction. In many European cities if a vehicle is damaged while in a car track the owner not only cannot collect damages, but he is quite likely to be fined for being on the track. Unquestionably, vehicles should be prohibited by law from using the car tracks, and it might be added that the heavy and swift-moving interurbans are doing much toward correcting this evil.

It is of interest to note that the T-rail is making headway for city use. In Brooklyn two of the leading lines are equipped with such rails, and are giving perfect satisfaction. It is particularly gratifying to state that, within the past month, after a hard fight, a franchise has been granted in Sandusky, Ohio, whereby T-rails are to be used on all city streets, this being the first municipality in Ohio to grant such a privilege. In Brooklyn the bricks next to the rails on the inside are beveled to allow for the wheel flange. Some time ago the town of Flushing, Long Island, made exhaustive inquiries and experiments as to the best rails to be used in connection with macadam boulevards, and it was unanimously decided to adopt the T-rail.

The width and length of cars are points which should be considered in traffic arrangements. In Cleveland the space between the rails—or devil strip, as it is called there—is uniformly 4 ft., so that it is necessary to place screens on the inner sides of open cars to prevent passengers from being injured. The distance between tracks is regulated by franchises, and, of course, cannot be changed, hence the interurban companies are forced to regulate the width of their cars accordingly. Some of the cars recently purchased by one of the interurban companies are so wide that they almost touch in passing, so that great care is required in their operation. In the future we shall endeavor to secure 5-ft. devil strips, and the writer would advise companies building new lines to take nothing less if possible. The traffic agreement in force between the Toledo city company and one of the interurbans provides that cars shall not be longer than 49 ft. 6 ins., and shall not be larger or heavier than those in use at the time the agreement was made. The flanges of wheels are not to be more than  $\frac{3}{4}$  in. in depth, and the tread of wheel must not be of unusual width. This word "unusual" is a trifle ambiguous, and seems likely to cause trouble; since that which was unusual two years ago is now common, and even behind the times.

At the present time, so far as can be learned, the difference in voltage is not causing serious trouble. At present the Cleveland city lines operate on the ordinary 550-volt circuit, while the interurbans employ 750 volts. Naturally the cars operate at a slower speed while in the city, and they do well enough. The only noticeable difference is that the lamps drop considerably when the city current is reached. The city cars employ three circuits of five lamps each, while the interurbans have three circuits of six lamps each. Nothing is done to remedy this discrepancy, although it could be easily corrected by cutting out one of the lamps at the city limits. In Cleveland it has never, thus far, been found necessary to install additional feed-wire and side feeds to take care of the unusual loads of the heavy interurban cars, but if they keep increasing their weight and speed, something of the kind will be found essential. The extreme weight of the interurban cars and the tendencies of operators to open up full speed makes them more dangerous and harder to control than the city cars, and precautions should be taken to guard against exceeding the city speed ordinances. It is understood that in Buffalo a system has been employed under which the motorman removes the ordinary controller handle at the city limits and substitutes another which does not permit the control to run above the series into the parallel. Such a device undoubtedly prevents many accidents.

The question of interurban roads handling freight is one which will doubtless require considerable legislation in many States before its status can be regulated. In Ohio the courts have recognized the right of interurbans to carry freight, but nothing is said about the quantity or kind that may be carried. Some of the municipalities and counties have attempted to regulate this by specifying package freight, mail and express. The majority of Ohio roads are operating combination passenger and express cars, and only in one or two exceptions have attempts been made to operate exclusive package freight cars. In a certain Ohio city recently the city authorities undertook to prevent the interurban cars from stopping on the streets to unload milk. After making a move the officials consulted the corporation attorney, and he rendered an opinion that since the State gave the companies the right to carry freight, it also gave them the right to unload it, and at any time or place they thought fit. It may be noted right here that one of the most annoying features of the traffic arrangement is when interurban companies insist on unloading milk or freight at points along the route most suited to the convenience



of their customers. In many of the more recent arrangements it is specified that the interurban companies must provide a freight station in the center of the city, with turnouts from the city tracks. In many cases small interurban roads cannot afford to go to this expense, and the writer believes in such cases it would be good policy for the city company to build and equip the freight station and lease the use of it to the interurban company or companies, at a figure which would cover the interest, depreciation and expense of maintenance. To digress a trifle from the subject in question, the writer believes that it would prove an excellent investment, besides being a great convenience to merchants, to utilize the interurban freight station as a general transfer station for freight of all kinds. Freight cars can be transferred to the various steam roads during the night by the use of powerful motors, and the objections of excessive noise made against this practice would thus be eliminated. The station should be located on some side street off from the main line of travel, and in this way much of the heavy teaming which interferes with the street railway service would be diverged to other streets.

To return to the interurban freight and express business, it is becoming generally appreciated that this factor of the business is one of the most promising features of the new mode of transportation, and already, in some sections, it is reaching very large proportions. In Ohio probably the best example is the Cleveland & Eastern Railway, which taps a very rich isolated farming district, and handles immense quantities of package produce and milk; during the past few months the receipts of this road from freight, mail and express amounted to a trifle over 25 per cent of the gross earnings. This company maintains exclusive express cars, which run into the city twice a day, in addition to combination cars, which are almost invariably filled to their utmost capacity. Some of the properties of the Everett-Moore syndicate are not at present handling package freight, although they will in the near future, but the reports for one year show that, out of gross earnings of \$10,000,000 for the various properties, \$200,000 was derived from package freight. As is generally appreciated, the handling of this class of business adds but little to the expense of operating the road. The major portion of this class of business can be carried on combination cars at times when passenger traffic is not heavy; hence, aside from the cost of handling at stations, the receipts from this branch are almost all clear profit. Naturally the city companies should share in these receipts. The method of division varies in different cities. In Cleveland the city companies take such proportions of the amount received in carrying United States mail, express and freight as the distance on the city tracks is to the whole distance carried. This arrangement also exists in Toledo and other cities. In Toledo the traffic agreement provides that the suburban company shall pay all cost of loading and handling, and the arrangement may be altered, by arbitration, after any period of three years. At Columbus the city company recently made an agreement with an interurban company whereby the latter shall pay the city company 10 per cent of the gross receipts from freight. The majority of agreements provide that the city company does not guarantee the right of the interurban company to handle the freight, and the city company is to be held free from damage in case the business is restrained by legal or other action.

Comparatively few of the traffic arrangements in the various cities are exactly alike. There are almost invariably local conditions which have their effects, and frequently agreements which would be satisfactory in one place would be unfair in others. There are many reasons why the city company in one city should receive a higher rate for handling the cars of the interurban company than those in other places. For instance, it is worth more to handle the heavy interurban cars in extremely hilly cities, like Kansas City and Pittsburgh, than in Cleveland or Detroit. The extreme cost of fuel in Denver or Omaha would make a difference, as compared with Buffalo or Philadelphia. The length of the haul is also an important factor to be considered.

The Cleveland agreement is, briefly, as follows: The city crews take charge at the city limits. (Since this agreement was made this section of the agreement has been changed by some of the roads. The crews remain on the cars and, while on the city line, they are paid by the city company the same as its own men.) The city companies collect and retain all the local fares and pay to the interurban companies mileage at the rate of 2 cents per car mile during the first two years of the contract, this part of the contract to be arbitrated at the end of each five years thereafter. It might be added that no occasion has ever been found since for changing this clause. While in charge of city crews the city companies are responsible for all damages to cars or individuals. The above agreement was made between six interurban companies and two city companies, and it was agreed that no other companies should be admitted to the city tracks without the

consent of the others. The suburban companies agreed not to make traffic arrangements with any other city companies, should they appear in the field, and agreed to take no interest in any city project. The city companies agreed not to build extensions that would in any way compete with the interurban companies.

At Detroit several years ago one of the city companies made a traffic agreement with a company which proposed to operate from Royal Oak to Detroit. The companies settled on a meeting point, and each extended its line until they connected. The cars of both companies were operated the length of the two lines, the crews changing at the connecting point, the men always remaining on the line which employed them. Both companies sold single and round-trip tickets, tickets sold by one being accepted by the other, and at the end of the month the debtor paid the balance against it. Later, the suburban line was extended to Pontiac, and thereafter the Pontiac company furnished all the cars for the through runs. The city companies furnished the crews at the city limits and assumed the responsibilities and paid the suburban company 2 cents per car mile.

A carefully prepared agreement existed until recently between the Toledo Traction Company, of Toledo, and the Toledo, Fremont & Norwalk Railway, one of the longest and speediest traction roads in the country; the agreement, as stated before, provides for specified types of cars, weights, wheels, flanges and other technical details. It provided that the city company did not guarantee the right to operate passenger or freight cars, but merely granted such rights as it had a right to grant. The city company was held free from damage in case of failure of power or in case city company is legally restrained from operating the cars.

The city company did not guarantee the strength of its equipment, neither did the interurban company guarantee the strength of its cars. The crews of the interurban road remained on the cars, but the city company reserved the right at any time to remove them and utilize the city men, the company whose crews were in charge of the cars to be responsible in cases of accident. Under this arrangement the city company received of fares collected within the city limits, during the first five years of the agreement, 4 cents; during the second five years, 3½ cents; thereafter, 3 cents.

The Dayton city company has two kinds of agreements; one by which it received all local fares, meaning all fares collected from passengers carried from any point on the city lines to any other point on the city lines and no further, and 2½ cents per passenger, other than local, carried by the interurban company over any part of the city line. By the other agreement the city company received 3 cents per passenger carried over any part of the city lines. In each form of contract the interurban company keeps an account of all freight, mail and express or other matter carried, and pays the city company in proportion to the distance same is carried over the respective lines, the city receiving one-half of such proportionate amount which would be due it if the whole sum received should be divided. The interurban crews remain on the cars, and all fares collected within the city are recorded on register furnished by the interurban company and aged upon by the presidents of both companies. The interurban company discharges employees upon reasonable complaint by the city company. The interurban companies are responsible for all damages caused by their cars or employees while on city tracks. The city company is not liable in case of interruption in power or damage to tracks or bridges.

In Columbus an agreement has recently been made on a modification of the last-mentioned plan. In that city the local company utilizes a broad-gage track, this being also the case in Cincinnati and a number of tributary towns. In this case the interurban company agreed to stand the expense of installing a third rail to accommodate the standard gage. The suburban crew are to remain on the car and the city road is to receive 3 cents out of each 5 cents collected for city fares. In another Ohio city (Cincinnati) the local company uses the broad gage, and an interurban road entering the city has also been built with this gage. The city company pays the interurban company 30 cents per hour, or \$5.40 per day (eighteen hours making a car day), as rental for the cars while on the city tracks. The city company takes up the interurban tickets at regular rates and the interurban company pays for same each month.

The Buffalo & Niagara Falls Electric Railway, before its consolidation into the present system of the International Traction Company, had a line which extended from the city of Buffalo to the city line at Niagara Falls, and the cars used the tracks of the Buffalo Railway Company in Buffalo and those of the Niagara Falls & Suspension Bridge Railway in the latter city. When the cars reached the Buffalo city tracks the city company's men took charge, and all fares collected went into the treasury of the Buf-



falo company; in other words, the suburban company gave the use of its cars for this distance for the privilege of carrying through passengers. In Niagara Falls the situation was different; here the suburban company paid 3 cents out of every 5 cents collected for the power and use of tracks. It is understood that the 2-cent and 3-cent plan is used in Pittsburg, St. Louis, Kansas City, Indianapolis and other places, and it appears to be deemed a very equitable basis of division.

In preparing this paper the writer requested information as to traffic arrangements from nearly all cities where interurban cars are known to enter over the city company's tracks, but for some reason or other the majority of managers failed to reply, or else declined to give detailed information. As one manager put it, "We have had a hard time settling on a satisfactory arrangement, and do not propose to educate those who may become our competitors." Another manager wrote: "We have no traffic arrangement with interurban companies, and if I can help it do not propose to have any, as I believe in the policy of the metropolitan system in any city constructing all the lines that could be reasonably demanded."

The handling of local city passengers by the interurban cars presents a problem with many different phases, dependent, to a large extent, upon the terms of the traffic arrangement and the inclination of the crews in charge. Under ordinary circumstances the interurban companies are anxious to get their cars in and out of the city as rapidly as possible, and they do not care to stop at every street for city passengers; and it might be added that the city passengers have a decided weakness toward the larger and more comfortable interurban cars. This desire on the part of the interurban company is especially marked when, as is the case in Cleveland, the interurbans do not share in the city receipts, but are paid so much a mile covered. On the other hand, where the interurban company shares in the city receipts it is sometimes considered worth their while to cater to the local traffic, and generally this tendency is not at all to the liking of the city company. The writer has in mind an instance where two interurban companies use the same tracks for the matter of 12 miles to the city limits, and then both enter over the city tracks. It is a matter of common talk that both companies jockey for the 12 miles of interurban business, and then both have a contest with the city company for the city business. It is said that the interurban cars race to get ahead of one another at the junction, while at the city line the city company makes it a point to have a city car precede each incoming interurban. Laying aside the small profit that can be derived from the city business, it is unquestionably against the best interests of the interurban companies to cater to the city trade. The interurban roads are coming more and more into competition with the steam roads, and to the person who has a long interurban ride in front of him there is nothing more tiresome or more discouraging than the frequent stops and crowded cars consequent with picking up and letting off city passengers. Were it not for city ordinances, which provide that all cars must stop for passengers, it would, in the long run, be more profitable for the interurban cars to run through to the center of the city without stop except to let off or pick up their passengers.

The question of ordinances regulating the stopping of cars is one which should be taken up with a view of securing concessions for the interurban cars. Although in the majority of cases such cars are recognized by the city ordinances only as city cars, it is time they should receive certain privileges and not be compelled to handle local traffic. It should be pointed out that the interurban cars are greatly benefiting the merchants of large cities by bringing in people who have traded at country stores, thus aiding greatly in the development of the commercial centers, and it can be proved that this development can be still further increased by giving the urban residents speedier transportation and better accommodations. It might be argued that much business would be lost to the interurban cars through failure to make stops in the city to pick up passengers, and this is true; but unquestionably much of the difficulty might be overcome—providing the city ordinance permit—by having the conductor of the interurban car question each passenger as to his destination before he steps aboard; if he desires to go to a point on the city line he should be requested to take the next car. If legislation on this point cannot be secured, then the trouble can be eliminated, to a certain extent, by posting notices requesting city passengers not to use the interurban cars, and by having the city company precede or follow each interurban car with a city car.

One of the roads running into Cleveland, the Cleveland, Painesville & Eastern, operates what are known as "Special Limited" cars. They are designed especially for business men who reside in Painesville, Mentor and Willoughby, and they reach the center of Cleveland each morning in time for business, run-

ning after business hours in the evening. They make no stops except at these towns and save about thirty minutes on the run of 30 miles. Inside the city limits the cars are considered as specials, and do not stop for local passengers. Thus far the practice has caused no complaint among city people, and the cars are a great luxury to the suburban town residents who do business in the city. It is understood that other roads are soon to follow this practice, as it is of immense advantage in building up the small towns. It affords a constant income to the interurban roads, and does not detract from the business of the city companies, since the city fare is collected as usual, and, therefore, it may well be encouraged by both.

Under no circumstances should the city company attempt to make the interurban car part of its regular schedule; such an arrangement is not conducive to good service for either party.

The status of interurban railways in years to come is one which few people are willing to prognosticate. Just at present it appears to many people that the interurbans occupy, and will continue to occupy, a field which is separate and distinct from that of the steam roads. They are operating from town to town, opening up heretofore isolated country and affording short routes between points, which, heretofore, have been far apart, from the fact that they are located on different steam railroads. In this way the electric railways aid greatly in the development of the country without actually interfering with the business of the steam roads; on the other hand they frequently improve the steam road business. Will this continue to be the situation is the question which plainly is troubling the steam railroad people. If the tide of electric trunk line building can be abated, the steam railroad people are now clearly willing to share the passenger business by turning over to the electric roads the short-haul traffic. The business which comes from small towns surrounding the larger cities and that which goes from one small town to the next is said to be detrimental rather than beneficial to many of the steam trunk lines. The president of one of the most important steam roads in the country has recently been quoted as saying that it would be money in the pockets of stockholders if the short-haul passengers business could be turned over to the electric roads. He figures that people could be brought into the larger centers on the suburban cars, and from there they could take through fast trains for distant points. He stated also that the increase of freight business consequent with the building up of numerous suburban towns would more than compensate for the loss of the short-haul passenger traffic.

Briefly, the above appears to be the aim of many of the present promoters of electric roads, but it is a well-known fact that there are many others who claim that the day is not far distant when electricity will compete in every way with steam. Some of the roads under construction are being equipped with 80-lb. rails identical with those used on steam roads, and speeds of 60 miles to 70 miles an hour, with through sleeping and dining cars, are freely talked of. An Ohio company (A. E. Appleyard, of Columbus) has recently placed a contract for electric sleeping cars, which will be placed in operation within the next ten months between Cincinnati and Columbus. Within as many months the Everett-Moore syndicate will have through cars operating from Cleveland to Detroit, and it is the intention to compete for through traffic with the fastest steam road in the country.

Clearly such arrangements can have little in common with the 10-mile-an-hour schedule which of necessity must remain permanent so long as cars traverse the surface of crowded business and residence streets. Laying aside the question of speed, the electric trunk lines will, sooner or later, find it to their advantage to handle heavy freight, coal, grain, etc. At present the citizens and city authorities of large cities make little complaint against combination express and package freight cars, or even an occasional exclusive package car, but it is expecting too much to calculate on freight trains transporting merchandise of all sorts through residence streets, even at night.

Obviously, the only solution of the problem under the various conditions mentioned is for the interurban cars to enter the center of the city by means of underground or elevated tracks, with special tracks for through cars.

Interests identified with the Schuylkill Valley Illuminating Company have purchased the Montgomery & Chester Electric Railway, and the companies have been consolidated as the Phoenix Gas & Electric Company. In arranging for the joint operation of the plants a number of important improvements are to be made, and it has been reported that the railway lines are to be extended from Phoenixville to Bridgeport by way of Valley Forge. It is generally believed that historic old Valley Forge will become a most popular resort, in this case.



## Alternating and Direct-Current Transmission on City Lines

BY M. S. HOPKINS

General Superintendent, Columbus Railway Company

When requested by the executive committee to prepare a paper on "Alternating and Direct-Current Transmission on City Lines," I frankly stated that as I was not an electrical engineer and had had no experience with alternating current I did not feel competent to present the subject before the association. They in reply requested that I present the subject at least in such a manner as to bring forth a profitable discussion by the members of the association. This I have attempted to do.

The problem of transmitting power to outlying districts on city lines is one constantly confronting a large number of managers to-day. The steady growth of outlying districts and the increased suburban traffic incidental thereto, requiring larger and heavier cars and increased speed, have severely taxed the direct-current distribution. The manager finds his transportation department unable to provide sufficient cars to handle the increased traffic and maintain schedule speed; the cost of transportation large, due to necessary slow speed of cars; loss in transmission enormous, and must admit his present feeder system entirely inadequate to meet rapidly-growing demands made upon it. In attempting to meet these demands the usual course has been:

First—To add copper to the feeder system, which has already reached enormous proportions.

Second—To raise voltage on certain feeders by means of booster.

Third—Install storage batteries at ends of lines.

Fourth—In extreme cases to build an additional power station, located with reference to economy of copper.

Fifth—Install an alternating-current system in main power station and rotary sub-stations at convenient points.

The first four plans above mentioned lack flexibility, and extensions of any magnitude are attended, necessarily, with large outlay of copper, burdening the system with heavy fixed charges and large power house expense.

It is not within the province of this paper to take up the various methods for meeting these increased demands, but to try and set forth the main features of polyphase alternating transmission with rotary converter sub-stations working in connection with existing direct-current feeder system.

It is with exceeding interest that the railway manager has observed the development of polyphase alternating-current apparatus and the several and reliable methods of installing and handling high-voltage circuits of large power. It is now possible by means of rotary converters or motor generator sets to have as many feeding points or sub-stations, changing high-tension alternating current to 600-volt direct current, as may be found expedient, and this at a comparative small outlay and at a minimum charge for power house expense. Of course, the number and location of these sub-stations is determined by striking a balance between the cost of operation of the sub-stations, including interest, depreciation, attendance and fixed charges, and the interest, depreciation and fixed charges on the copper investment. In many cases the item of station attendance, otherwise the most serious of all, may be eliminated almost entirely by making the sub-stations a part of the car house, repair shop or ticket office, or even general office.

For long distances alternating transmission is now almost universally adopted where an entirely new plant is installed. The many weak points, which are always present in any new system, have been well worked out and remedied, and it would seem that the time has now come for companies using the direct-current apparatus to at least make future additions to plant with alternating-current machinery, and thereby avail themselves of economies offered by modern invention, still using their direct-current system within an economical range and the alternating current for the outlying districts, thus working the two systems in harmony with each other.

The alternating-current system, owing to its great flexibility, can very well be operated in connection with direct-current system, and lends itself particularly well to the solution of the problem of transmitting current to outlying districts. The generators can be wound for high potential, so that the cost of copper is comparatively small and a high efficiency maintained.

Alternating-current machinery consists of generator, step-up and step-down transformers and rotary converters, as now installed, seems simple in operation, and should require but very little more attention than existing direct-current machinery. The generator at the main power station should require even less attention than a direct-current unit of the same size—the step-up and step-down transformers requiring practically no attention. The rotary converters can be located at convenient points along the line; if in

car house, or other points where an attendant is necessarily on duty at all times, little or no expense would be required. Starting up in the morning, shutting down at night, keeping the bearings lubricated and the occasional putting in of a circuit breaker being about all that would be required.

In installing an alternating-current system in connection with existing direct-current system it would seem wise to use a number of small rotary converters, located at load centers over the line. These machines can be so designated as to work in parallel with existing direct-current feeders—the rotaries caring for the average load, the direct-current feeders coming in to help care for sudden fluctuations, and in case of injury to any one unit the direct-current system would tide you over the difficulty. The load factor at the station should not materially change from that now existing with direct current, owing to the fact that even if there are violent fluctuations in the amount of power required from any one rotary, it is not likely that the maximum demand for power will occur simultaneously on the other rotaries, and if the machine is properly wound and connected in with existing direct-current system, direct-current feeders should go far toward equalizing the load between rotaries.

A temporary sub-station mounted on a flat car, which can be easily moved from point to point, will be found very convenient for the relieving of extreme and unusual loads which frequently occur in most cities during certain seasons of the year. Railways are required to move enormous crowds in a very short time, and that frequently at considerable distance from the power station. On account of the heavy and infrequent character of these loads and long length of feeder usually encountered, the copper necessary for the handling of this service by simple direct-current feed is prohibitive, and the series booster is frequently resorted to. Even with this device the first cost of installation is considerable, and owing to the resistance of ground return, a practical limit to the amount of power and distance to be covered is soon reached. A temporary sub-station divides the current returning in the track, reduces the drop to one-fourth of that obtained with a straight feeder, and permits much more satisfactory service to be given with less than one-fourth the amount of direct-current feeder copper otherwise required. Where the transmission voltage does not exceed 6600 volts it is possible to avoid step-down transformers, and thus decrease the weight of apparatus on the car by using an induction motor generator set, having this induction motor wound direct for high voltage. Besides reduction in weight, this arrangement possesses a further advantage over the rotary converter in that the direct-current voltage can be regulated by hand over a much wider range, allowing easy and accurate regulation of the load, which is frequently of great importance in putting the set into service where the line drop is very heavy. In determining the details of a system of this kind, the local conditions existing must be carefully considered; the districts through which transmission lines pass should largely govern the voltage; the center of load and convenience of attendance, the location of rotaries.

From such information as the writer has been able to obtain, the three-phase system seems to be the best adapted for railway work, because of its simplicity and economy in copper, as in each wire of the three-phase system two alternating currents, differing in phase, are combined, and the loss less than when the same power is transmitted by continuous single-phase or two-phase currents. The three-phase circuit requires but three wires, while four are necessary for a two-phase circuit—the same size wire being used in both circuits.

The 25-cycle apparatus has the advantage for railway work, the high inductive effects, troubles encountered in operating machines in parallel, and difficulty in obtaining slow speeds have caused the higher frequencies to be abandoned for this work.

Having thus attempted to outline the general characteristics of the three-phase alternating-current system employing rotary converters, it may prove of interest to show the intended application of these principles to the operation of railway lines in the city of Columbus, and the various economic considerations affecting the choice of system, number and location of sub-stations.

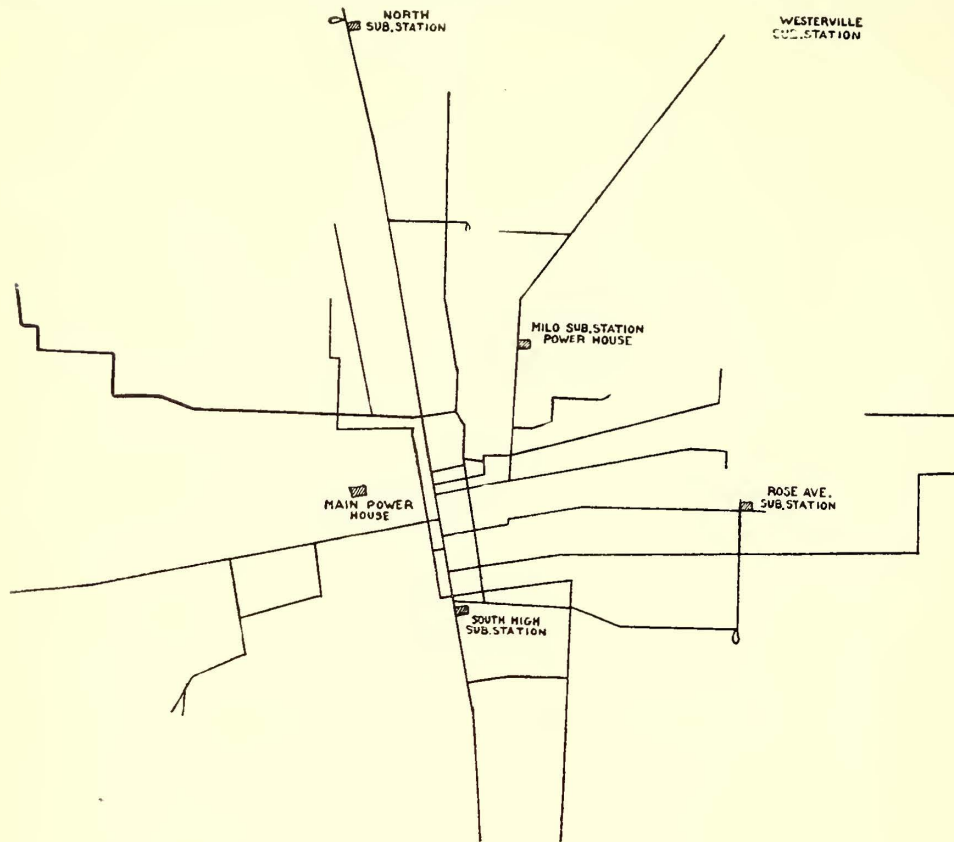
The Columbus Railway Company, with which the writer has been connected a number of years, now owns and operates two steam power plants, known as the Milo and Spring Street power stations. As you will note from the accompanying map, the Spring Street station is located near the center of the city, on the Scioto River, where all necessary water for condensing purposes can be obtained, and has the best railroad facilities for the handling of coal. The Milo station is located somewhat to the northeast of the center of the city, and where no water can be obtained save that which is pumped from artesian wells of limited capacity. The cost of producing current at this station is much higher than at Spring Street. The Milo station is used largely as reserve, and put into service only when demanded by heavy traffic to Minerva Park, Westerville or Fair Grounds.



The two stations are electrically connected by a heavy feeder system, so that under normal conditions during winter months the load of the whole system may be handled from Spring Street station, using, however, a series booster located 9 miles out on the Westerville line at Minerva Park to maintain voltage on the Westerville end.

There is at all times a steady load of considerable magnitude on the lines running out to the eastern suburbs, and during the summer months on the lines running north to Olentangy Park, a pleasure resort which is owned by the company, and which fre-

quently attracts large crowds. These loads have continued to increase for several years past without making additions to feeder lines. Frequently during extreme traffic it has been found necessary to use the three M. P. 75-kw machines in parallel as a booster in order to handle traffic. This overloading of feeders has occasioned heavy loss in transmission. In order to determine just exactly what this average loss is, two wattmeters were calibrated together; one was then installed in the feeder line at the power station, the other where the feeder taps into the trolley—the difference in watts showing exactly the loss resulting in transmission, both in overhead copper and ground return. These meters have been installed for two weeks at a time under average conditions in outlying feeders which would be affected by the installation of an alternating system. The results show the loss to be equivalent to the following per cent of total load for an average 18-hour day:



LOCATION OF COLUMBUS STATIONS

quently attracts large crowds. These loads have continued to increase for several years past without making additions to feeder lines. Frequently during extreme traffic it has been found necessary to use the three M. P. 75-kw machines in parallel as a booster in order to handle traffic. This overloading of feeders has occasioned heavy loss in transmission. In order to determine just exactly what this average loss is, two wattmeters were calibrated together; one was then installed in the feeder line at the power station, the other where the feeder taps into the trolley—the difference in watts showing exactly the loss resulting in transmission, both in overhead copper and ground return. These meters have been installed for two weeks at a time under average conditions in outlying feeders which would be affected by the installation of an alternating system. The results show the loss to be equivalent to the following per cent of total load for an average 18-hour day:

East Long Street section.....	23	per cent.
East Oak Street section.....	31.2	" "
East Main Street section.....	27.4	" "
South High Street section.....	27.8	" "
North High Street section (park not open).....	25	" "

Owing to the heavy peaks of loads from station to station, we were unable to get accurate results showing loss, but from results obtained estimate the average loss at 20 per cent. The loss on Westerville line varies from 40 per cent during the winter months to 60 to 75 per cent during the summer months. During the periods of heavy load, and when the maintaining of voltage is highly essential, the loss is far in excess of the above figures on all sections.

The capacity of both power stations is now frequently taxed to its utmost, and additional unit must soon be installed at Spring Street station; the entire feeder system of the road is now inadequate to meet the present demands, and must be increased at once. It is therefore proposed to install a 350-kw, 6600-volt, 25-cycle, three-phase, revolving-field generator, direct connected to engine, at the Spring Street power station, together with necessary exciter, generator panel and 6600-volt line panels for controlling the three outgoing feeder lines; to install a rotary converter sub-station at Oak and Rose Avenue car house to handle the loads on all

eastern lines; one at Milo power station to handle normal station load, using the steam plant now at this station for reserve; and rotary sub-station at Minerva Park to handle park business during summer months, and through Westerville business during winter months. As the reserve capacity at Spring Street station will be small even after this unit is installed, it is highly important that the system be so arranged as to permit the distributing of load between all units in power station as may be desired. In order to make the maximum capacity of alternating-current unit available under all conditions it may be necessary to install a rotary converter station at South High Street car house, which is located near the center of load and easily connected with direct-current feeders, making it possible to relieve the overload on direct-current units and increase the load on the alternating unit.

In addition to the above permanent stations, it is proposed to use a portable sub-station, to be located normally at North High Street car house, to handle Olentangy Park travel during summer months, and when occasion demands this station can be quickly moved to help out other sub-stations. You will note that all sub-stations are to be located at car houses, and car house employees are expected to attend them in connection with their regular work.

The best engineering practice has limited the potential of transmission lines carried overhead through city streets to 6600 volts. There are a considerable number of lighting and railway companies in this country following this practice with perfect satisfaction, and with modern method of construction such a transmission line would be no more harmful or dangerous than the usual city arc-light circuit. It would, therefore, seem advisable to use this voltage on transmission lines—consisting of three No. 4 B. & S. feeders from Spring Street power station to Milo, a distance of 2 miles; to Rose Avenue sub-station, a distance of 3 1/4 miles; to North High Street sub-station, a distance of 4 miles, and to Westerville sub-station, a distance of 9 1/2 miles.

With these sub-stations installed, the following amounts of feeder wire would be replaced by sub-stations, and available for use in reinforcing direct-current feeders not reached by sub-station feed:

Milo sub-station.....	43,890	pounds.
Rose Avenue sub-station.....	35,530	" "
Westerville sub-station.....	73,620	" "
Total .....	153,040	pounds.

At 18 cents per pound, this copper would represent a value of \$27,547.20, from which deduct the value of high potential copper in place, \$10,000, would leave \$17,547.20 to be credited to the cost of the sub-stations and charged to increase in direct-current feeder system, which will be ample for present needs.

In the above estimate we have retained the present feeder copper on North High Street circuit, for the reason that sub-stations will be used for intermittent service only.

In considering the economies in alternating transmission, station installation need not be considered in this case, as the cost of alternating-current machinery will not materially differ from direct current. The cost of rotary sub-stations is estimated as follows:

Milo Station .....	\$10,000.00
Minerva, or Westerville, Station.....	7,500.00
North High Street, or portable station.....	12,000.00
Rose Avenue sub-station.....	10,000.00
South High Street sub-station (if installed).....	7,500.00

Total cost of sub-station apparatus..... \$47,000.00

To this should be credited \$17,547.20, the difference between the cost of copper to be supplanted and high potential copper required, as this copper will be taken down and used for reinforcing sections which are still to be supplied by direct current, the investment being more than taken care of by economies resulting from increased capacity of direct-current lines. This leaves us an invest-



ment of \$29,453.00, the interest on which should be taken care of by the saving in loss due to transmission.

Assuming the value of a kilowatt-hour of current at \$.006, exclusive of fixed charges, the loss shown by wattmeter reading on sections to be fed by sub-stations, would amount to \$5,365.00 yearly.

The plan as outlined above for transmitting current to these districts should keep the loss well within 15 per cent between main station and sub-station bus-bars, even during periods of heavy load, which would result in a saving of \$3,804.00 in yearly transmission of average load from station to sub-station bus-bar. From this should be deducted the loss from sub-station bus to car. In this case, owing to the location of sub-stations and interconnecting of direct-current feeders, the loss will not exceed the loss now existing from point where direct-current feeders now tap and where wattmeter readings were taken to car; hence, we have \$3,804.00, the net saving in cost of power due to high-tension transmission, being equivalent to 12.8 per cent on investment, which, from a financial standpoint alone, would seem to warrant the above-outlined plan of transmission, without considering the greatly increased facilities for handling of large crowds, the saving resulting in transportation department due to increased speed, and the ability to make future extensions of almost any magnitude without the attending losses and a large outlay for copper necessary with direct current.

### The American Street Railway Association—The Purpose of Its Organization, and the Benefits Accruing to Investors in, and Operators of, Street Railway Properties by Membership Therein

BY G. W. BAUMHOFF, ST. LOUIS

The subject is, it is needless to say, a fruitful one, justifying a paper in keeping with the title, but appreciating brevity where facts only are desired, I shall endeavor to enumerate some of the many advantages of membership in this association to owners and operators of street railway properties.

A learned doctor once said, "Ignorance, pestilence and avarice make the human race akin." Substituting the word "ambition" for the last named, I am constrained to believe the same agency is responsible for the organization of this association; for if one person's knowledge of street railway affairs were as thorough as that of some others, the necessity would not exist for attendance at conventions to lay in a store of information to better fit oneself for such duties. Who will deny that disease among horses and the best means of guarding against the spreading of such pestilence and the care of horses was at one time the chief topic for discussion at our meetings? And is not "ambition" one of the chief incentives which prompts man to excel his neighbor and competitor in proficiency? Is it not a motive for seeking membership in an association which has witnessed the evolution of electric traction with its vast improvements, from the old-time animal traction; has seen it outdistance the cable, and is now looking forward with eager eyes to still greater achievements with this mysterious power, and to yet another change whereby to improve and perfect the system of street railway service? The founders of this association built not only wisely but with beneficial results to the street railway systems of this country far beyond their realization.

To the foresight and indefatigable energy of H. H. Littell, D. F. Longstreet and Thomas Lowry, from whose "Littell" beginning the association has passed through the "Long-street" of progress without "Low-ying" its usefulness, belongs the credit of the present efficiency and high state of perfection of the street railway systems of this country, which efficiency the entire world has adopted as its standard.

The growth of the association has been marvelous, the good it has accomplished inestimable. It doubtless represents, through its membership, a greater combined capital than any organization or association in the world, and through its channels has disseminated information resulting in the establishment throughout civilized communities of electric railway systems where no other service could be maintained, and in supplanting animal traction with its resultant saving in time. It has been the means of saving millions of dollars to many investors in street railway properties by information procured from papers and discussions at our annual meetings, particularly at a time when much doubt was involved as to the best system to adopt in changing from animal to mechanical traction.

It has been the means of bringing the executive and managing departments of street railway properties in closer communion with their employees, and is largely responsible for the improved

condition of street railway employees generally to-day as compared with the period prior to its organization. Its aim has been, and is, to encourage, elevate and ameliorate the condition of that gallant and noble army of public servants, the street railway employees, than whom none are more loyal or devoted to their work.

Through the proceedings of its annual meetings it has laid the cornerstone of successful operations of the street railway systems of the world, and its gatherings are looked forward to with eagerness and assurances of greater additional knowledge concerning street railway improvements which are springing up like magic everywhere. It recognizes no creed, sect or nationality. The universal law of God is its guidance, and the greatest good to its members and the community they serve its ambition. Investors have long since realized the many advantages resulting from this association, and every company throughout this country should profit, not only by membership therein, but insist on being represented at its meetings.

The Street Railway Accountants' Association is an offspring from this organization, and arranges its annual meetings to harmonize with the time and place of those of the parent body. The formulation and standardizing of accounts now generally observed must prove of additional value to the investor and manager alike.

The appointment by this association of a committee on standardizing street railway supplies and material is another step in the right direction, which will doubtless prove of inestimable value to the investor and manager, and will, in the opinion of the writer, result in the formation of another branch of this association, bringing the mechanical department of the various railway systems in closer touch with the managing and accounting departments.

In conclusion, there is another auxiliary originating from this association, the importance of which must not be overlooked, the street railway press, through whose untiring efforts we are constantly advised of improved methods, forms a means for an interchange of ideas, and its work, when more generally appreciated, will, it is to be hoped, be substantially rewarded.

### Capital Accounts From the Viewpoint of Investors and the Public

BY COL. T. S. WILLIAMS

Vice-President, Brooklyn Rapid Transit Company

Some recent catastrophes in railroad finances deserve particular discussion in a convention of railroad officers and accountants.

The Third Avenue Railroad Company, of New York, in February, 1900, passed into the hands of a receiver, its stock having declined from \$242 per share to \$45 within a year preceding, and annual dividends averaging 8 per cent having been paid in the five preceding fiscal years. So violent a decline in the market value of what had been regarded as a conservative investment stock shook public confidence, depressed prices of other securities, and produced conditions of financial panic. To those who had studied intelligently the annual reports of this company these results were not surprising; the wonder was that in the face of such reports investment buying could have raised the stock to so high a figure—for Third Avenue stock had not been a speculative one and, therefore, had not been the subject of market manipulation. A comparison of the reports of the company to the State Board of Railroad Commissioners for the five years preceding the receivership reveals clearly the cause of the company's downfall and makes almost incredible the apparent confidence which its friends had in the worth of its stock. In 1895 the change of motive power from horse to cable had been completed, the company had no floating debt except for current accounts, the outstanding capitalization (including both bonds and stock) was \$13,600,000, the cost of road and equipment, including permanent investments, was \$13,499,629, and the net income applicable to interest on capitalization was \$1,129,994, or 8.3 per cent. On June 30, 1899, the capitalization outstanding had risen to \$17,000,000, a floating debt had been incurred of \$13,385,122, the cost of road and equipment and permanent investments (stocks of other companies) had risen to \$30,424,990, and the net income applicable to interest on capitalization was actually less than in 1895, being \$1,116,469, or 3.6 per cent. Yet during those four years all the net income above the interest on \$5,000,000 of bonds was diverted to dividends on the capital stock and not a dollar was appropriated to interest on the remaining capitalization represented by \$13,385,000 of floating debt. Presumably the interest on loans was charged to investment account, so as to leave net income enough to insure the continuance of dividends on capital stock. In brief, the company's directors in four years added to capital account nearly \$17,000,000 (more than 100 per cent increase), without in-



creasing the net income by a single dollar. The additions were gradual and are vividly shown by the following table:

Capitalization—	June 30, 1895	1896	1897	1898	1899
Stocks .....	\$8,600,000	\$9,000,000	\$10,000,000	\$10,000,000	\$12,000,000
Bonds .....	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000
Loans .....	None.	1,875,000	1,675,000	9,693,347	13,385,122
Total .....	\$13,600,000	\$15,875,000	\$16,675,000	\$24,693,347	\$30,385,122

Cost of road and equipment, including other permanent investments..	\$13,499,629	\$15,638,592	\$16,662,517	\$24,885,739	\$30,424,990
Net income applicable to interest on capitalization .....	1,129,394	1,062,945	1,077,864	1,063,921	1,116,469
Per cent of capitalization.	8.3	6.7	6.4	4.3	3.6
Part of income applied to dividends on stocks.	\$624,000	880,000	\$75,000	800,000	\$30,000
Part applied to interest on bonds .....	252,300	253,600	250,000	250,000	250,000
Part applied to floating debt .....	None.	None.	None.	None.	None.

An analysis of the operating expenses shows only \$1,127 charged to maintenance of roadway and track during the year 1896, and only \$888 in 1897. Of course, with such financing, bankruptcy was certain unless dividends were suspended and bankruptcy came because the dividends continued. The initial mistake was in making the company pay excessive prices for railroad properties, the possession of which brought no additional net income; it was repeated in charging the interest on moneys borrowed for such purposes to capital account instead of to expense account; and it became almost criminal in diverting to stockholders income which belonged to creditors.

For many years the stocks of the Baltimore & Ohio Railroad Company were in high repute, and because of their reliability as dividend payers had found their way into strong-boxes, and the income from them supported families, charities and educational institutions; but in 1896 this company went into the hands of receivers, and an examination of its accounts by Stephen Little showed that in seven years there had been an overstatement of income of \$11,204,000 by improper charges to capital accounts. Making allowance for this, substantially no surplus earnings remained for the common stock, yet dividends on that class of stock were paid at an average rate of 4 per cent for several years. Had operating expenses been properly stated and dividends conservatively paid, there probably would have been no occasion for receivership, and much distress among investors would have been avoided.

Another comparatively fresh illustration of the improper swelling of capital accounts is the story of suspension of dividends by the Long Island Railroad Company following a change in the control of the stock in 1897. For five years prior to 1897 dividends had ranged between 4 per cent and 5 per cent, and the price of the stock was not far below par. But while the capital stock remained the same, each year's reports showed constant and considerable additions to cost of road and equipment, being paid for by new issues of bonds or by loans. From 1892 to 1896 the increase was over \$2,200,000. Then came the change in control, an overhauling of the books, and an absolute excision of over \$1,700,000 from this account, and of \$278,000 from the permanent investment account, charges to those amounts being regarded as operating expenses and improper additions to capital. It so happened that during the four previous years there had been paid in dividends \$2,130,000, and it would, therefore, appear that if the revision of the company's accounts was accurate, these dividends were never earned, but were, in effect, paid out of capital funds. That something was wrong might have been surmised from the company's reports, for the additional capitalization of nearly \$3,000,000, all told, brought no additional earning capacity, and the net income applicable to returns on capitalization actually decreased from \$1,208,000 in 1892 to \$1,104,000 in 1896.

These instances of the creation of dividends out of capital instead of surplus earnings are extreme, but they illustrate a tendency and a temptation which exist in greater or lesser degree in all corporate accounting. If capital account, representing original investment and cost, could remain forever fixed, charges only being made to supply deductions for depreciation, railroad bookkeeping would be a comparatively simple affair, a demonstration of receipts on one side and expenses on the other, and the bills payable account would be a very effective indicator of any attempt to swell net earnings by withholding proper charges to expenses. But capital accounts, whether called investment account, cost of road and equipment, advances for construction on account of lessor companies, or betterments and improvements (the more diverse the accounts, the greater the opportunity), must fluctuate with the development of business, and are too often em-

ployed to hide legitimate operating expenses and thus to display a fictitious earning capacity. One railroad company's reports show an average operating expense of 70 per cent of gross receipts; another, in a similar locality, operating under not very dissimilar conditions, show 50 per cent; is the difference entirely one of management and conditions, or partly one of accounting? Not all, or most, of questionable bookkeeping results in disaster, as it did with the Third Avenue Railroad, and, of course, every addition to capital account must, sooner or later, be paid for out of fresh supplies of capital, borrowed money or surplus earnings, and many a railroad, by bookkeeping devices, is able to conceal its true condition until improving business encourages a return to conservative methods; but now and then the extreme is reached and there follows discovery, shock and receivership. Shall such things be prevented, and how? Is the suffering investor himself to blame, or is the corporation and the State? What is needed—more law or more morals, or both?

Nowhere can such questions be more bravely faced or more frankly discussed than among railroad men. This association has rendered great service to the cause of clean bookkeeping in its efforts for the establishment of a uniform classification of accounts. Its further concern should be that such classification, where used, shall always state the full facts, and that neither the desire of stockholders, the ambitions of railroad officers, or the demands of speculation shall induce any withholding of the truth. Of course the most accurate accounting will not prevent mistakes in corporate financing or management; errors of judgment or bad motives will always make possible the misuse of corporate moneys; but the requirements of publicity ought to encourage conservative methods, and official reports ought to be so full, clear and honest that the stockholders and the public cannot be easily misled in their estimation of the value of a company's securities.

A discussion of capital accounts necessarily involves a consideration of the original issue of capital and its book representative of property assets, but I desire more particularly to speak of the yearly addition to capital charges, after original construction and installation are completed and the immediate earning capacity of the investment is demonstrated. The public and the average investor are no longer much deceived by what is called "watered" stock or bonds, and the original nominal capital assets of a corporation are generally appraised in public estimation at their actual value, even though that actual value may be much below the nominal value of the securities outstanding. But after the original capital issues are made and the construction or investment accounts have taken shape, the investing public is often strangely indifferent to additions thereto—confiding apparently in the very sound, but not always accurate, presumption that no additions to investment or construction accounts are made unless they represent substantial and permanent improvements or additions to the property, resulting in increased net earning capacity. It is the lack of scrutiny into such additional charges and the absence of sufficient information regarding them in official reports which permit the public to be deceived, and then to learn sometimes, at sad cost, that such charges represent no substantial improvements or additions, but only ordinary maintenance, with no resultant increased earning capacity, which sometimes must be paid for out of surplus (this would not be so bad), or out of fresh issues of capital—meaning the distribution of the same or less net income among the holders of a greater number of shares or bonds. A perversion of facts with the result of deceiving a corporation's stockholders is not to be justified under any circumstances, but how to protect them against such deception and enable them to see for themselves the company's actual condition is not entirely an easy problem.

I am not one of those who believe much in the efficacy of laws for the accomplishment of the most substantial reforms. Men will not be good merely because to be bad is illegal and may subject the evildoer to punishment. The most thorough and wholesome reform springs from within and accompanies the evolution of conscience. And the development of conscience as exemplified in the finer distinctions of right and wrong has in no activity of society been so marked in recent years as in the conduct of corporate affairs. Never was the sense of responsibility so keenly felt among those who handle other people's money as it is to-day, and never was there a higher standard of business honor. A wholesome public sentiment will eventually cure in a natural way most of the evils from which we may now suffer, and in the reflection of that sentiment and the correction of those particular evils which we are now discussing there can be no more effective instrument than the earnest effort of those who are engaged in keeping the accounts of corporate transactions. You may not control their ultimate aspect; you may be compelled by direction of superior officers to make charges which your judgment and instinct do not approve; but if your advice and help are in the right direction there can be no more potent influence toward conservative methods, and



gradually that influence will establish a higher and higher standard of corporate accounting.

But while laws may not be a great reliance for good, they are helpful in accentuating public sentiment and in encouraging respect for higher standards. Restrictive corporate legislation has often gone to extreme and unwise lengths, but reasonable regulation of corporate powers and acts is conceded to be a proper exercise of governmental authority, and such regulation, when intelligent and conservative, has undoubtedly done much to safeguard the interests of both investors and the public. I believe it is now quite generally a feature of State legislation that increases of stock or bonds of railroad corporations shall require the approval of the State Board of Railroad Commissioners, or corresponding authority. While such a power may be improperly exercised, I am not aware that its exercise has been the subject of much adverse criticism. Yet under such regulation, evils such as I have illustrated have existed, and I suggest whether it would not be advisable to change either the letter or the administration of the law so that more effective results may be obtained. My suggestion relates more particularly to the laws of New York, but is applicable where similar conditions exist.

The present defect in the regulation of capital increases is that it does not begin early enough and is one-sided. Until the application for increase in the issue of bonds or stock is made the subject is not officially before the Board of Railroad Commissioners, and in anticipation of approval the money may have already been spent and charged to capital accounts. The board inquires generally into the propriety of the increase and the use to which it is to be applied, and usually grants the application, leaving the expenditure of the proceeds, if not already expended in advance, to the discretion of the company, as it should. But the defect is that regulation does not extend to the capital accounts as well as to the issues of capital. The Third Avenue Railroad Company applied for and secured increases of capital only to the amount of \$3,400,000 in four years, but during that interval its capital accounts increased nearly \$17,000,000 (passed unchallenged by Railroad Commission), of which \$13,385,000 was represented in floating debt, the incurring of which did not require official consent. If additions to construction and investments accounts are to be paid out of new capital and the issue of this new capital must be approved by the Railroad Commissioners before it is valid, why should not the Railroad Commissioners pass upon the additions to construction accounts as they are made? These accounts, as pointed out above, are a gradual growth. They may contain many improper charges. Issues of capital against them may be long deferred or never made, the cost being represented by floating debt or surplus. But to the extent that they are improperly swelled they give a false idea of the property's earning capacity and permit the payment of dividends out of moneys which should have gone to ordinary expenses. That was the Third Avenue, the Baltimore & Ohio and the Long Island case, and if regulation had been effective it might have avoided these catastrophes.

There need be nothing radical and no hardship in the possession of such proposed powers if judiciously exercised. While there is always room for honest difference of opinion as to the propriety of charges to construction, and the problem is further complicated by the condition of long-term leases as affecting advances for construction on leased lines, there is no more reason to expect arbitrary and unjust decisions from the official body in the matter of capital accounts than there is in the new issues of bonds and stock, and the fact of official supervision, exacting detailed knowledge of charges, would be a valuable check on reckless accounting and financing, a positive benefit to railroad officers, and an additional safeguard to investors. To-day, as I understand the law in this State, the Railroad Commission has the right to demand full information of the accounts and to insist upon the preparation of reports according to its classifications; but while the blanks call for detailed information of annual additions to cost of road and equipment, the Commission has no power, if convinced that any of the charges under this head are improper, to compel a transfer from construction account to operation accounts. Perhaps no compulsion may be necessary—a recommendation from such a body is usually equivalent to a compulsion—and all the good might be accomplished if sufficient investigation were made by the board into the capital charges of each report, followed by suggestions of correction where correction was deemed necessary. But I think it would be a greater protection if the public could know that no addition could be made to construction accounts without having received the inspection and approval of the official board.

Of course, certificates of public officers are not absolute. Banks have been known to fail without government examiners suspecting anything wrong—and railroads will still make statements which are not entirely true, no matter how stringent the regulations under which they are prepared. All harks back finally to the character

and ability of the managers who conduct corporate affairs. To them and their stockholders every influence which promotes honesty, straightforwardness and conservatism is a security against demagogic attacks. Nothing promotes radical and oppressive legislation so much as chicanery in corporate management. Compulsory publicity of accounts in sufficient detail, and wise official supervision, will do much to supplement individual effort for clean book-keeping, and to determine for the benefit of both investors and public the genuine earning power of corporate property.

## Report of Committee on Standard Blanks and Accounting for Material and Supplies

BY F. E. SMITH

Auditor, Chicago Union Traction Company

Your committee are of the opinion that the motion made at the Kansas City convention which led to their appointment did not correctly state the real object desired to be obtained by their labor. We think the matter of blanks is secondary to a system of accounting for material and supplies, and once a system is laid down the blanks to carry out that system could easily be prepared. We have therefore directed our efforts principally to formulating a system which we believe would be complete and meet the requirements of all roads. We shall assume that all material and supplies after their receipt, regardless of their being stored at different places, are under the care of one person, who will be considered responsible for the same. This person we shall designate in this report as the "storekeeper."

In the preparation of the system we have divided the subject into four general heads, viz.:

- A. Purchase.
- B. Receipt.
- C. Disbursement.
- D. Accounting.

Under each heading we have endeavored to explain the several steps necessary to accomplish this result, viz.: the most complete accounting system for material and supplies it is possible to have.

The subdivisions herewith follow:

### (A.) PURCHASE.

#### (1) Requisition for Purchase.

The first requirement is a proper requisition for the purchase of material and supplies for stock or for immediate use. It should be made in triplicate—the original for the purchasing department, the duplicate for the accounting department, and the triplicate to be retained by the storekeeper. It should state for what purpose the material is needed; that is, whether for stock or for some specific work. If for stock, should state the quantity on hand, as well as quantity needed and a description of the material required. The original and duplicate should be sent direct to the general manager, or some other official with equal authority, who should make such corrections as to quantity to be ordered as he desires, on both copies, and, after approving both, send them to the purchasing agent. When this official has ordered the material he should note on the original and duplicate, in spaces which should be provided, the names of parties from whom he orders and his order number, and should then send this duplicate to the accounting department. It should be the duty of the accounting department to check bills that represent purchases made, by the authority of this requisition, before said bills are vouchered.

#### (2) Order from Purchasing Department on Firms or Individuals.

This should be made in triplicate—the original for the party from whom goods are ordered, the duplicate for party to whom goods are consigned, and the triplicate to be retained in the purchasing department. These orders should be consecutively numbered, should bear the requisition number, and contain full shipping directions. The original should also show the conditions of purchase, which can be made to suit the specific requirements of each company, and should be signed in the name of the company by a properly authorized person. If spaces are provided on the duplicate in which the receiving clerk can enter the date and quantities received, together with the lot number assigned them, it will be found a great convenience. Such roads as have adopted the plan of sending out with orders blank billheads to be used in billing goods bought by them are unanimous in their opinion of the merits of the plan. It insures uniformity of size, which is a great convenience in filing, and it enables the roads to provide spaces for such data as may be needed for the proper checking of the bill, instead of resorting to rubber stamps, which are often carelessly applied and efface the figures. We therefore favor the general adoption of this plan.



(3) *Order from Purchasing Department on Company's Shop.*

This form is provided for the purpose of ordering from the shop something to be manufactured or furnished for which a requisition has been drawn—something that is outside of the ordinary material manufactured in the shop, for which there is no requisition drawn, and which is taken care of usually by what is known as the "Shop Order" or the "Job Order." This form should be practically the same as No. 2, except that the original should contain, instead of the conditions of purchase, information as to the account or department chargeable. All labor and material used by the shop in filling this order should be entered on the back, and same returned to the purchasing department. It would be well to assign numbers to this class of work, to enable the purchasing department to order by them should duplicates be required.

(4) *Record of Bills Approved by Purchasing Department.*

This department should be required to keep a record of all bills approved by it. It should be in such form that the total of bills approved will be shown, and should contain the following information: Bill Number, Date, Bought Of, Order Number, Total Amount, Rate of Discount, Amount of Discount, Deductions (for freight, express, or switching charges), Net Amount, Charge to Material and Supplies, Charge to Other Accounts, and Date Delivered to Auditor.

This record should be sent to the accounting department as soon as the entries for the month are closed. The accounting department should check the charges to material and supplies on the voucher record by this record.

## (B.) RECEIPT.

(1) *Assignment of Lot Numbers.*

For the proper identification of all material and supplies put into stock a lot number should be assigned. A record should be kept of the lot numbers and their assignment. Having assigned a lot number to some specific material, a notation should be made on the duplicate order for it that these goods have been assigned such a number. Then, should this particular order be delivered in several instalments, the same number follows until the order is completed. A card should be provided to remain with the material so far as this is practicable, which should show a description of the material and the lot number. This card may also be used as a stock card, and show dates and quantities received and issued, or such information may be kept in the lot number record, which would then in a great measure become a stock journal and ledger, provided it is concluded that the result to be obtained will warrant the labor and expense. The lot number record should be in charge of the storekeeper. Where material is to be shipped direct to branch storerooms, it will probably be found more convenient to have a series of numbers for each branch.

(2) *Handling of Bills.*

We recommend the following plan: Upon receipt of a consignment of material at stores, the receiving clerk should check same by the duplicate order. When goods are received at a branch storeroom, or other point where it is not convenient to have these on file, he should be provided with convenient blanks on which to enter the material received. These he should attach to his daily report, mention of which will be made later, and forward to the storekeeper. Consignors should, so far as possible, be required to make a bill for each order and send same to the purchasing department as soon as order is filled. If, however, a part of the order remains unfilled at the end of the month, a bill should be sent for such material as they have delivered, in order that the storekeeper may have the necessary data to complete his record. Upon receipt of bills by the purchasing department they should be checked by the order and certified as to the correctness of prices. They should then be entered on his record, giving them the first open bill numbers, which numbers should then be placed on bills to thereafter identify them. They should then be sent to the storekeeper, who should check same by his memoranda made on the duplicate order, enter on bills the lot number and department to be charged with the bill, should certify to the receipt of the goods in good order, noting any exceptions for which a counter-bill or deduction should be made, and return to the purchasing department, which will enter on the record the date sent to accounting department and send same. In cases where it is desired to take advantage of a special discount for quick payment, we recommend the use of a printed notice to be attached to the bill when first received, which will show the date on which the bill must be paid. Departments receiving bills with these slips attached should be required to give them immediate attention. The accounting department, upon receipt of bills, should check same by the requisition and file such bills as are to be paid monthly until the receipt of statements from consignors, which they should be required to

send on the first of each month, covering all the unpaid bills of the month and any of previous months which may remain unpaid. The bills should be checked with the statements, missing ones looked up, and the statements vouchered. If the original bills are retained or filed in the accounting department, it will be found necessary to give much detail on the voucher.

(3) *Recording.*

A record of all material and supplies received should be made as soon after the receipt of goods as is practicable. All material and supplies received, of whatsoever nature, whether new, second-hand or scrap, whether returned to stock after having been charged out and used, or whether manufactured material, *i. e.*, material made up in the shops of the company, should be entered on this blank, which should embody the following: Date, Quantity, Articles, Description (underneath distribution, "New, Second-hand or Scrap"), From, Order Number, Cost, Amount, Total, Bill Number, Lot Number, Where Stored, and Remarks.

The department or subdivision of the storeroom may be designated by letter, *viz.*: "A" might cover the track department, "B" the line department, etc.

(4) *Stock Ledger.*

In order to have a complete and perfect system, which will show at a glance at any time the quantity and value of any particular class of material which is in stock, it will be found absolutely necessary to use a ledger. This ledger may be in book form or in the library index-card form. Whether this information is of sufficient value to warrant the expense of maintaining it is for each individual to determine for himself. This ledger need only contain the description of article, which would be the account heading. On the debit side would be the date, lot number, quantity and value; on the credit side would be the date, requisition number, quantity and value.

In connection with this branch of the subject we beg leave to quote from a paper entitled "Material Accounts," prepared by Mr. A. D. Parker, general auditor, Colorado & Southern Railway, for the meeting of the Association of American Railway Accounting Officers held in Denver in May. He says under the heading

## STORE ACCOUNTS:

It has already been hinted that many, if not most, railroads carry large stock registers at their several stores, and it would appear to the observer, and possibly to most storekeepers, a necessity. On the other hand, voluminous books of this character often become statistical, and have little practical value. The storekeeper who is alive to the interests of his company handles his material in the same manner that a merchant does his stock. He is in touch with his material every day, and the careful distribution of the articles themselves, either on the shelves or along the floor and platforms, answers the question of requirements. Indeed, the stock registers become misleading at times, and frequently a glance at the material itself is required to check an item, or items, recorded in the ledger. For this reason it is more practical for a minute accounting, paradoxical as it may at first appear, to have as little clerical work as possible at the store, and carry the registrations to the audit office. Instead of making a diversified classification of material, it should be divided into thirty or forty practical headings which will give the requirements necessary.

The plan suggested by Mr. Parker has much to recommend it. "Material and Supplies" can be subdivided into as many headings as may be found necessary or desirable, and the value of the different classes of material by this method can be readily shown. It should, of course, be understood, however, that the information as to quantities and description of material that would be shown by the stock ledger previously referred to and recommended could not be shown by this method; however, we believe if the stock cards are properly kept it will be found to meet all requirements.

(5) *Handling of Second-hand Material and Scrap.*

Under this subject it is difficult to map out a system that will be applicable to all roads, but we shall endeavor in a general way to give our ideas as to the proper method of procedure.

If this class of material is entered on the stock books at a value when it is stored for future use or sale, it then comes under the care of the storekeeper, and more importance will attach to it than if it were simply dealt with when sold. Another advantage to be gained by this plan is that the expense or other accounts to be credited with scrap will receive the credit at the same time they receive a charge for the material which replaces the scrap. Any discrepancy which may occur between the price obtained for the scrap and the value placed upon it would have to be adjusted proportionately between the accounts credited. When obsolete material is scrapped, stock material account should be credited with the scrap value and the difference charged to the proper expense account, or to a depreciation account, if one has been provided, or to profit and loss direct. We do not favor the plan of adding a



percentage to all material charged out to provide a fund to which this shrinkage may be charged. It is mere guesswork—none of the expense accounts containing material are accurate, and it is at variance with the true principles of accounting.

## (c.) DISBURSEMENT.

(1) *Distribution and Charge of Material.*

(a) Regular Requisition.—Regular requisitions should cover the needs of a department for a specific period, being made but once a month if practicable. They should be drawn in duplicate—the original to be submitted to the general manager or some other official of equal authority for approval before being filled, and the duplicate to be retained by the person drawing the requisition. They should be numbered consecutively.

(b) Emergency Requisition.—The emergency requisition is designed to provide for material for emergency use, which could not be anticipated or covered by the regular requisition, and should be honored by the storekeeper without the same approval as surrounds the regular requisition, with the understanding, however, that a regular requisition will be drawn later covering such emergency requisition honored. They should be drawn in duplicate—the original to go to storekeeper and the duplicate to be retained by the person drawing the requisition. They should be numbered consecutively.

(c) Request for Material and Supplies.—This form provides for the drawing of material by employees of the shop, track, electrical, or other departments, after the request has been signed by the foreman in charge of the employee, and the goods should be delivered to the employee upon presentation of the request. The request is honored by the storekeeper with the understanding that the head of the department making same will sign a manifest for the material so delivered, or requisition the request later, if so desired by the storekeeper. This form is put up in blocks, is drawn only in the original, not numbered, and operates as a sight draft on the storekeeper.

(2) *Manifesting.*

(a) A regular manifest should accompany each shipment of stock from the storerooms. This should be in triplicate—the original and duplicate going with the goods, the original to be receipted and returned to the storekeeper, the duplicate to be retained by person receiving the goods, and the triplicate to remain in storekeeper's book. They should be consecutively numbered and contain the following information: To Whom, By Whom and Where Delivered, state the number of requisition upon which this material was issued besides the date, Quantity, Articles, Cost, Amount, the Account Chargeable, and the Lot Number.

(b) A blank to be used for one or all of the following purposes:  
To transfer material from one storehouse or department to another storehouse or department.

Second-hand material transferred to storehouse.

Scrap material transferred to storehouse.

Material transferred from storage yards to the place where it is to be used. For example, the handling and distribution of rails, ties, paving blocks, etc., to a place where the same are to be used.

This form should be in duplicate, should be consecutively numbered, and contain the quantity and description of the articles, and be receipted.

(c) A blank which may be called "suspense." Being a manifest designed to cover the issuance of material which cannot be intelligently charged out when issued. For instance, the delivery by the storeroom of material for line repairs which is to be used on emergency or tower wagons. This should be consecutively numbered and be in duplicate, the original to be retained by person responsible for the material issued upon it until every article is accounted for on a place provided on the blank, and the duplicate to be retained by the person sending out the material. All material which has been issued upon this manifest which is unused on the last day of the month must be returned to the storekeeper for inspection; the storekeeper will receipt for it and re-manifest it. The person to whom the material is issued shall report upon this blank the use to which the material was put, giving all particulars regarding same.

(3) *Reporting.*

A blank should be provided to report to the storekeeper daily material and supplies that have been taken from the stock of the branch storerooms and used. It should be drawn in duplicate—the original going to the storekeeper and the duplicate being retained by person making report. It should be consecutively numbered, and should have the following printed upon it: Lot Number, Quantity, Articles, Used For and Chargeable To, and blank columns for the storekeeper's record, to insert cost and value.

## (d.) ACCOUNTING.

(1) *Abstract.*

A blank designed for abstracting all forms of manifests or re-

ports covering raw material and supplies disbursed, second-hand or scrap material put into stock, or material manufactured in the shops of the company, showing the accounts properly chargeable or creditable, with the value of same.

(2) *Monthly Report.*

A monthly report to the accounting department by the storeroom department, being a recapitulation, and covering the abstracts of material and supplies disbursed, and which will show the accounts and amounts chargeable, the footing of which amounts will be the credit to material and supplies. The receipted manifests should accompany these reports and be checked by the accounting department.

(3) *Storeroom Report.*

A report from the storeroom department to accounting department, which is a recapitulation of the abstracts or reports of material which had been charged out and subsequently returned to stock; all manufactured material made in the shops of the company which had been added to stock, or scrap material which had been put into stock, and the accounts to be credited with these amounts, the total of which makes the debit to material and supplies, and should agree with the amount shown on report sent in by the purchasing department.

## Car Mileage and How to Arrive at It Easily

BY J. M. SMITH

Controller, Toronto Railway Company

"Up to date" is a term used by most business men of the present day, whether it be the merchant in his store, the manufacturer in his shop, the steam or electric railways, with their plant and equipments, or whatever business you choose to name—all are agreed, to keep pace with the times they must be "up to date" in all of the various branches of their respective enterprises. While this is so fully admitted, it is surprising how many electric railway companies neglect so important a matter as the keeping of a record of their car mileage; especially is such the case among many of the smaller companies.

A number of the larger companies go very minutely into the question of mileage, and rightly so, as too much care cannot be exercised to arrive at the correct mileage run, as the same forms a basis for comparison of income and operating expenses, one year with another, and one system (similarly situated) with another. To arrive at their car mileage they require their division superintendent to keep data of all deviations from their schedule or time card, to make all calculations and to report to the accounting department each day the mileage run on the various lines, on a form showing the number of cars, the number of full and short trips on each line, making mention of the points of starting and finishing of such short trips. As a check on this report, the accounting department, being in possession of the daily schedule or time card, showing the number of trips to be run upon each line, can, by deducting the number of trips lost, ascertain the exact number run, the lost trips are in some cases reported by the division superintendent and in others by the conductors themselves on their trip sheets, and by having a duplicate of the engineer's measurements of the different lines, they are enabled thereby to calculate the mileage and thus check the report sent in.

It will readily be seen in such large cities as New York, Boston, Chicago and many others to arrive at the correct car mileage run entails considerable clerical work; more especially is such the case where the mileage of each individual car is recorded.

The progressive manager or superintendent will not overlook the importance of seeing that his statistics are as complete as possible, among the first of which should be record of car mileage, for by this unit of comparison will he be enabled to compare the operation of his company with the records of others similarly situated, as well as follow more closely the cost of maintenance of his own system by comparing the life of the various lines of materials as purchased from different manufacturers, such as car-wheels (usually purchased under a guaranteed mileage), trolley-wheels, gears, pinions, armatures, bearings, etc.

The calculating of car mileage does not take as much time as some may suppose, the time occupied figuring the total mileage run on the Toronto system, where we have sixteen different lines in operation, and calculating and recording the mileage of each individual car, there being on an average 300 cars, including extras, per day, is about two hours daily. Much time is saved by having prepared tables of measurements, giving the mileage of from one to any number of trips. As a rule, the schedule number of trips on a line does not change very often; they are usually the same each day, unless it be Saturdays or special days, when a number of extra cars are added, thus increasing the total trips run. In such cases it



is only necessary to deal with the increased number of trips, adding the mileage of the same to the mileage of the schedule number.

To illustrate my meaning, we will say that the schedule calls for 1000 trips on a certain line. By reference to your table for this line you find the mileage for this number of trips equals 5000 miles; if there should have been ten trips lost during the day, by referring again to your table you will find the trips lost would equal 50 miles, leaving the exact mileage for the line to be 4950 miles.

The same table of measurements above referred to is used for ascertaining the mileage of the individual cars.

#### RECORDING MILEAGE

The recording of car mileage statistics comes properly within the sphere of the accounting department, and the said department fails greatly in its duties if it does not see to the proper recording of car mileage; not only to see that the total mileage run is recorded, but also to see that proper books are kept that will show the mileage of each individual car, and that the same be in such form as will enable the manager or superintendent to ascertain readily the total car mileage, or the mileage of any individual car for any given period.

I feel certain that larger companies have realized the necessity of keeping record of car miles for purpose of comparison, and have worked out a system more suitable to their circumstances, that will enable them to compute their mileage, than can possibly be suggested by a person unfamiliar with the conditions under which their systems are operated; therefore, in dealing with this subject, I will confine myself more to suggesting a method that, I think, will be simple and yet suitable to the smaller companies, the greater part of which method is followed out by the company I represent.

I have here some of the forms in use by the Toronto Railway Company that will assist me in explaining the system.

First, let me say that all car mileage is calculated and recorded in the accounting department with us, where a table of measurements of the different lines is filed, which table also includes dead-end measurements. I mean by dead-end measurements the distance between the car house and the starting point of the different lines.

Form No. 1. This form is filled out, one for each of our lines by our car starter, or division superintendent, in so far as to the badge numbers of the conductors, car numbers, numbers of the fare boxes, and the number of the trips as per time card. After all cars are despatched, these forms are sent to the accounting department to be in readiness for the recording of the contents of the fare boxes used on the respective lines as they are counted next day.

On this form the fifth column is headed "Trips per Card," meaning the schedule number of trips to be run; the sixth column is headed "Lost Trips," meaning trips not run for any reason during the day; the seventh column, marked "Trips Run," represent the actual number run after deducting those lost from the number as per schedule. This form, therefore, becomes the foundation, as it were, upon which the total mileage of the line and of the individual cars running each day is computed.

Form No. 2. This form is used as a summary, showing the total number of cars and trips run, mileage and earnings for the day, of the different lines as calculated on form No. 1.

Form No. 3. This form is used by the conductors in reporting lost trips during the day. Forms are to be found at the different car houses, so that as each conductor is relieved or goes off duty he makes record of any trips lost and cause of same. These reports are forwarded to the superintendent's department at the close of each day, when a clerk next morning attends to the entering of the lost trips in the column for that purpose on form No. 1 in the accounting department.

Form No. 4 is a page from our earnings register. Each page represents a different line or route, and is ruled for thirty-one days. It is entered up daily and gives the record of one of our lines, such as the cars, trips, mileage, earnings, passengers and transfers for one month. A summary is made of the different lines at the close of each month on a page at the back of the register, thus constituting a complete record for the month.

Form No. 5 is a page of our individual car mileage book. The mileage of each car is here entered from form No. 1 each day, and each page is ruled to record one hundred cars. As our car numbers run up to close on 900 it would, therefore, require nine pages each month, but the company has adopted a plan to distinguish between the open and closed cars, numbering all closed cars even numbers and open cars odd numbers; thus you will see it is only necessary to bring forward the mileage of the closed cars during winter months and of the open cars during summer months, thereby reducing the number of pages to about five.

The above constitute all the forms bearing on this subject used

by our system, and we find them sufficient to enable us to arrive at both full and individual car mileage.

In conclusion, let me say if all electric railway companies would adopt a system whereby they would be enabled to make comparison, if for no other purpose than to follow the cost or life of material purchased for maintenance, they would certainly appreciate the benefits derived therefrom.

### A Street Railway Managers' Association

The general managers of the various electric railway properties of the Everett-Moore syndicate have drawn up articles for the organization of the Everett-Moore Managers' Association. It is the intention to meet every two weeks at Cleveland, Detroit or Toledo, to discuss different matters of mutual interest. A standard system of handling the properties will be adopted, and a standard set of rules for handling employees will also be adopted. It is believed that these frequent conferences, together with inspections of the different properties, will tend to improve the service greatly. Those in attendance at the meeting at which the association was organized were: Ira McCormack, Cleveland Electric Railway; R. E. Danforth, Lake Shore Electric Railway; L. E. Beilstein, Toledo Railways & Lighting Company; Charles Currie, Northern Ohio Traction Company; Joseph Jorden, Cleveland, Painesville & Eastern Railway; R. L. Andrews, Cleveland & Eastern system; C. E. Carr, London Street Railway; A. F. Edwards, Toledo & Monroe Railway. J. C. Hutchins, of the Detroit United Railways, was in New York and could not attend. He will, of course, take an active part in the new association.

### Strikes at Chicago and Scranton

The employees of the South Side Elevated Railroad, of Chicago, went on strike, Sept. 28, but the attempt to cripple the service was most ineffectual, and but little inconvenience resulted to the public. Sudden demand for increased wages was made on President Carter, of the company, the men stating that immediate concession to their demands, or a compromise that would satisfy them, was all that would prevent a strike. President Carter received the representatives of the men, who demanded a 20 per cent increase, and told them that the question of increased wages would be considered by the company. Those who had been chosen to wait upon Mr. Carter reported the result of their visit, and, acting under the impulse that prompted the sudden demand, it was decided to strike. The company had, it seems, been considering the question of an increase in wages, and shortly after the strike was inaugurated the wages of those who remained faithful to the company was increased according to the following schedule: First-class motormen from 25 cents per hour to 27½ cents per hour; second-class motormen, from 22½ cents per hour to 25 cents per hour; conductors, from 17½ cents per hour to 19¼ cents per hour; guards, from 15 cents per hour to 16½ cents per hour; switchmen, increase of 10 per cent.

The Scranton Railway Company, of Scranton, Pa., has imported men to take the place of those who went on strike, Oct. 1, and the company is reported as stating that it will not consider any overtures from the strikers. The company has succeeded in operating cars, but the lawless element has recently been at work. It is reported that a number of cars have been badly damaged, and that several of the men who have taken the places of the strikers have been maltreated. The difficulty between the Scranton Railway Company is said to have resulted from the discharge of two dishonest conductors. Demands that these men be reinstated were made to the company, and the company, in the hope of avoiding a strike, agreed to arbitrate the matter. This offer the men refused.

Among the attendants of the recent yacht races were many persons prominent in the street railway industry, some of whom came to New York in advance of the convention for this purpose. W. S. Gould entertained a number of well-known electrical and street railway folk on his beautiful yacht "Neairia," from day to day, while the Roeblings, as usual, were generous hosts, H. L. Shipley extending a lavish hospitality on board the "Nerita." Frank J. Sprague had the pleasure of spending one of the days on board the beautiful "Erin" as a guest of that genuine British sportsman, Sir Thomas Lipton, owner of the "Shamrock."



## THE PROCEEDINGS OF THE CONVENTION

President Walton H. Holmes, of Kansas City, Mo., called the convention to order at 10:45 o'clock, and introduced Randolph Guggenheimer, President of the Municipal Council of New York City, who delivered the following address of welcome:

### MR. GUGGENHEIMER'S ADDRESS

Mr. President and Members of the American Street Railway Association.—In the name of the city of New York, which I have the honor to represent on this occasion, I welcome the delegates of your association to the metropolis. It is not necessary for me to have a technical knowledge of railway management to say that you have acted wisely in selecting New York as the meeting place of your association for this year. We are very proud of our city because we believe that it is pre-eminent among all the world's municipalities in many respects, and especially in its street railway system. There was a time not many years ago when President Vreeland would not have found it difficult to solve the problems of street transportation in the old city of New York. Then stages, drawn at the breakneck speed of 4 miles an hour, carried passengers as far north, in the Island of Manhattan, as Twenty-Third Street. A great transformation was wrought by the laying down of horse-car lines in various avenues and streets, until at last the usefulness of the horse was threatened by the adoption of the cable on Broadway and Lexington Avenue. At that time New York City seemed to be contented with antiquated methods because even, in the neighboring city of Brooklyn, the overhead trolley was doing a rushing and killing business. We yield the palm of superiority even to Philadelphia in the matter of speed and the number of slain pedestrians. But I can congratulate President Vreeland and the Metropolitan Street Railway Company upon their adoption of the sub-trolley system which, in my opinion, is the only reasonable solution of urban transportation. At the present moment the city of New York, as far as the lines of the Metropolitan Street Railway are concerned, possesses the most perfect and the most rational street car service, not only in the United States, but in the whole world. I venture now, with great diffidence, lest the presidents of other lines should be present and resent my words, to hope that, in the not distant future, the underground trolley will be adopted in every borough in the city.

The street railway business, especially during the last twenty-five years, has become one of the most important and colossal of all the industries in the United States, and contributes materially to the welfare of the people. It does so in many ways. A calculation of the number of men employed in street railway work throughout the country would show that intramural transportation companies are the means of sustaining a larger number of families than the statistician would at first sight imagine. But, in addition to the unconscious benevolence displayed by the bond and stockholders of the various street railroad corporations throughout the United States, they perform a public duty of incalculable value to a greater degree to-day than at any previous period in our history. The operations of commerce depend upon the efficiency of your transportation lines. If it be true that time is money, and that the saving of time means success, I cannot understand to-day how the business of the community was efficiently performed when it required as long a time to journey from Harlem to the business districts of this city as it does to reach New York from Albany.

The adjustment of all questions relating to the enlarged organization of street railway companies will become more and more difficult. The time will come when the surface of the United States will become an interlaced network of street railway lines. The administration of such corporate business requires the most acute intelligence and the highest degree of trained abilities. The men who preside over the fortunes of these companies must possess abilities not less remarkable than those required for the government of the State and nation. But this period in the history of the world, which may be fitly called the age of electricity, the engineers employed by such corporations must possess the highest degree of technical skill. The era of the horse car and of the cable is practically passed. Modern conditions demand a transportation service which shall be in keeping with the swift progress of the times.

I congratulate the American Street Railway Association that you number among your members men whose success in the past bespeaks a high degree of administrative prosperity in the future, and that the American engineers in your service possess that scientific accuracy and progressiveness which have added so greatly to the reputation of America in applied science.

Again, Mr. President and members of the American Street Railway Association, in the name of the city of New York I bid you a most cordial welcome to the metropolis. I trust that all the members of your society will bring to your homes the pleasantest possible memories of your visit to New York, and that your convention may prove, both socially and professionally, the success which it so eminently deserves. I know that I am simply speaking for the people of this community when I express my most earnest hope that the American Street Railway Association will be so well pleased with their visit that they will soon again select the city of New York for the purposes of holding their annual convention.

Let me thank you again for your courteous reception.

PRESIDENT HOLMES: Mr. Guggenheimer, allow me, in the name of the American Street Railway Association, to thank you most heartily for your kind words of welcome.

We will now proceed with the regular order of business. The first business on the programme is the calling of the roll. As it is customary to take the registration at the door for the roll call, we will dispense with the calling of the roll. The next order of business is the address of the president.

President Holmes then delivered the following address:

### PRESIDENT'S ADDRESS

It is extremely appropriate that the twentieth session of the American Street Railway Association should be held in the city of Greater New York. In acknowledging the kindly spirit of hospitality pervading the address of welcome to which we have just listened, I but feebly voice the feelings of every member of the association when I say that not the slightest doubt was ever entertained but that our meeting in the great metropolis of America would prove to be the most enjoyable and profitable in its history. I am assured that every desirable arrangement has been made for our comfort and entertainment, an assurance entirely unnecessary from the gentlemen who have these matters in charge. Personally, I have the highest pleasure in meeting with you on this auspicious occasion, and I extend to one and all my hearty congratulations that once more we are gathered together in convention under circumstances and environment which guarantee that the best interests of the association will be promoted and greatly enhanced thereby, and that we will return to our homes refreshed and stimulated by pleasant memories, and inspired to still higher efforts and greater success in our calling by the light of the experience, thought and fellowship of successful brethren working to a common end.

Since the last meeting of this association the President of these United States has been taken away by the ruthless hand of an assassin. It has been truly said of Mr. McKinley that he was the most beloved of all our Presidents while in office. His kindly disposition and sincerity of purpose attracted all men to him in such marked degree that, through his example and influence, the last vestige of sectionalism has been happily removed from our common country. Great as was the loss in his taking off, it was not without some compensating advantages. It has served to arouse and unite the whole civilized world in one common bond of sympathy, and to teach us, as well as anarchy, that the foundations of our government, being laid deep and lasting in the principles of liberty, right and justice, are not to be even momentarily shaken by an assault on the chief magistrate, however successful. By this unhappy event business was nowhere seriously disturbed except by its voluntary cessation for a short period actuated by universal patriotism and sincere grief that a great and good man had been so cruelly and causelessly removed from the service of the country which he had loved so devotedly and served so faithfully and so well. Peace to his ashes, and may the red hand of anarchy never be seen in our midst again.

At a session of the executive committee, held in the early spring, your president appointed a committee on standardizing of street railway equipment, known as the standardizing committee. This committee, I am informed, has given the subject very careful thought and consideration, and at the proper time the result of its deliberations will be reported to you. In my judgment, no more important subject looking to permanent improvement in street railway conditions could engage your attention, and when the report comes in I trust it will receive the full measure of discussion which the question deserves. While the views reported will be of great value in themselves, they will stand out in still bolder relief in the light of a full and intelligent discussion. I am so impressed with the importance of this problem that I beg



to suggest the propriety of its continued study and investigation, through committee, until substantial results are obtained.

The past year has been one of peace and prosperity in the street railway business. No serious labor troubles have occurred, no doubt due to the fact that a better understanding is constantly being brought about between employer and the employed. Managers and men are everywhere being brought close together, with the result that misunderstandings, often due to unauthorized acts of subordinates, are of much less frequent occurrence. Imaginary grievances are often more serious than real ones, and generally more difficult of settlement.

The standard of construction and equipment continues to grow more and more substantial and expensive, contributing, measurably, to the comfort of street railway patrons. The electric street car of to-day is a palace on wheels compared with the horse coach of twenty-five years ago. The highest degree of comfort is being rapidly attained, and every day gives evidence that the well-equipped street railway has passed beyond the stage of a mere necessity of convenience, and is looked upon by a very large percentage of the community as a primary source of pleasure and enjoyment. The street railway manager is nothing more nor less than a merchant selling rides on a large scale. The profit on each ride is so small that money is to be made only by doing a large business. This fact every competent manager fully realizes, and hence it is that he is ever willing to introduce improvements everywhere, even to the extent of discarding substantial and valuable equipment, whenever it can be seen that such action will bring anything like an adequate return in the way of increased patronage. His unremitting endeavor is to induce people to patronize the cars, and to that end is constantly providing for them attractions in the way of parks and amusements in great variety. Wherever public parks or places of amusement are to be found the efforts of the authorities in that direction are supplemented by the street railway manager who supplies them with attractions and exhibitions which would otherwise be wanting.

The time to be occupied by the deliberations of this association has this year been limited to three days, the whole of Thursday, according to the programme made by the executive committee, being set apart for the consideration of the exhibits made by the supply men. The action of the executive committee in thus emphasizing the importance of these exhibits I have no doubt will meet with your hearty approval. They contain all that is new and valuable to be known in the machinery and appliances pertaining to the business in which we are engaged. A careful and discriminating study of them is almost an education in itself. They have been brought from everywhere, in many instances from great distances at large expense, and are displayed in a manner most attractive and instructive. It is but right that this substantial recognition should be made of this exceedingly valuable feature of these conventions.

I trust that the members of this association will take particular interest in the work of the accountants' association which is assembled here in convention at this time. They are accomplishing much of value in their special department, and by the work they are doing are greatly facilitating the interchange of desirable information and promoting the safe and economical administration of the affairs of street railway companies.

It gives me great pleasure to be able to state that the present condition of this association is the most healthy and prosperous in its history. During the past year its membership has greatly increased and its bank account is in a most satisfactory condition. No more convincing testimony could be given of the usefulness of the association and of the reason for its existence.

The thanks of the association are due to the secretary and the executive committee for the able and successful manner in which they have conducted its affairs during the past year.

In closing permit me to say that the honor which you have conferred upon me is most highly appreciated. To be the president of this association is an honor of which any man might well be proud, and I shall ever esteem the compliment paid me in my selection, to preside over your deliberations, as the brightest jewel in the crown of whatever success I may have achieved as a street railway man. If my administration of the high office has been a success it has been due more to the kind and considerate support and co-operation of others than to any merit of my own. I can bespeak for my successor no greater surety of success than to be accorded the same generous treatment.

PRESIDENT HOLMES: The report of the executive committee is in order. The report of this committee consists of the minutes of the meetings of the committee.

#### EXECUTIVE COMMITTEE'S REPORT

Secretary Penington then read the minutes of the executive committee meetings held Feb. 28 and Oct. 8, 1901. These minutes

consisted simply of a record of the routine work of the executive committee in the selection of the hall for holding the convention; the dates of the convention; the arrangements for the banquet; action concerning members in arrears of dues; selection of headquarters for the convention; selection of topics for papers and writers to prepare the same, and work done by the executive committee in considering similar matters. The executive committee, at the meeting held Feb. 8, appointed the committee on standards.

On motion, the report of the executive committee was received and filed.

PRESIDENT HOLMES: We will now listen to the report of the secretary and treasurer.

#### REPORT OF THE SECRETARY AND TREASURER

Secretary Penington presented the following report:

Cash in bank Oct. 10, 1900.....	\$7,000.75
Receipts to Oct. 1, 1901	
Annual dues .....	\$4,550.00
Rent of space exhibit hall, 1900.....	1,819.60
Rent of space exhibit hall, 1901.....	1,195.80
Interest on deposits.....	187.28
	<hr/>
	7,752.68
	<hr/>
	\$14,753.43
Expenses to Oct. 1, 1901	
Printing and stationery.....	\$955.85
Postage .....	133.65
Salaries .....	1,500.00
Miscellaneous expense .....	50.00
Executive committee, 1901.....	396.96
Nineteenth annual convention, 1900.....	1,204.21
Twentieth annual convention, 1901.....	23.00
Committee on standards.....	361.08
	<hr/>
	4,624.68
	<hr/>
	\$10,128.68

#### NEW MEMBERS

The following companies acquired membership at and since the last meeting:

- Cincinnati, Ohio.—Cincinnati Traction Company.
- Cincinnati, Ohio.—Cincinnati & Eastern Electric Railway Company.
- Dallas, Tex.—Dallas Consolidated Electric Street Railway Company.
- Danville, Ill.—Danville Street Railway & Light Company.
- Detroit, Mich.—Detroit, Rochester, Romeo & Lake Orion Railway Company.
- Edgewater, N. J.—New Jersey & Hudson River Railway & Ferry Company.
- Fishkill-on-Hudson, N. Y.—Citizens' Street Railway Company.
- Jackson, Miss.—Jackson Railway, Light & Power Company.
- Lebanon, Pa.—Lebanon Valley Street Railway Company.
- Lynchburg, Va.—Lynchburg Traction & Light Company.
- Meridian, Miss.—Meridian Street Railroad & Power Company.
- North Adams, Mass.—Hoosic Valley Street Railway Company.
- Norristown, Pa.—Schuylkill Traction Company.
- Ottawa, Ill.—Ottawa Railway, Light & Power Company.
- Ottawa, Ontario.—Ottawa Electric Railway Company.
- Pomeroy, Ohio.—Ohio River Electric Railway & Power Company.
- Philadelphia, Pa.—Holmesburg, Tacony & Frankfort Electric Railway Company.
- Pittsburgh, Pa.—Monongahela Street Railway Company.
- Rockford, Ill.—Rockford Railway, Light & Power Company.
- Saratoga, N. Y.—Saratoga Traction Company.
- San Juan, Porto Rico.—San Juan Light & Transit Company.
- Terre Haute, Ind.—Terre Haute Electric Company.
- Wolcott, Kas.—Kansas City-Leavenworth Railway Company.

#### MEMBERS WITHDRAWN

- Anderson, Ind.—Union Traction Company.
- Aurora, Ill.—Aurora Street Railway Company.
- Cincinnati, Ohio.—Cincinnati Railway Company.
- Lowell, Mass.—Lowell & Suburban Railway Company.
- Portland, Maine.—Portland & Yarmouth Electric Street Railway Company.
- Quincy, Mass.—Quincy & Boston Street Railway Company.

#### MEMBERS REINSTATED

- Great Falls, Mont.—Great Falls Street Railway Company.



## RECAPITULATION

## MEMBERSHIP

Oct. 10, 1900.....	163
New members since last meeting.....	23
Reinstated .....	1
	—
	24
	—
	187
Withdrawn .....	6
	—
Membership Oct. 1, 1901.....	181

MR. WYMAN: I move, Mr. President, that the report of the secretary and treasurer be accepted and spread upon the minutes, accompanied with the congratulations of the delegates on the exceedingly good showing which appears.

The motion was carried.

PRESIDENT HOLMES: We will now have the report of the committee on memorials of deceased members. This was read by Mr. Vreeland, chairman of the committee.

PRESIDENT HOLMES: If there is no objection, the report will be adopted and made a part of the minutes of this meeting.

Secretary Penington announced that the Compressed Air Company, of Rome, N. Y., invited the delegates to visit its works and inspect its plant for manufacturing compressed air motors; also that the Bethlehem Steel Company, of South Bethlehem, Pa., invited the delegates to visit the plant on Saturday, special cars being provided for that purpose; also that the badges of the association would be honored on all the street and elevated railway lines in New York, Brooklyn, Long Island City, Jersey City and Hoboken, as well as entitling the holders to the free service of the local and long distance telephones and the use of messengers of the American District Telegraph Company.

PRESIDENT HOLMES: The papers by Robert McCulloch, of Chicago, on "Street Railways: A Review of the Past and a Forecast of the Future;" by Charles S. Sergeant, of Boston, on "The Public, the Operator, and the Company;" and by George W. Baumhoff, of St. Louis, on "The American Street Railway Association: The Purposes of Its Organization and the Benefits Accruing to Investors in and Operators of Street Railway Properties by Membership Therein," being printed, and having been distributed to the members, will not be read; the papers do not seem to admit of very much discussion, but if any member desires to discuss them we should be pleased to hear from him.

Secretary Penington then read a letter from Captain McCulloch, regretting his inability to be present at the meeting for the reason that nearly all his heads of department had left Chicago to attend the convention.

MR. WYMAN: Mr. President, I desire to move the unanimous thanks of the convention to Captain McCulloch for this paper which he has so carefully prepared and put in such excellent shape; and in speaking to that motion permit me to say that I am quite certain that I voice the sentiment of all the delegates present when I say that we regret exceedingly the absence of Captain Robert McCulloch from this meeting. We regret that we are not able personally to thank him, not only for the paper, but for his services in the past, for the unflinching loyalty and devotion to the interests of the association and the street railway fraternity in general, and for the great help that he gave the association in its earlier days, in its organization period, and the assistance which he has rendered it during all the time of its life. I wish that this sentiment shall be embodied by the secretary in the resolution which I have offered.

The motion was unanimously carried.

PRESIDENT HOLMES: The paper by Ira A. McCormack, general manager of the Cleveland Electric Railway Company, on the "Relations of Interurban and City Railways," will now be considered. I will ask Mr. McCormack to make a brief statement of the contents of his paper.

MR. MCCORMACK: I did not expect to be called upon to make any remarks, as I supposed the paper would speak for itself. There is, however, one thing I will speak of in connection with the paper, and that is in getting information from different companies in relation to traffic agreements I find that a great many general managers are reluctant to give any such information. As stated in the paper, one street railway operator put it in this way: "We had hard work arriving at an agreement, and we do not propose to educate our competitors." Another railway man whom we asked for information about agreements between interurban roads and city roads stated that he did not have any agreements, and that he proposed to run all the roads radiating from his city as part of his system. In writing this paper it was a surprise to me to find that it is in the Western cities that the traffic agreements

are made between interurban roads and city roads, and that very few of these agreements are made among the street railways in the East. The absence of these agreements in the East may be accounted for probably on the principle of the general manager who said that if there were any roads to be run into the suburban districts they proposed to build them and operate them.

I have received a letter from the Columbus Railway Company, which says: "We note in your paper on the relations of interurban roads with city roads a paragraph wherein you state that an agreement has been recently made between an interurban road and this company, whereby the interurban road is to stand the expense of installing the third rail to accommodate the standard gage to our broad gage. While the franchise granted this company permits such an agreement under certain conditions, yet no such steps have been taken or agreement made, and it is doubtful as to whether such an arrangement would at any time be made." It appears that my paper should have stated that the right to make such an agreement was provided in the franchise, but that no such agreement had been made.

A short time ago I was subpoenaed to testify in a case at Pittsburgh where two companies were trying to agree on an equitable rate to be paid by a suburban company in going over the tracks of a city road. The idea seemed to predominate there that so much per passenger should be paid. That is the basis on which such agreements are made in a number of cities; but in the West, as is stated in the paper, the practice is that when the cars of the interurban road enter upon the tracks of a city line the city line takes the car as if it were its own car; that is to say, they man the car, taking full charge of it, and are responsible for accidents. The city line collects all local fares and collects an extra fare from the interurban riders from the city line, so that the city line receives all the revenue and pays to the interurban company 2 cents per car mile. In this paper I have tried to show to the people in the West that it would be advantageous for them to encourage the building of interurban lines, and I have probably gone pretty far in saying, as one gentleman remarked to me to-day, in regard to interurban roads entering the city that city lines might encourage them to the extent of building such terminals as would accommodate the freight business, and charge the interurban road the expense of maintenance and interest on the money expended.

MR. LANG: I appreciate that a traffic arrangement which might be desirable between an interurban company and a city company would vary according to the local conditions which exist in each city. The considerations which would arise in making a traffic agreement between a city company and an interurban company desiring to enter New York, Chicago, or Philadelphia, would be vastly different from those which would apply in the case of an interurban company desiring to enter a city the size of Toledo, which has about 150,000 inhabitants; so that in the few remarks upon this paper which I shall make, I must of necessity speak more particularly of contracts which exist in Ohio, and of which I have more or less information. The contracts which have been made for cars in Cleveland, Cincinnati and Detroit differ from the Toledo contracts in this—that the city companies in these places at the outset expected to make the suburban cars do the city work, and in so doing to pay to the suburban company a certain mileage for the use of the cars. In our city we have a different rule in making these contracts. We recognize the advantage of having the employees on the suburban road run their cars into the city and out again. The suburban company assumes all liability of accident. That is not desirable, however, for the city road unless it has some provision in its contract which gives it practically the control of the suburban railway employees. It is somewhat difficult to make that kind of a contract, but we have deliberated carefully on the question with our attorneys, and we think we have provided an arrangement of that kind. It provides that if an employee of the suburban road refuses to recognize the authority of our superintendent that man shall be immediately discharged. My theory of the suburban road is that it is the rapid transit feature of it that makes it of value to the city companies, and hence, in the contracts we have made, we provide that the city company shall receive from the suburban company a proportion of the fares collected; and that proportion in our case generally runs from 3 to 4 cents per passenger. That gives the city company the benefit of the growth of the interurban business. As regards the freight business, we have made a temporary contract, which permits the city company to receive from the suburban company the proportion of the amount of freight receipts due the city company, based on the proportion of the mileage carried over the tracks of the city company. We are not satisfied that this is a good provision to make, or that it is fair to either side, but inasmuch as the freight privileges have only recently been granted, and it is somewhat doubtful whether the interurban railways will get anything under the Ohio laws, we have drawn these contracts to extend over



periods of two or three years, with the right of either party to adjust them at the end of that time. The Supreme Court of Ohio has recently held that an interurban company, chartered under the laws of Ohio, has a right to carry freight and express matter into the cities, irrespective of any ordinance of the city prohibiting the carrying of freight. Thus it seems to be the policy of the court to extend to interurban companies larger powers so as to carry out the purposes of their organization.

We have recently constructed in Toledo, and I think there is now being built in Detroit, a central station for handling freight. Its location is in the heart of the city, and it is built much after the plan of steam railroad stations. The electric freight cars of the interurban road run alongside the freight depot, with a watershed extending out over the car far enough to enable us to load and unload freight with safety. Our plan is to figure the cost of the land and building, the interest on the investment, taxes, depreciation, etc., and for the present to charge the interurban companies a given rental for the use of the building. It is expected that, later on, a company will be formed for doing the express and freight business of the city, to solicit business and exchange it between these roads, but at the present time we are operating in the manner state.

We experienced some difficulty with the suburban companies, growing out of the use of wheels of broader tread and deeper flange than the city work reasonably permits us to use. We find that most of the suburban roads are projected and their equipment contracted for before the final arrangements are made with the city companies; so that we sometimes have to yield to the interurban companies some points that are not desirable unless we desire to enforce certain conditions which, on their face, appear to be hardships. Hence, the expression in the paper on the part of the writer, that he did not understand what the reference to unusual width of tread or flange meant. The conditions to which this statement refers are that after a certain suburban railway had constructed twenty cars it was discovered that the car-wheels had a tread of  $2\frac{1}{2}$  ins., whereas the ball of our rail is only 2 ins. We were nearly ready to commence business, although the exact terms of the contract had not yet been agreed upon, but we had told the suburban company that we would make the contract. This contract was to have been similar to the contracts which had up to that time been made by us with other companies. Our purpose was to encourage the building of these roads, and the putting of them in operation at the earliest moment possible. We have found these traffic arrangements in all cases to be revenue producers.

I have noticed that nearly all of the promoters of interurban railroads are exceedingly anxious to obtain the most favorable terms possible for entering the city. It means money to them. Hence, speaking from the standpoint of the city companies, we have set ourselves resolutely against yielding on all points, but we have often made considerable concessions. In the case of the first interurban line which we allowed to use our tracks, we have had practically to reconstruct the entire track over which that company ran, due to their heavier cars, oscillation and speed. I have discussed with some street railway men the question of the contracts made by us with interurban roads, and I find a diversity of opinion upon that subject as to whether these contracts are desirable or not. I consider some of them to be desirable; but time only can tell whether they will all be profitable.

Regarding the question of freight cars on the interurban roads, in our city the interurban roads have built freight cars designed especially for that business. They are run at given times during the day, according to the traffic, and so far the people of the city have made no objection to the use of these cars. Street railway managers now and then hear a criticism about freight cars being run through the city streets. We have provided for that, for while our freight cars reach at the center of the city, they do so a little to the side of the main streets, so that the cars do not trail through the central part of the city. The favor which this freight traffic receives on the part of dealers is astonishing. Butchers, grocers and others patronize it very generally. I was told the other day by a man who deals in eggs that his business has been doubled since the advent of the interurban railway, owing to the facility of getting things in and out of the city; and the day before I left home an insurance man told me his business had been improved, by reason of the extra facility in getting his agents in and out of these suburban towns. I apprehend such instances might be given in large numbers to prove the value of the freight service to interurban roads. The interurban road of the future will be very valuable to the city companies, in my judgment, by reason of this great privilege. Possibly some of you have heard of an invention called the "Bonner Rail Wagon." It has been tried in one or two cities in Michigan to a limited extent, and some road on the Isle of Wight is now operating them successfully. The plan is to have a wagon built with a wide tread wheel, that is mounted on a truck, and when the wagon gets to its destination, it is taken

from the truck, a horse is attached to it, and the wagon is run the same as any other wagon. It makes trips to the farms, is brought back to the station, then put on the truck again, and carried on the street railway into the city, and so on back and forth.

In my judgment, the interurban roads in the future will make a great many connections from the main line to small hamlets and places where freight and other farm products can be gathered together, and shipped with despatch and cheapness to the centers of population. In some of our interurban roads we know of cases where lines have been formed to connect with the main line, and run to hamlets 3 miles or 4 miles away, and in that way the traffic of the interurban railroad has been largely built up.

In our State, until within the last year, there has been a great deal of difficulty in making arrangements with steam railroads for effecting crossings; but the steam railroads have come to recognize the inevitable, that the suburban roads are bound to be built and that former might as well make the best terms possible with them, because by the right of eminent domain the suburban company has a right to cross anyway. The steam railroads are, therefore, now meeting the interurban roads with more cordiality than heretofore. A steam railroad man told me not long since that he and the interurban railways would be very cordial; that this sentiment would go so far as to include an exchange of traffic, and in that view of it, it seems to me as if the interurban railway might prove to be a very valuable adjunct to the city railway of the future.

MR. O. T. CROSBY: Referring to the paper under consideration, I think that while the arrangements being effected between the city roads and interurban roads are based upon conditions as they now exist, yet I see, I think, that these conditions are going to change, and much of the work under this arrangement must change with the conditions. The reason lies in this: That independent of the question of ownership, that is, as to whether ownership shall be vested in the town, city or country road, or vice versa, there are still various questions of a mechanical and electrical character, which lie at the bottom of all, and which, I think, will become better and better understood as we go along. The tendency is rather to a divergence of mechanical operation, between the outside and the inside road. The city road has practically reached its limit in respect to the size of car and the speed of car. When you have decided upon certain sizes and weights of cars, and certain average speeds that are to be maintained, you have practically determined a number of important electrical and mechanical considerations. You have so far determined them that the use of the same mechanism under widely varying conditions of weight and speed will not be desirable. The outside, or country, road has not reached its limit, either in respect to the size of car or the speed. Just as long as we shall continue to be able to make motors that will run faster than those which have previously been built, just so long will there be a desire on the part of the outside, or country, people that to use the last form of motor, and it will be given to them somehow or other. So also in respect to the size of the car. There is a constant demand on the part of the outside road for an increase in the size of the car, because the passengers must be in the car longer and the car must be run at higher speed than with the city cars. It may be, therefore, although I think this view of it has not been widely taken, that we must approximate more for our interurban service to the methods of the steam roads, who have had the problem before them for fifty years, than we do to those of our electric railways for the movement of people in the cities. We have got to provide somehow or other for that want, to save time for the suburban man, and to do what he wants. We must try to squeeze down the time he is in transit to an equality with the time the city man is in transit. To do this we have to pass him through the city faster than we do the city man, as he has to add to his time of transit the time he spends outside in the country in passing from one town to another. It looks to me that you will want a special track for the handling of large, high-speed suburban cars, a special track where the car can be kept up to nearly its ordinary outside speed; for, bear in mind, that the operation of a very heavy high-speed car on a city track, subject to city conditions, is by no means desirable. You must almost inevitably operate, from an electrical point of view, at a disadvantage. You are often required, in order to meet the best conditions of voltage outside, to have a high voltage outside. The result is that when the car gets into the city you have an undesirable state of affairs.

I went into this matter very carefully with H. H. Littell when we built the Buffalo & Niagara Falls Railroad, which was one of the earliest cases, perhaps, where a large car intended for high speed was to be operated over city tracks. We compromised the matter by putting four motors under the cars, while, on the score of economy and maintenance, we might have been justified in putting only two. The question of alteration of speed came



up, also that of throwing on the line cars of tremendous capacity and lower resistances. The handling of such cars means a good deal to the city station. Mr. Littell at that time looked at the question in the interest of the city end, and objected to the putting on of two motors of low resistance, because the starting of such motors makes unusual demands for an instantaneous supply of current from the station. To meet that condition we put on four motors instead of two. This is a mere illustration of the case as it exists in Toledo, and in similar places, because the roads in these cities have not reached the limit which will be required by future service as to size and speed of cars. It is evidently desirable that some compromise should be made. If the public and the street railway men will frankly recognize that there is a disparity between the conditions, there may be obtained a corresponding supply, so to speak, of space, of trackage room, etc. It is difficult to bring about, I know, and it may be necessary, in order to overcome this disparity, to get some kind of a track where the cars will be permitted to maintain a high speed. This is asking a good deal from the city point of view, but it seems the only way out of the problem, as it now exists, because under the present conditions, where country and city service is combined, it is difficult to get a satisfactory speed for country service. The country service is necessarily more sharply marked into hours of great activity and hours of very little activity. You therefore have this problem. You say you won't make more than a certain number of stops on the suburban line. That is all right, as far as it goes, but what are you going to do on Broadway, or on most of the busy streets of our large cities? The moment the interurban car strikes the regular city service, it is brought down to the speed of the city service, whether it stops or not. If a highway was provided where there was comparatively little demand for the usual city service, the cars might make fewer stops, and in that way obtain practically a higher speed. In that way it would be possible to care for the freight business which has been mentioned as being a matter of considerable importance.

It is quite out of the question to handle any considerable amount of freight business satisfactorily on city streets. If this business reaches any sort of magnitude it will prove to be objectionable on city streets. I am sure in saying this, I am not explaining the cause of the disappointment that many men have felt in laying out suburban roads. They expect to get a nice freight business, and they do not get it, because they cannot handle the business properly, and do that which the public has imposed on them, and which must be done in most cities, namely, the proper service for the people in this city. Of course, we must have our freight service as well as passenger service. The suggestion made of the wagon which could be put on a truck is very interesting, but it would be impossible to stop a car long enough to take a wagon in a busy street off. It will come to this, I think, that a satisfactory system of rapid transit through the country and the city will be obtained by stopping the high-speed, heavy suburban cars in the upper portion of the city, and have the people transfer to the lighter cars, ordinarily used in city service.

In all this discussion we must bear in mind that when the heavy suburban cars enter the well-served city streets they cannot run any faster, practically, than the regular car which does the city business, and all of whose characteristics have been worked out for city service. I believe, therefore, one of these two conclusions will, in the long run, obtain, namely, a either changing of cars in some well selected outer portion of the city, or some special line of transportation through the city. In the latter case it would be possible to handle freight service also on the special line, but in the former case the freight business must be distributed by means of wagons to the station.

I do not wish to distract the attention of the members of this convention from the immediate question that arises in the matter of making these traffic arrangements. I have had many times to go over them, and I know it is difficult to make these arrangements. The question easily straightens itself out when the ownership is common, except the underlying mechanical conditions, which remain just the same. I would be glad if the author of the paper or any other gentleman would throw some light on this question: What is the fair and proper limit of the size, weight and speed of cars we should try to handle in a typical city service. That has, I think you will see, much to do with the ultimate relation between the two.

**PRESIDENT HOLMES:** We have a paper on that subject to be discussed on Friday which I think will answer your question. I see in the audience a gentleman I knew a great many years ago, who has served in every capacity connected with steam railroads. I will ask Willis E. Gray to tell us something about suburban roads from the standpoint of a steam road.

**MR. GRAY:** The question has come up as to the service on steam railroads, which I think is quite similar to that of the propositions

on electrical railways, aside from the difference of motive power. The gentleman who has just spoken, it seems to me, has the right idea. Your field in suburban service is in its infancy, as I see it. You have before you a great many problems to solve which will require a great many mechanical changes in your equipment. Your speed must be greater, your facilities must be better, although they are now excellent. It was my pleasure not long since to stop at Painesville, Ohio, for the purpose of riding over the suburban line to Cleveland. In that trip the possibilities of this service came to me. You must have more speed; you must have better arrangement for the handling of your passengers; you must have a place where you can carry light packages and all those things, and that brings about the question of mechanical methods. Personally, I feel you are only beginning to enter the interurban business.

**MR. L. E. MYERS, of Peoria:** Representing as I do a joint steam and electric railway, I think some of our experiences along this line just made may be interesting. We operate steam locomotives and electric passenger cars over the same tracks, and do a very large freight transferring and switching business with a great number of steam railroads of such magnitude as the Big Four, Rock Island and roads of that character and importance. We handle all our package freight on electric passenger cars. We handle through freight business with our steam locomotives, and have two local freight trains each way daily for the transportation of such bulky trade as we cannot carry on our passenger cars. We find on a single-track road, of which 8 miles are used jointly by the steam and electric cars, that it is a serious problem to handle our freight trains. For that reason we have found it necessary to maintain a complete train despatching system, and at the various crossings with steam railroads we have standard interlocking signal towers and maintain our electric service in exactly the same way as our steam equipment, which would go to show that the destiny of the interurban railway is substantially along the lines of what the steam railroad people have done.

I want to disagree from the gentleman who proceeded me as to the probable attitude of the steam railroads. Although we are a steam railroad in fact, we find that we cannot get any recognition from our connecting lines, except such as we force upon them by originating the business. We have a number of instances on our road where we have created a considerable freight business. Such as we originate and control, the steam railroad will take from us, but they will invariably divert their business so as to escape paying us any charge for using our rails. While I should like to agree with the opinion of the gentleman who preceded me, that the relations of the steam railroad and interurban railway are going to be closer, my experience has led me to believe that instead of the relations becoming closer, they will become more antagonistic as the success of the interurban railway becomes more defined.

Speaking on the subject of Mr. McCormack's paper I am connected with three interurban properties, widely distributed, and in each instance they succeeded in making traffic arrangements with the existing local properties at each end. It is my opinion, based on a somewhat varied experience, that there are no two conditions alike; and while Mr. Lang's agreements are excellent for Toledo, they would not, in my opinion, be well adapted to some other cities. From what Mr. Lang tells me, I think the contracts he marked with the interurban roads are eminently fair. My idea of the solution of the problem of the relations of the interurban and local roads is to have an independent entrance, provided by the local company for the use of the independent road, the local business to belong to the local company, and the interurban road not to participate in that business under any circumstances.

The question of high speeds is a vital one to the interurban road. I am now building a road where, I think, we have reached the limit of weights and sizes for interurban equipment. We are building our cars 61 ft. long, and we are equipping them with 75-hp motors, and the weight of the equipment and car, completely loaded, will be 45 tons. We are building these cars, in my judgment, out of all proportion, because we are limited as to weight. The track centers of the existing road at one end are such that we cannot have our cars any wider than 8 ft. 5 ins., which is too narrow, in my opinion. The solution of the problem between the interurban road and the local road, in my judgment, as already stated, is an independent entrance for the interurban road to be owned and furnished by the local company.

**MR. NICHOL, of Rochester:** I think, perhaps, that my experience in this matter might be of some benefit to this convention. I have built, and am operating, a road from the center of the city of Rochester, 41 miles straightaway, to Sodus Bay, in the State of New York. I am also operating the other lines which center in the city of Rochester, and comprise some 100 miles of track, and a great many of these questions come up for decision before myself and associates. I think the traffic arrangements to be made de-



pend largely upon whether the suburban road runs on the highway or over private right of way, as this feature affects the amount of business the suburban line will bring to the city. In our case we have built probably two-thirds of the suburban line on the highway, and one-third on private right of way. We find that the conditions existing along the highway, passing through little villages, etc., are very similar to those we have to consider in our cities. We found in building of the Rochester & Sodus Bay Railroad that on account of having to go into the city of Rochester over a grooved rail, we had to employ on the interurban line practically the same width of tread and depth of flange as we do in the city, namely,  $2\frac{1}{4}$  ins., for the tread, and  $\frac{3}{4}$  in. for the flange. We make the flanges heavier, however, in order to prevent them from breaking in going over the switches, etc., high speed.

Regarding the size of car, we also found that to run our cars into the city about 45 ft. was the maximum length possible; that is, 35-ft. body, and two platforms of 5 ft. each, to go around the corners of streets. Furthermore, we found it was necessary, for the same reason, to limit the width of our suburban cars to 7 ft. 9 ins.; this being determined by the width between city tracks. We find we can use practically the same motors as in the city, but require more of them, so that they can make higher speeds outside the city, but to get business on that suburban line it seems to be necessary to make the same speed in the city that we do on the highway. If we were going to build a line again we would make a private right of way, as near to the lines of highway travel as possible, and yet get away from them so as not to have to make so many stops, which consumes our time.

As far as the discussion in regard to the traffic arrangements between the roads is concerned, we have gone on the principle that the city road is entitled to very near all of the income from the suburban sections. Accordingly, our contracts have been made on the basis of the earnings per mile, or per car-hour of the city lines. For instance, if we found that the suburban company wanted to go on one of our lines on which we earn 20 cents per car-mile, we charge them 20 cents per car-mile; this being divided up between power and operation. We furnish the power and furnish the men for the car. As soon as the car reaches the city limits it becomes our car, and the crew becomes our crew, entirely under our charge, with certain provisions. For instance, if the crew be not such as we require, we can, on giving notice, have them removed from the car. The same remark applies to the condition of the cars, trucks and motors. If certain repairs are not made within a certain time we have the privilege of making them or keeping the car off our tracks. We also do quite a considerable freight business, and employ for this purpose cars which have much the appearance of passenger cars, in order to comply with the wishes of the people of the city. They are run through the city to our freight station. Both freight and passenger cars, when they get outside the city, are run according to steam railroad practice, with regular train orders, which are communicated by telephone instead of telegraph, and are repeated back to the dispatcher's office. The suburban cars in the city have to take the speed of the city cars, and are, therefore, delayed considerably. This will largely affect the amount of business the interurban companies will get. In my opinion, it would be preferable to have the line go into the city on an independent track, but I hardly think that this is necessary for a suburban road which runs on a highway, as it is limited to speed in any event.

Mr. McCORMACK: Mr. Lang spoke of an arrangement whereby a wagon was to be hauled on to the interurban road to the city limits on a truck or flat car, so that when the interurban car reached the city limits the wagon could be detached from the car or truck, and taken to any part of the city. While I was with the Brooklyn Rapid Transit Company the market business coming in from Long Island assumed such proportions that the National Express Company, which has a contract to handle the freight business of the Brooklyn Rapid Transit, considered the advisability of building cars for this purpose, in much the same line as Mr. Lang has suggested. An account was kept at one point, Jamaica, L. I., of the number of wagons coming into the city loaded with produce, and in one night, from 6 o'clock in the evening until 6 o'clock in the morning, the number was 357 wagons. After getting some data on the question of what we would receive for the freight, it was found that the farmer could not pay the cost of handling that freight at such a price as to make it an object to the railroad company to build such cars. After going into the thing a little further it was found that the Long Island Railroad had tried the experiment, and built a number of cars, and had them arranged so that the wagons could be carried on the cars. They experimented with it somewhat, and then abandoned the system.

Mr. Crosby stated that in his judgment the question of interurban passengers coming into the city would necessarily require a large car and equipment, such as would be inadmissible on city

streets, and transfers were therefore necessary. If we undertook, in Cleveland, to have a car ready to meet every interurban car that comes in during any hour of the day, the city car could only give a limited amount of seating capacity compared with the interurban car, and there would necessarily have to be a number of standing passengers in the car, and we could not do any local business in the city. I wish to call particular attention to the last sentence in my paper, which reads as follows: "Obviously, the only solution of the problem under the various conditions mentioned is for the interurban cars to enter the center of the city by means of underground or elevated tracks, with special tracks for through cars."

Mr. DAVIDSON, of Pittsburgh: The conditions in Pittsburgh are such that I think it hardly possible that the interurban cars can occupy independent tracks. Some of the gentlemen here know the situation, and I think they will agree with me that so far as we are concerned the problem will have to be solved by bringing the interurban cars in over the city tracks. One gentleman has brought to your attention the mechanical difficulties, and reasons have been given as to the electrical troubles, and also as to the change in the size of the flange. The fact has also been developed that larger treads are used on the interurban cars than on the urban cars, and that point has not been dwelt on enough to show why that is so. The rail on the streets is so well laid that there is no opportunity whatever for the gage altering from time to time. On the tracks outside the city where the T-rail is used, there is not the lateral support to the rail, which is the case with the heavier rail in the city, and the chances for the track getting out of gage is therefore an important matter. For that reason a wider tread is necessary than for a city road; that is, a 2-in. or  $2\frac{1}{4}$ -in. ball on the rail, while the width of the tread on the interurban cars is increased to probably  $2\frac{3}{4}$  or 3 ins. This, as has been pointed out, makes considerable trouble in the case of the rails on city roads. For my part, I think the rails on the city roads will have to be modified to meet the conditions of the interurban roads. I think it will be necessary to increase the width of the ball of the rail, and also the depth of the guard-rails, so as to accommodate the wheels of the interurban cars. I am connected with an enterprise in Pittsburgh where we are building an interurban road out of the city for a distance of some 35 or 40 miles. We will use girder rail in the city streets, and also in two or three towns to the west, but between all the other towns, I am glad to say, we have built entirely on private right of way, where we propose to maintain high speeds. At the same time we have kept within easy reach of the main thoroughfare in the country through which we travel; we thereby expect to get all the local business we could have had by going on the public road, but at the same time we get the benefit of the high speeds on the private right of way. We took up a right of way 33 ft. wide, and are grading our lines for a double track, T-rail construction, stone ballast, and the specifications of the road are practically that of a first-class steam railroad construction of the day.

I happened to be the general manager of the plaintiff company in the case mentioned by Mr. McCormack, where he spoke of being a witness in the case. It was a question as to what one company should pay another for use of track in the city. I am able to report something which Mr. McCormack probably does not know, and that is that the judge who heard the case concurred with some of the other gentlemen here who were witnesses, Mr. McCormack, Mr. Lang and others, as to the theory on which our company presented its cases, namely, that the compensation should be on the basis of passengers carried. The other company advocated the theory that we should be paid on the basis of the actual investment. The court took our view of the case, but not entirely so. The court attempted to arrive at the same results, but instead of awarding a price per passenger, took the data furnished and figured out an amount on the basis of the number of passengers who on the average during the past five or six years were carried in the interurban cars. We have taken exception to that particular method of arriving at the result per passenger. The court, it will be seen, agreed with us in the general principle, if not in the method of arriving at the result. I am also connected, as general manager, with another road in that city, and we are the interurban company in that case. We have a contract with the city company which is practically perpetual, and the condition of the 5-cent fare in the city was made in making that contract. I do not know that the gentlemen who made the contract had any data for the basis of their contract, but I have been much interested in comparing the figures for some three or four years after the contract was made, and trying to find out what the result, financially, was to the two different companies. Without going into details, I will say that I have made calculations which show that the gross returns per car mile of that portion of the line over which the fare is divided is about the same to the two companies. I think that condition was probably arrived at without any data, and it figures out that way



now after three or four years' experience. In this case the right of the city company to all fares on their track was recognized. As to the balance of the passengers, traveling over the tracks of both companies, it is also fair to argue that both companies are interested in that fare. One company furnishes the trackage over one end of the route, and the other company furnishes the trackage over the other end of the route, going in the opposite direction, and I think it is only necessary, therefore, to figure out a proper proportion for a division of the fares passing over the two tracks.

Meeting then adjourned until 2:30 p. m.

#### AFTERNOON SESSION

THE PRESIDENT: We will now resume the discussion on Mr. McCormack's paper. I will call on Mr. Roberts, of Cleveland.

MR. ROBERTS: The first question I would consider is, is there a basic principle possible on which to found a traffic arrangement between a city and an interurban road, and if so, what is it? After that, what are the factors entering into the determination of the exact amount equitable in any given case? and the determination of the value of each factor for such case. Relative to the first: How does the operation of the interurban road affect the city road, and what is the benefit to the interurban road? In this case the city road has something to sell, the interurban, to buy. It is also generally the case that the city company realizes that the presence of an interurban road is beneficial, and is willing to treat on an equitable basis. In many cases it is compelled to do so by the terms of its franchise.

My opinion is, first, that it is desirable that the cars of interurban roads, while on the city road's track, be directly under the control of the city road. Second, pay a percentage of the fares from passengers outside of the cities delivered to or received from the city road, and also, either a percentage of the fares for city passengers, or, instead of such percentage, a rental fee for each car-mile of the interurban cars in the city. My preference is for the former as to passengers, and the latter as to freight, at least if carried in cars for freight only. My reasons relative to the first are, that it is objectionable to have conflict of authority in the matter of operation, and possible, and often probable, conflict of interest in damage cases. Relative to the second, it is questioned by very few, if any, that even if the city road furnishes track and power, it should also pay the interurban something for delivering passengers to or received from them. What form the payment should take is a question, but it seems to me that the per capita basis is the fairest, although the argument may be advanced that it makes practically no difference to the city company how many passengers are carried. Nevertheless, I think that the receipts should be considered.

Of course, it is possible that the interurban company might bring so few passengers to the city limits that the excess cost of operating the heavier cars would more than balance the increased receipts. This is not likely, but a minimum flat amount could be agreed upon if considered advisable. Whether the suburban company should have a percentage for local fares is more questionable. In my opinion, they should, at least generally, provided, of course car mileage is not paid. This will be materially affected by the times between cars on the local road and also on the interurban. For example, I know of one case where an interurban company operates over a city road which previously operated a thirty-minute service on this line (which was a suburban one), and when the interurban started, the city road took off half its cars. It is an extreme case, for often the addition of the interurban cars does not materially decrease the receipts of the city cars. It is also a fact that local passengers will sometimes wait for interurban cars. For example, personally, I always endeavor to catch the interurban car in winter, and the city open car in summer. This is from a smoker's standpoint. I know others in my neighborhood who always endeavor to take the interurban car, and this is an argument in favor of the city company not paying the interurban. If passengers take the interurban car in preference, it becomes a question whether the city road should receive the entire fare, because it would appear that the interurban offered better facilities. On the other hand, the city road would say that if the interurban was not there, the passenger would take the city line, and this raises the question of effect of character of service on travel.

So much as to the basis and, though I have stated my preference for the basis of divided receipts, nevertheless, there are good arguments in favor of the car-mile rental.

Having arrived at a basis, the next point to determine is the equitable amount. The following are some of the factors which enter into this consideration: First, the length of haul in the city. It makes a difference whether it is a 3-mile or 4-mile haul, or a mile or less. Second, whether the city track operated over is prac-

tically interurban in its character or whether it is essentially a city road. For example, we are now considering a case of 1 mile in a city of 15,000 people, and another of one-half mile in a town of 30,000 people. Third, what expenditures will the city road defray to allow the operation of the cars, *i. e.*, in power, car service, etc. In connection with the matter of higher voltage outside of towns, as compared with the voltage desirable for operating in the suburban portions of the city, that often works to advantage. For example, in Cleveland we have several roads. On one we run at a maximum of 43 miles an hour with a schedule of 20.5. On another road we have a maximum speed of 55 miles per hour, a schedule speed of 26.2 and an average speed in operation of 40.2 miles per hour. On all these roads the voltage is from 575 volts to 600 volts, while that in the city is from 450 volts to 500 volts—sometimes more, sometimes less. In the city the cars usually run on the series notch.

MR. McCORMACK: It has been unfortunate—at least, I feel so—that this paper was not distributed earlier, so that the members should have had a better opportunity to read it through and become conversant with the different subjects mentioned. This morning I have had to answer a number of questions, and a number of points were brought up that I feel were covered in the paper. Mr. Roberts brings up the question of the city road paying so much per capita to the suburban road. Now, there are local conditions surrounding that must be considered. You might have a line of suburban roads that would have to enter the city over 20 miles of track, so that the city road would have to provide additional power to cater to the suburban cars. These cars should not be overcrowded, and must have additional seating capacity, and that does not make a paying car in a city for long distances. I have in mind a road that doesn't run over three-quarters of a mile; Mr. Davison has one in mind also, and to pay on a per capita basis might not be the most equitable way. But I have tried to cover the different cases by giving different agreements with the suburban companies, and endeavored to deduce something from them that would be of benefit to the members. In regard to controller voltage, there has come up a question altogether different from the one I suggested, of having a handle so that the city motorman could not go into parallel, and I will ask if Mr. Crosby will tell us of devices of this kind, because he has made some study of them lately.

MR. CROSBY: I do not recall that there has been any specific case in practice in regard to the point raised, which I understand to be this, that, in order to control the speed of the car in city lines, it should be made in some way impossible for the motorman on those lines to throw the motors into parallel. The subject was very carefully considered five or six years ago when I was in the manufacturing side of the business instead of in the operating side, and had much to do with the question of handling, and it comes back to me in this way, that it is not a difficult thing to do. You can make a rigging which will perform the function desired, and at the same time not impose upon the mechanism or the man who handles it any too great labor. If nothing else was in the way of doing this, I should say that would be the best course.

A MEMBER: I should like to ask Mr. Crosby if the motorman could not go on using the series notches instead of going into parallel?

MR. CROSBY: Yes, that has been accomplished. A large resistance can be thrown in the circuit so that when the heavy motors are thrown in parallel they will yet not receive more than their proper amount, considering both themselves and the station. But all these devices are, of course, burdens upon the cost of the car and of the mechanism. It can be done—there is nothing at all in the way—either one or the other would serve. When I referred to the matter this morning I only meant that when you try to meet these different conditions you necessarily complicate the mechanism more or less. I do not mean to say it cannot be done, because it can be done in one way or another.

THE PRESIDENT: Mr. Crosby, I would like to ask you if it is not possible and perfectly practicable to have an independent resistance for controlling the speed through the voltage while the car is running in series inside of the city limits, cutting that out after leaving the city line, and using the regular resistance for the series after leaving the city line.

MR. CROSBY: That is, of course, practicable.

MR. HOPKINS, of Columbus: We had some trouble at first with our own suburban cars where they entered the city lines, principally on the car circuit breakers. To overcome that, we have had the resistance made just twice the carrying capacity originally furnished, and arranged to adjust the circuit breaker on the car so that if the motorman throws the controller to the parallel notch too quickly it will throw the circuit breaker in the car, instead of the circuit breaker at the station. We found that by making a very simple arrangement, changing the operation of the car circuit



breaker on coming into the city lines, and as they leave the city changing it back again, the difficulty was obviated.

MR. CONNETTE, of Syracuse: I have been very much interested in this discussion, because several lines have been projected to enter the city of Syracuse, one from Rochester, one from Utica, and another from Auburn and several less important places, and our company controls all of the city lines. We have adopted the policy of standing at the end of our lines with our arms wide stretched to welcome our bucolic friends, so that we may get their nickels and increase our receipts. The basis upon which we are willing to let these roads enter Syracuse is that when the suburban cars crossed the junction point of our line that car becomes a car of the Syracuse Rapid Transit Railway Company, and the passengers upon that car shall pay 5 cents, just as if they were upon a car of the Rapid Transit Company. The passengers are then brought to the terminus, which will probably be in the center of the city, and will be entitled to a transfer which will carry them one way or the other, as the case may be, to any other point within the limits of the city. We feel that this transfer privilege is a decided advantage to the passenger upon the suburban road. We expect, of course, to pay a reasonable price per car-mile for the use of the car, as well as all the expenses of operating the same.

A MEMBER: May I ask upon what you consider a reasonable price per car-mile?

MR. McCORMACK: Speaking for Cleveland, we pay 2 cents per car-mile, and a number of our agreements are on that basis. The price should be regulated by the circumstances of the case.

MR. HEGARTY, of Kalamazoo: I think most of the gentlemen speaking to-day are looking at the question from the city road's standpoint, and not from that of the interurban road. I do not mean to criticise the remarks upon passenger traffic that come from the interurban roads, so far as they relate to traffic that the city would not get otherwise. It is no more than fair that the division should be made upon a fair basis. In Michigan that is the way we are doing it on roads coming into town bringing an interurban traffic. We would not get it otherwise. In regard to running into town on the car mileage basis, we also pay so much for the amount of power used for propelling cars into town, that is to the center of the town, and when they go out the other side of the town they pay in accordance with the mileage they make on a basis of what appears to be satisfactory. So far as stopping outside of the town, changing crews, and the city line taking all the fares is concerned, we tried that, and the suburban road said they wouldn't stand it; either transfer the passengers or let the car stand. We found that plan killed the traffic on the interurban road, and then we used this basis of dividing the fares and letting the interurban company have their proportion of the fares.

MR. CONNETTE, of Syracuse: Perhaps when the difficulties of securing rights of way and the privilege of entering a city, the expense of constructing a line in city streets, the expense of paving the streets and the interest on the investment, which, of course, is considerable, and the maintenance of the city line are considered, the city companies are certainly entitled to some consideration. So far as changing cars at the end of a line is concerned, I do not think that would be perhaps the thing to do. My idea has been that the conductor and motorman of the suburban car, when they reach the junction, should become the employees of the city line and bring the car right into the city. Another fact should be borne in mind: When suburban cars of another company that has no rights of way are running upon the tracks of the city company, the city company is responsible for all accidents that may occur in connection with such cars.

MR. PARKER, of Detroit: I am identified with several interurban companies that run into several different cities, and I believe that local conditions affect the entire question. I call to mind one road where we had a trackage of 6 miles in a certain city. The city company furnished all power, crews, and immunity from accident, and everything of that kind, and took the whole fare, paying a rebate on mileages. Another place where we had a trackage, perhaps, of 2 miles, we divided the fares, and that was the more equitable basis I think. I do not think you can lay down any hard and fast rule. I am inclined to believe that in this matter we ought to be governed a little on the order of the Golden Rule, and try to get together and settle on some equitable basis.

MR. DAVISON: It might be understood from what I said this morning that the case stated by me would not be upon the same lines as those of the gentleman who has just spoken. As I understand it, nearly all the cases of companies that have been considered are those where the interurban line reaches to the city line only. They carry their passengers to that point for a full fare, no matter whether it is 5 cents, 10 cents, 15 cents or 20 cents, or whatever it may be. In that case the business can usually stand the city fare of 5 cents, just what the city company gets on its own business, when the city company assumes the expense of the

power, crew and everything else. Now, the case which I stated this morning, was a little different from that, in this respect, that the incoming lines met the city line at a point more than half-way between the city line and the business portion of the city. Now, in that case there could only be one 5-cent fare from the city line to the business portion of the city, so that the two companies divided up 5 cents. This division was practically on the basis of the mileage that was operated by the two different companies. Each company stood the expenses on its own portion of the line, with the exception that the interurban company gave the city company the advantage of the use of the cars.

MR. MYERS: I am talking solely from the interurban standpoint; perhaps it did not sound so this morning, when I said the city company should keep to itself the local business. In my experience in dealing with properties in various places throughout the country, and making traffic contracts, I have never found any two conditions similar. I am not prepared to say that I would not duplicate any contract I have made, but I do say that I would not be willing to duplicate any one of them without a thorough investigation to ascertain whether such former contract or that basis of agreement is best adapted to the new situation. I have a case in mind where we made a traffic contract with a road in a city of upward of 50,000 people. We are paying there the lowest practical universal rate, and are allowed car mileage for the use of our cars. At the very end of this line we were met with a similar proposition, which I declined, for the reason that in the first instance we were provided with a very good double track and very good service; there was nothing to interfere with our interurban service, so far as speed was concerned. In the second instance, in a smaller town we found a single track, poorly operated, and a decrepit car plant, and the probabilities were that our service would be seriously interrupted if we used those tracks jointly. It finally came to a point where we were offered 3 cents for a universal transfer, but the transfer was not worth anything, the cars of the road did not go anywhere. Therefore, I say, every one of these cases has got to stand on its own merits. I do not agree with Mr. Roberts when he said that when the physical and electrical conditions were provided for the others would work themselves out. I think if we settle the financial question we can meet the physical conditions, because we can take care of them with the earnings, if we have them; at least that has been my experience.

MR. McCORMACK: Part of the discussion has seemed to indicate that my paper was written from the standpoint of the city road. As I do not wish to be misunderstood, I will say that the company with which I am identified probably owns as large a mileage of suburban roads as any other company in the country, something over 1300 miles, and the question of contracts between suburban roads and city roads is certainly of vast importance to us. I will say further, that these suburban roads, with the exception of one suburban road running out of Cleveland, are owned by the same interests that control the Cleveland Electric Railway Company, and the traffic agreement made there was thought to be an equitable one, in that city. And I want to call your attention to a statement in my paper where I referred to my efforts to get the traffic agreements of the different companies in the different cities throughout the United States. Comparatively few of the traffic arrangements in the various cities are exactly alike. There are almost invariably local conditions which have their effect, and frequently agreements which would be satisfactory in one place would be unfair in another. There are many reasons why the city company in one city should receive a higher rate for handling the cars of the interurban company than those in other places.

Another thing, the courts of the State of New York have held that the suburban company has no rights, and the city company cannot make a traffic agreement with them to let them in over the city streets; but the suburban company can get a franchise over the same streets in which the city company operates, and then they can enter into a traffic agreement. I think the same thing is done in Pittsburgh.

THE PRESIDENT: In view of the fact that quite a number of papers are to be brought before this convention, if we do not take up another one very soon, I am afraid Mr. Vreeland will have us with him for a considerable time. I think we had better close the discussion, and take up Mr. Chamberlin's paper. I take pleasure in introducing to you Eugene Chamberlin, of Brooklyn, who has prepared a paper on the street car best adapted for city use. (This paper is published elsewhere.)

MR. CHAMBERLIN: After the controversy which you have had, which possibly could have been prolonged for some time longer, it may have occurred to you that these controversies would not occur unless you had cars to perform this interurban traffic. I would like, gentlemen, to call your attention to the first and last clause of my paper. I do that for the purpose of protecting my-



self somewhat, on the ground that Mr. McCormack's remarks lead us to believe that you had not carefully read his paper. "The evident magnitude of the subject assigned, and the opportunity offered for criticism, causes the writer to feel that any and all suggestions should be made with a certain degree of caution, and that they should, as far as possible, be sustained by facts." The latter clause is still more important. "The author of this paper fully realizes the task with which he has been honored, and understands that a device of any character, to have and retain merit, must be subjected to the most severe criticism, which is now fully and freely invited, and he feels satisfied that with a body of men of your recognized ability and standing, all hobbies, if any such exist, will be for the time eliminated, and justness and fairness govern all criticism of whatever character, and he believes that you, in common with himself, have an object to attain in determining the most satisfactory vehicle for electric roads in point of efficiency in service, economy and operation, and last, but not least, the convenience and comfort of the traveling public."

There has been a car built to meet the requirements laid down in this paper, and through the courtesy of the president and general manager of the road that I have the honor to serve I have, in the building below, or the company has in the building below, the car in its completeness. Knowing that you can better determine the points at issue by examining the car than by anything the writer might present, I would request that you examine it carefully.

Briefly I would call your attention to the points at issue. By the adoption of a car of this kind or of a similar character the shifting of trucks and motor equipment can be avoided; the roads would be effectively operated with a less total number of cars; there would be required only a limited room for the storage of cars not in service.

The seats as designed and installed in this car are of a type peculiar to this device, operating in multiple upon an arm pivoted to a fixed base, the arm being out of center, giving you, when the seats are in transverse, a 22-in. aisle, and in a longitudinal position a 44-in. aisle prepared for a standing load. This car, which has a body of 28 ft. in length, seats thirty-six passengers in a comfortable office chair; thirty-four of those passengers, whether the seat is in the transverse or longitudinal position, face in the direction the car is going.

The installation of the heaters in this particular car are against the wall of the car. In the proposed car they are to be a part of the arm on which the seat revolves, bringing the heating apparatus nearer the center of the car mechanically, instead of using some automatic device for forcing the heat through. The electric lighting, the maple floor strips upon the car for sanitary purposes, and particularly the immunity of this car from accidents by passengers dismounting and mounting the car steps, as against the ordinary open car, are worthy of notice. We found this percentage of accidents in the proportion of about three to one, covering a period of six months.

Now, as to the question of brakes. Unquestionably many street railway managers are passing through the experimental stage in testing the different kinds of brakes and determining the merits of each style, and endeavoring to determine which will meet their needs in point of cost of maintenance and efficiency of operation, and it has occurred to the writer that advance opinions on this subject would be a trifle undesirable, and might be attended with very unsatisfactory results at this particular time. Still such tests are made and determined individually.

Now, last but not least, the question of wheels. A certain type of a 435-lb. wheel of 33 ins. in diameter and  $2\frac{5}{8}$ -in. tread is recommended.

**THE PRESIDENT:** I am going to call on John I. Beggs, of Milwaukee, to open the discussion on the up-to-date street car.

**MR. BEGGS:** The question of cars is one, I presume, upon which every manager of a street railway company has opinions, and they are simply, to a very great extent, the result of his individual experience and observation. Much like the subject which we have discussed for the past two hours, we probably will not have reached any conclusive results after we are through criticising or commending Mr. Chamberlin's paper.

As to the general principle involved and attempted to be accomplished by the car which Mr. Chamberlin has discussed, I fully agree with him; in fact, in our own system we have, for five years past, been developing a car which would meet the requirements of that service during every day of the twelve months of the year.

Then again comes in the question of geography. What would be possible in the city of Milwaukee, on Lake Michigan, where we have a very short summer season and no very extreme heat, would not be possible in the Ohio Valley cities like Cincinnati, Louisville, St. Louis and all the way down the Mississippi, where a very different condition exists. What I might

consider was a car that would suit us all the year around would not fit in those localities. Therefore, we must consider the conditions surrounding each different individual company that may attempt to adopt this car.

We are gradually abandoning, as fast as they are worn out, all our open cars. We adopted some five or six years ago a double-truck, cross-seated car, with the idea that we could make that answer our service. When the experiment was first made, it was doubtful whether it would succeed, but after five years of operation, and after gradually changing the conditions of the line, we have now nearly our entire equipment of that standard, and in our climate it suits very much better than the double equipment of partially closed or partially open cars or either. The reason for this is that our climate takes very sudden changes, many times a drop of 30 degs in thirty minutes, so, then, an open car would be often very uncomfortable. To certain features of Mr. Chamberlin's car I am not ready to subscribe. The general principle of the car differs very little from that which has been adopted by quite a number of roads throughout the country, among which our own was possibly among the first. I know I appeared here four or five years ago to defend a double-truck, long closed car that at that time was combated by a much larger number of this association than would oppose it to-day.

In Mr. Chamberlin's car, while he has a very good (and possibly to the general public a desirable) form of seat, there is considerable question in my mind as to its durability. I think there is too much complication under the seat, and I understand that is one of the particular features of this car.

So far as his facilities for converting into an open car are concerned, I really see no advantage in it over that embodied in cars which we have had built for five years past, where the sash drops under the floor of the arm-rail. We have double doors in the front, and that gives the largest possible opening in the front and rear; therefore we have comparatively an open car.

One of the disadvantages in Mr. Chamberlin's car is that in our cars, in practically the same space, we are able to place more seats, which is a very important element. It is, in fact, one of the strongest arguments against the cross-seated car that it is not capable, during the crowded hours of the day, of carrying so many people. We in a body of 29 ft., seat forty-four passengers. This car under discussion has a body over corner-post of 28 ft. and seats thirty-six passengers, a difference of eight passengers in the seating capacity.

Furthermore, there are many of those things that are very nice in theory. The possibility of throwing these seats at congested hours longitudinally along the sides of the cars is one of them; but we all know that in actual practice about as many of these seats would be turned over by the passengers as would be permitted to remain in that condition. There is nothing to do but touch a lever, and you have confusion in a very short time. This method of seating, I think, would prove troublesome.

These criticisms I extend because I have a great deal of respect for Mr. Chamberlin's mechanical skill and the manner in which he runs the shops of the Brooklyn Rapid Transit Company; and I know he appreciates the spirit with which I speak in regard to this car; but I assumed, Mr. President, that I had to perform a duty to you in finding some fault with this car in order to provoke a discussion of it.

Upon our two roads we have gradually, in fact, persistently, attempted to keep as closely as possible to the same class of equipment upon the interurban roads as could be reasonably operated on our city line.

My friend, Mr. McCormack, referred in his paper to a manager that had written to him that he didn't have any traffic agreements on his road, and as far as it was possible for him to prevent it, there would be none; that was myself. And I am more thoroughly convinced, after listening to the arguments here to-day, that the policy is good as far as it can be pursued, because this matter of equipment is bound to come up. There will come the conflict. We see it cropping out here to-day, as to which road is producing the revenue, which is carrying the passengers. There are very few cities, I take it, where the conditions exist that have been referred to to-day, where, by only traversing about 1000 ft. of the city track, the interurban road can get to the center of the city. To my mind it should be impossible to reach the center of a city without coming over at least 3 or 4 or 5 miles of city streets, and the interurban car must be brought over those streets. Otherwise, we have lost all the advantages that are claimed for electrical interurban service. Your traffic will soon be gravitating back to the steam road if you require the passengers to transfer at the city line, or even annoy them by collecting another fare. In our system we try to collect a fare to wherever the passenger is going, and he is not annoyed after he reaches our city line; he is carried through; there are transfers given him to any point in the city. For that reason the ques-



tion as to whether a company is operating interurban lines will have a very important bearing upon the quality of the equipment that should be placed upon its tracks. In our new specifications for cars we try to make them answer for either service, and the passengers do not really know the difference so far as the equipment is concerned. The tendency on every road is for local passengers to wait for the higher speed interurban car. They know it makes better time and fewer stops, and therefore we try as far as possible to eliminate any distinctive difference between the interurban and our city car.

I have no doubt Mr. Chamberlin will be ready to convince us that this mechanism under the seats of his new car is not likely to get out of order. We have heard that regarding electrical apparatus for the past fifteen years. I think he will have considerable difficulty, when it comes to put in his car heaters, with the mechanism under his seat, with the turning and jerking; I think he is very likely to have short-circuits and trouble. I think the mechanical swinging apparatus will, after a very short time, begin to shackle and give an unpleasant noise, of which we have enough with the best devices we can get. Neither do I like his door to one side. We are now considering extending our cars, which are 41 ft. over all. After five or six years of careful operation and observation, we are now considering adding 5 ft. to our city cars, in order to put the space of two more car seats in them; but instead of putting in transverse seats, I propose to install longitudinal seats at the end; in other words, put at each end a longitudinal seat that will seat two persons, thereby giving better ingress and egress to and from the car. We use double doors in the center of the car, so as to make it during the summer season as far open as possible. After five years' experience, we have still 200 open cars which we are wearing out. We use them for special occasions, but we have many of our patrons that will wait until the standard car comes along, even in the hottest days of summer, because of the greater comfort there is in riding in it.

MR. SERGEANT: I had not expected to say anything on this question, though I believe, as I think Mr. Beggs stated, the type of car is purely a local condition. I think the people of one community have habits different from those of another community, and hence want a different type of car. A good deal depends upon the way those people have been educated, what kind of facilities they have become accustomed to. On the question of double equipment, I suppose that everybody for years has been trying to, and hoping, to see some kind of a car constructed that would be a summer car and a winter car, and some of our builders have developed very ingenious devices. I think Mr. Chamberlin's car is also an ingenious device, but is it really a substitute? Is it really a box car, and also an open car?

I do not hesitate to say that if, in hot weather in summer we had that sort of a car on our streets, and also were running our ordinary open car with cross benches, that Mr. Chamberlin's car would get a few old people and old ladies that were afraid to be outdoors in the open air, but the public would take the other car, the open car, and at the same time if the thermometer dropped, as it might, they would seek that car. We have always been put to a large expense to provide a double equipment, and we have it so duplicated. We have about 70 per cent of our box cars always ready for use, even in the summer season, when we are running open cars. If the weather changes and a shower comes up, we make it our practice, as far as possible, to substitute the box car for the open car. The reason we do this is to please the passengers, and that means to make them ride. I am quite sure that if one reckons the capacity of the open cars, the additional motors and trucks, the enormous car house area which is involved in the storage of those open cars, and determines, as near as he can, the additional business that he gets because of the open cars, that it would be very difficult to show a profit on the open cars. But that is not the question with us. The question with us is that the people have been accustomed to the open cars, and they demand them, and while it would undoubtedly seriously curtail our gross earnings, I have no doubt if we had not investigated, and the profit had not been computed, there would have been a greater readiness to take the compromise car something after this pattern.

There was one thought suggested to my mind upon seeing one seat immediately in front of another; that is, this might be an offensive position under some circumstances. On the other hand, there is a sort of moral protection in the longitudinal seat. People can sit there in very close proximity without being associated in the particular manner that they are in a seat of this kind. I have lived in hopes that the time might come when one car, available equally for summer and winter use, would manifestly be available, but I think, as far as I have seen, all compromise cars have introduced additional mechanism and additional parts, which must necessarily make their maintenance very much greater. That is one reason why I think such cars will never

come into very general use. We know very well what the longitudinal car costs us to maintain. When we add mechanism to the car, I think we are adding trouble and expense.

MR. WASON: In Cleveland we made an attempt, a number of years ago, to make a combination car take the place of a summer and winter car; but after several years of experience with the attempt we found it impossible to make one car answer both purposes. We were very anxious to get rid of the double equipment, and built a cross-seated car, with a door on one side. Since that time we have changed these cars, and have taken the seats out and put them longitudinally. It seems to me almost impossible, at least in certain localities, to make a car that will answer for both summer and winter. It would surely be a most useful arrangement if such were possible, but I doubt whether the state of the art will admit of that at present. A combination of a claw hammer and a driver is about the maximum of utility. If you combine any other types or devices, you are liable to spoil the attempt made. I believe the two cars will have to be used in most of the localities; local conditions purely will govern that.

MR. CROSBY: I should like to ask if we rightly understood Mr. Beggs. I think he said that in Milwaukee the people will wait for the standard car, which, I think, is a compromise, or convertible car. Mr. Sergeant has stated that his experience in the past was quite to the contrary, and so is Mr. Wason's. My own experience would coincide with that of the two gentlemen last named. I think the merits of this question as to whether you can get as much riding with a compromise car as with the open car has much to do with what is to be the determination.

MR. BEGGS: Possibly my statement would be better understood if qualified or explained. All of our open cars are single-truck cars. All of our standard cars, as we call them, are not in a sense convertible cars—but they are the standard cars we use the year round, with the sash dropping into the sill to the arm rest. The sash are within the control of every passenger on the car, with the simple exception that in winter we put on a winter strip, so that the sash cannot be opened at that time. Double doors at both ends give the greatest amount of ventilation, producing practically the same effect as in an open car. It is a fact in our city that with this type of double-truck cars, which are much easier riding and more comfortable than our others, there never has been that objection. It may be that the community is different, but this assembling of passengers in twos has not been thought an unnecessary or undue familiarity. I do not see what difference there is, when they are brushing against each other at the side, as in the longitudinal seats, and in which it is possible to crush persons very much tighter than in a cross-seated car where only two people ever attempt to get in a seat.

Of course, I qualify my answer by saying that possibly that would not be the case in Cincinnati, St. Louis or New Orleans; but where the temperature keeps down to a reasonable degree, as in Milwaukee, that is the fact. After the closest observation of five years, the statement is made positively, and we shall not be sorry when our open-car equipment is gone. The only advantage, so far as we are concerned, in the open car is to take care of a baseball game, for instance; you can carry about twice as many passengers in them as in the standard car, and we largely use those cars for that particular purpose.

MR. DAVISON, of Pittsburgh: One of the roads which I represent has an equipment of 125 open cars and about 70 closed cars. The closed-car equipment is taken off the line entirely during the summer months. I was somewhat interested in what effect the open cars had on traffic, and early in the season this summer, before the weather was very warm, I selected one of our roads. It was a Sunday, when travel was expected to be quite good, and I put on the box and the open cars so that every other car was an open car. The result of the day's business was that, notwithstanding the fact that the seating capacity of the open cars was just 50 per cent of the closed car seating capacity, the business done by the open cars was somewhat more than twice that of the closed cars. I am satisfied that if I had continued that experiment for one month I would have had very little traffic in the box cars and the summer cars would have gone on loaded to the guards, as they say.

MR. FULLER: What kind of cars were those?

MR. DAVISON: Well, these cars were single-truck cars, and the seats in the closed cars longitudinal seats. The summer cars have the cross seats the full width of the body. I have ridden in box cars such as Mr. Beggs describes, with the ends largely open on account of the large doors and the low windows, and I always thought that I perceived a difference in the draft. It may be imaginary on my part, but the draft through the front door, I thought, was more uncomfortable than that of the open car with a free draft; that is, open on all sides. It may be imaginary, but I think there is something in it; and on hot summer nights the car that is open on all sides is certainly very much more agreeable.



MR. WASON: I think that if before Mr. Beggs concludes with the open car he should try some long fourteen-bench open cars; he would probably find it to his advantage. I do not believe there is a very large difference between the changes of temperature in Milwaukee and Cleveland. The changes in Cleveland are as rapid as those mentioned, namely 30 degrees in 30 minutes; still we have our long-bench open cars.

MR. BEGGS: I shall not attempt to combat the arguments that have been offered. In a single-truck, longitudinal-seat car I am surprised that people ride at all. It is a very different proposition from what I call our standard car, with nothing whatever to interpose to the atmosphere except the posts, other than getting the air around the feet, which does occur in an open car. We have just as much air space in our standard car as in any open car that is built; that is all the difference. We do not get the draft referred to as coming through the doors, because the car is open all around. I think we can sacrifice something in gross receipts. I do not care about the gross receipts; it is the net receipts that I am after. I want money with which to pay fixed charges and dividends. We can afford to sacrifice something in gross receipts to avoid the multiplicity of equipment and the trouble and expense which it means to invest in and take care of it. I seriously question whether a car can be built that will suit in all localities. It depends, to a very great extent, upon the views of the population you are dealing with. What would be considered excellent service in one community would possibly not be tolerated in another.

MR. CHAMBERLIN: During the eight months which the car described by me has been in operation, and the six months in which the seats used have been in service, nothing has been spent for repairs. No seat has been changed from a longitudinal to a cross position, or vice versa, by a passenger. We also have cars with low drop sashes, but the sash opening not only furnishes a receptacle for newspapers but for tobacco quids and cigar butts which we find when we overhaul the cars.

THE PRESIDENT: We will now take up a paper by M. S. Hopkins, of Columbus, Ohio, entitled "Alternating and Direct-Current Transmission on City Lines." (This paper is published elsewhere in this issue.)

MR. HOPKINS: In preparing this paper, I have had principally in mind the conditions which have been confronting me at Columbus, Ohio, namely as to whether we should put up additional copper to supply the needed current for outlying districts or install an alternating-current system with the sub-stations located out near the extreme portions of the city. The one question with me has been the advisability of having the two kinds of current in the power house; that is, having one unit of direct, the next unit of alternating; and as to whether the maximum capacity of a station could be made available at all times with an arrangement of that kind.

In order to get at just what our losses were in the feeder system, I used some wattmeters, and found that on the East Long Street section the loss in transmission amounted to 23 per cent, covering a period of two weeks averaging eighteen hours per day. On East Oak Street it amounted to 31.2 per cent; on the East Main Street section, 27.4 per cent; on the South High Street section, 27.8 per cent, and on North High Street section (the lower side), 25 per cent. During the period of extremely heavy travel these losses ran as high as 50 per cent or over, and our transportation department has been severely hampered for some time owing to lack of sufficient voltage to maintain schedules during heavy loads.

In our particular case of rotary sub-stations for supplying the outlying districts, we required 153,000 lbs. of copper, which would have a market value of about \$27,000. The high potential copper to take the place of this low-potential copper would amount to approximately \$10,000, which would leave about \$17,000 to be credited to the sub-station, because the plan which I have attempted to outline should keep the loss well within 15 per cent between the main station and sub-station bus-bars, even during periods of heavy travel. This would result in a saving of \$3,804 in the yearly transmission of average load from station to sub-station bus-bar. In this case, owing to the location of sub-stations and interconnection of direct-current feeders, the loss will not exceed the loss now existing from the points where direct-current feeders now tap and where the wattmeter readings were taken to the car; hence we have \$3,804 as the net saving in the cost of power due to high-tension transmission, being equivalent to 12.8 per cent on the cost of the net saving in cost of power due to high-tension transmission, being equivalent to about 12 per cent on the cost of the investment in the sub-station; which would seem profitable, not considering the great advantage in having good voltage at the end of the lines, enabling them to maintain schedule speed of cars at all times.

MR. CROSBY: It has been impossible during the few minutes the pamphlet has been in my hands to note whether the distances

involved are stated in this paper or not. In order that any general rule might be worked out, this should be detailed; I think the elements involved would necessarily have to be known. In other words, where a city is a very compact one, alternating current is rarely needed. In a city of the general size of Utica the use of alternating current for railway service did not at all seem desirable until the question came up of suburban roads. These roads were, in one case, 16 miles; in another case, 12 miles, and in another case, 11 miles from the center of the city. It was then thought better that the alternating current should be used for transmission on those outside lines; in the meantime keeping all the inside business within the direct service.

MR. HOPKINS: We have two steam power plants which we operate most of the time. Our idea was to locate one rotary a distance of 2 miles, to take the place of one of these steam stations.

THE PRESIDENT then appointed the following named gentlemen as the committee on nominations to propose the names of officers for the ensuing year, and also to recommend the place for holding the next meeting:

Charles S. Sergeant, of Boston, chairmen.

Albion E. Lang, of Toledo.

Frank L. Fuller, of Wilkesbarre, Pa.

H. N. Sloan, of Chicago.

W. W. Wheatly, of New York.

The convention then adjourned until Friday morning.

### Entertainments for the Ladies

The ladies' entertainment committee provided, on Wednesday, a very attractive entertainment for the ladies in attendance at the convention, and one in which some fifty or sixty ladies participated. This was a reception at the Murray Hill Hotel, commencing at about half past eleven Wednesday morning. A musical programme, consisting of twelve numbers, was rendered by the Kaltenborn string quartette, after which a luncheon was served the visitors in the main dining-room at the Murray Hill Hotel.

On Friday, through the kindness of Henry Sanderson, president of the New York Vehicle Company, an automobile trip will be provided for the ladies. The automobiles will start from Madison Square Garden at 11:30, will proceed up Fifth Avenue to Central Park, thence up the eastern driveway of Central Park to 110th Street. They will then cross to Riverside Drive and go to the new aqueduct bridge, returning to Claremont for lunch. The party will then go down Riverside Drive to 104th Street and thence to Central Park, taking the western driveway of the park to Madison Square Garden. Gentlemen who are accompanied by ladies to the convention are also cordially invited to attend this ride.

Ladies are also expected to attend the annual banquet at Sherry's, Friday night. According to the plans decided upon, the ladies and gentlemen will dine in separate rooms, but after the dinner the ladies will adjourn to the galleries surrounding the men's dining-hall and will listen to the speeches.

In the present issue but a few views of the exhibits in Madison Square Garden can be presented. It was, of course, impossible to obtain photographs of many of the booths in time for reproduction so early, but a small number of exhibitors succeeded in getting their displays sufficiently completely arranged to give a good idea of what they were to be. Of these our photographer was happily able to get snap shots in season to have the engravings used this week made before going to press. This year's collection of exhibits is far in advance, both in magnitude and quality of that found at any previous convention of the American Street Railway Association, and constitutes the heaviest exhibition ever held in Madison Square Garden. The expedition with which the massive pieces of apparatus were received, distributed and erected reflects great credit on Marcus Nathan and his able corps of assistants. To satisfactorily engineer an undertaking of this kind requires not only infinite patience and foresight, but peculiar executive ability, and the striking manner in which he brought about, in so short time, one of the greatest exhibits ever held in New York City, amply proves his great talent in this direction. Mr. Nathan's work in directing the exhibits was greatly facilitated by the manner in which the Joyce Trucking Company performed its share of the burden in moving the heavy machinery and cars to Madison Square, and placing it in position. Mr. Joyce gave his entire personal attention to the work before and during the convention, and was always on hand, night and day, with one of his numerous gangs of men to assist the exhibitors.



## The Convention of the Street Railway Accountants' Association

The first session of the fifth regular annual meeting of the Street Railway Accountants' Association of America was called to order at 11 o'clock Wednesday, Oct. 9, by President W. F. Ham.

In the absence of Secretary Brockway, the president appointed C. M. Heminway, of the Connecticut Lighting & Power Company, secretary pro tem.

On motion of Elmer M. White, Hartford, Conn., the minutes of the last convention, as published, were approved.

The president then introduced Hon. Bird S. Coler, Controller of the city of New York, who delivered a brief address of welcome. Mr. Coler expressed his pleasure on seeing so many representative accountants in attendance. He referred to various attractions of the metropolis, and cautioned the delegates against the danger of being run over by horse cars in certain parts of the city. He stated that these horse cars were run not because New York is behind the times in any respect, but because horse cars seemed to be necessary to demonstrate, by contrast, the phenomenal advancements that have been made in transportation by electricity. Mr. Coler assured the delegates that they had the freedom of the city, and trusted that none of them would require the police protection for which the metropolis is noted.

At the close of Mr. Coler's address, President Ham presented his annual address.

### PRESIDENT'S ADDRESS

We are now assembled in our fifth annual convention. As president, I welcome you all to this greatest city of New York, soon to be the metropolis of the world, and hope we may make this meeting worthy of the city in which it is held, the biggest and the best we have ever had.

As provided in our by-laws, our meeting is at the same time and place as that of the American Street Railway Association. We are again indebted to them for their kindly courtesy and hearty co-operation, and I now desire to express to them officially our sincere thanks and appreciation. We feel that these meetings have been a means of bringing us closer together, and promoting a greater degree of harmony between the operating and accounting departments, thereby increasing the efficiency of both.

Since we last met in Kansas City, our position has been strengthened in many ways. We are now on a solid and permanent basis. If it were at any time necessary to seek for excuses for the existence of such an organization, that time has passed. Our association has justified itself by what it has done and is doing.

When we look back to our first meeting in Cleveland, less than five years ago, and contemplate the growth of our association since that time in membership, standing and influence, we may well be proud of what it has done and confident that its future will be as bright as its past.

We started out with well defined purposes, and to a considerable extent these purposes have been fulfilled. One of our first objects was standardization. At our first meeting a committee was appointed to prepare a standard classification of operating expenses and construction accounts, and what was more difficult, to secure its adoption. This committee consisted of Mr. Duffy, then of St. Louis, chairman; Mr. Calderwood, of Minneapolis, and myself, then of Brooklyn. I have always considered it a privilege to serve on that committee. We came from widely separated sections of the country, and I remember when we first met our views were so radically different on many points that it seemed impossible to secure uniformity on the part of our committee of three, much less the association as a whole.

This committee reported at Niagara Falls in 1897, at which time it was enlarged by the addition of Messrs. Wilson, of Boston, and Davies, of Cleveland, and made a permanent committee of the association. It again reported at Boston in 1898, and the classifications then submitted were adopted by the association, and since that time have been very generally used throughout the country.

To secure the adoption of its classification, the committee recognized the desirability of securing the approval of the Railroad Commissioners in those States that require the filing of reports with them; and worked actively to bring this about. As a result, our classification was approved more than a year ago by the National Association of Railroad Commissioners, and has since been prescribed for use in several States.

In this connection permit me to speak of the highly satisfactory relations existing between this association and the National Association of Railroad Commissioners. A year ago we were invited to attend their convention in Milwaukee. Again, this year, we received an invitation to be represented at their convention at San Francisco, on June 4. I appointed as delegates to this con-

vention Messrs. C. N. Duffy, F. E. Smith and H. C. Mackay, all of whom attended, and can testify to the courtesies everywhere extended them. At this convention two things of great importance to our association were accomplished. The National Association of Railroad Commissioners adopted by-laws prescribing that our association should be represented at their conventions by three delegates, who should be entitled to the privileges of the floor on all questions in which we are directly interested. I esteem it a high honor for so young an association to gain this permanent recognition, placing us, as it does, on an equality with the Association of American Railway Accounting Officers, a similar association of steam railroad accountants. The question of preparing and adopting a standard form of report was also considered, and referred to a committee to co-operate with a similar committee of this association. While the appointment of this committee will be left to my successor, permit me to express the hope that they will at the proper time devote to the subject the attention it deserves, and work earnestly to secure the adoption of a complete, yet simple, form of report that will convey all needful information, without burdening the railroad companies with the preparation of useless statements and statistics.

From what I have said, gentlemen, you can judge of the progress that has been made toward standardization since our association was formed. Up to that time, with the exception of two or three States, where the Railroad Commissioners prescribed the form of report, there was absolutely no such thing as uniformity. Ours was the first successful effort in that direction. To-day it is safe to predict that in a short time the classification of this association, modified as we see fit to modify them, will be the standard throughout the country.

We have also made an effort to determine the most valuable unit of comparison. Two years ago Mr. Mackay, of Milwaukee, presented his views forcibly and convincingly on the advantages of the car-hour over the car-mile. The association was impressed with the importance of the subject, and referred it to a committee, consisting of Mr. Mackay, Mr. Smith, of Chicago, and Mr. Ford, of New Orleans, for further investigation. Acting upon their report, submitted last year, the association recommend "the adoption of the car-hour as a standard unit of comparison, with the understanding that it is to be put to a practical test by each company represented in the membership of this association, either in connection with the car-mile or not, as they may see fit, and that the committee report back at the 1901 convention." Their report, now to be submitted, should be the subject of earnest consideration and discussion. Aided, as we now are, by the practical experience of the past year, we are in a better position to determine the relative value of the two units. Let me observe, in passing, that preference for the car-mile unit is deeply rooted in the minds of operating men accustomed to it alone, and we can only change their opinion by positive proof that the newer unit is more valuable.

Another of our objects was to bring about uniform accounting methods. Here we are met with the objection that local conditions prevent uniformity, an objection that gains force for the reason that the "local conditions" are often beyond the power of the accounting officer to alter.

It is our purpose, nevertheless, to consider to what extent uniformity can be brought about, with which end in view a committee was appointed to report at this convention on a standard system of storeroom accounting. As finally constituted, this committee consisted of Mr. Smith, of Chicago; Mr. Tingley, of Philadelphia, and Mr. Henry, of St. Louis. They have gone into the subject most thoroughly, devoting to it much time and thought, and will, I am sure, present a most valuable report. The association is indebted to them for their labors, and I personally wish to express my thanks and appreciation. Other subjects will be taken up as fast as practicable, with a view to securing uniformity wherever possible and desirable.

Our department of blanks and forms, under the painstaking management of our able secretary, has been of great value and assistance to those members who have availed themselves of it, and is the means of bringing about greater uniformity in the use of blanks and forms, and consequently in accounting methods.

Another of our objects was to meet for the interchange of ideas and the improvement of the work of the accounting department. Have we not been successful in this? At our conventions we have discussed all kinds of questions relating to our work, each one presenting his views freely for the benefit of all. In addition to our formal meetings we have gathered socially and gone over with one another many a vexed point. I cannot conceive how anyone who has attended these conventions, participated in the meetings and mingled with the other members, could fail to be benefited by it, with the possible exception of the man who has a perfect system and "knows it all." We are all broadened by



our contact with one another, and go back to our desks better fitted for our work and more valuable to the companies we represent.

There was a time, not so long ago, that the accounting officer was considered a mere bookkeeper. I even recall an instance where a man of my acquaintance was classed as a fine accountant because of his beautiful penmanship. To-day, however, the position of accounting officer of a large corporation is justly recognized as vitally important. He and his department are necessities, despite the fact that they are non-producers. As consolidation has followed consolidation, as capital has become more and more centralized in immense corporations, his duties have become more necessary, more responsible, more arduous, more valuable.

He has many functions to perform. Defining them briefly:

First.—He must watch the incoming revenue and see that every penny is accounted for; he must watch the disbursements and know how every dollar is spent. Applying this to street railways, whose business is to carry passengers for revenue, he has to see that every fare collected is accounted for, a task of no mean proportions when we consider the immense number of passengers carried and the large number of employees handling the company's money. This branch of the business has been so systematized that it runs almost automatically, and yet requires attention to see that the machine does not get out of order. In the handling of tickets, especially, grave dangers exist, and the accounting officer must be ever alert, ever watchful. He has to surround all disbursements with every possible check to insure accuracy and prevent dishonesty. He cannot perform his duties in a perfunctory manner, but must know for himself what is going on. He cannot do everything himself, but should so arrange it that everything essential comes under his eye.

Second.—He must keep his accounts and records so as to reflect the true financial condition of the property; and

Third.—He must separate, consolidate, analyze, dissect, all that comes in and goes out in such a way as to present to the management intelligible, reliable and valuable information. He should not only present facts, but explain causes. He should be a student, an analyst, a critic. He should have an intimate knowledge of all the workings of the property that he may draw correct conclusions. He should be able to take a broad view of things; must not be too technical and yet must have a great capacity for detail. In his relations with other departments, he must be something of a diplomat. He must do his work intelligently, efficiently, simply, economically, and, above all, promptly. In my own experience, I have found that promptness is absolutely essential, and that facts once stale from age lose their value and interest, however presented.

Returning now to a consideration of his second function, to so keep his accounts and records as to reflect the true financial condition of the property. Are we doing this? When we present a statement of assets and liabilities, does it convey the information for which such a statement is primarily intended? If the accounts have been correctly kept, such a statement of an individual shows what he is worth or owes; of a corporation, to what extent the capital is enhanced or impaired. Can this information ordinarily be obtained from the balance sheet of a street railway or other corporation? The item of plant or cost of road and equipment may mean almost anything. It may mean actual cost price in dollars and cents of real and personal property; it may mean the cost of the same in depreciated bonds and watered stock; it may mean the value of the physical property based upon cost of replacement; or it may mean the same increased by the value of the franchise. Charges for depreciation may or may not have been made; cost of improvements and betterments or operating expenses even, may or may not be included in cost of construction. To meet the varying requirements of the law-maker and tax-gatherer on the one hand and the possible investor in securities on the other, charges to construction or to additions and betterments have been made, not with a view to propriety, but to expediency, to such an extent that for the purpose of determining the value of the property the item of plant in the balance sheet is, in most cases, incorrect and meaningless. That being so, some other item or items must be incorrect to balance, and for its primary purpose the whole statement is false.

Theoretically, there is, in my mind, no question as to what plant account should represent, namely, value based upon cost of replacement of physical property with due allowance for the good will or right to do business represented by the charter or franchise. Value, not cost. Is this practicable or even possible? So far as the physical property is concerned, there is no reason why its real value cannot be determined. To do this may require extensive calculations in which there is a possibility of a considerable percentage of error; but there is no doubt that a fairly correct result can be obtained. In fact, we know of a recent in-

stance of a street railway company having so kept its accounts that the plant account shown on its books very nearly balanced a compulsory and presumably impartial inventory of the physical property based upon actual cost of replacement.

As to the value of the franchise, recent efforts to determine this have been made in certain States for the purposes of taxation, in the calculations concerning which I consider the primary elements are net earning capacity and duration of franchise.

I am not prepared to say whether it is practicable or not to show on the books the value of the property on the lines indicated; but to determine that value is essential from the standpoint of the investor, and the time is at hand when street railways will be run in the interest of the investor rather than of buyer and seller.

In the past it has been a highly speculative business. The introduction and rapid development of electricity has added enormously to the net earning capacity of established lines, and has made possible the construction and operation of roads otherwise not dreamed of. The tendency toward consolidation and centralization has also been a powerful factor in the readjustment of values.

Plant account has had to bear many burdens. Horses have been replaced first by the cable and later by the electric motor; tracks have been reconstructed, often more than once, to meet the new requirements; power stations have been dismantled to utilize more modern and economical appliances; cars have been replaced by others of newer and more attractive design. And, generally speaking, all of this has been charged to plant, so that, measured by value of physical property alone, plant account has been largely overburdened.

Here we come to the important point, namely, considering the value of the physical property alone; what has been improperly charged to plant should properly have been charged against income, and deducted in one way or another from the apparent profits. Had this been done, I question if one road out of ten would have had any profits; certainly the business would not have been the highly profitable one it is supposed to be. Under the conditions which have existed, it has been well nigh impossible to determine the *true operating cost*, and I am fearful we do not yet know it, or at least do not yet show it on our books.

These improper charges to plant offset by increased capitalization have only been possible because of the rapid increase in earning capacity, and thereby in the value of the franchise. Were it not for this, plant account would have been greatly overburdened. As it is, the depreciation in value of physical property has been counterbalanced by appreciation in the value of the franchise, and the final result expressed on our books, though reached by faulty steps, may be approximately correct. This, however, cannot continue indefinitely. After the marvelous expansion of the last decade, we have now reached a resting place.

Electricity has developed to a point where such rapid leaps and bounds as it has made in the past are not at all likely in the future, nor is it likely that any other force more economical than electricity will be discovered to again revolutionize the business. Progress in the future is likely to be normal. We cannot continue to look for the same enormous increases in earnings, but will have to be content with the increase that comes from increased population and more efficient management.

Under such conditions, electric railroading will have to be conducted on the same principles as any other established business, and the accounts must be kept intelligently, honestly, and conservatively. The investor will require information as to the actual expense of conducting the business, and as to the real value of the property.

Individually, if not as an association, these are matters which should command our attention. Let us study the situation carefully and intelligently. Let us stand, as far as we may, for honesty and integrity in accounting methods. Let us not deceive ourselves, nor allow others to be deceived. Mere accountants that we are, we may be the humble means of saving street railway properties from the throes of insolvency and reorganization, to which so many steam roads were subjected a few years ago, partly from a failure to observe correct accounting methods.

In closing, let me express my thanks to all those who were invited to present papers at this meeting for their ready and willing response; to those who have served on committees for their unselfish and laborious efforts; to Mr. Brockway, our esteemed secretary and treasurer, for his valuable assistance and co-operation; to all those who have had a good word for the association; lastly, let me thank you most heartily for selecting me a year ago as president of this association. It is an honor I esteem most highly, and when at the close of this convention I surrender the chair to my successor, I shall feel that it has been a great privilege to have served for a time in the position of the greatest dignity you have to bestow.



The president then announced that the report of the executive committee was not quite ready for presentation, and that, with the permission of the association, it would be deferred until Friday.

The report of the secretary and treasurer was then read by Mr. Heminway.

#### FIFTH ANNUAL REPORT OF THE SECRETARY AND TREASURER.

The fifth annual report of this department is the story of success, and I am sure you will fully enjoy the good news of our continued prosperity.

#### THE RECORD OF MEMBERSHIP

Organization members .....	25	
1897 .....	12	
1898 .....	32	
1899 .....	34	
1900 .....	21	
1901 .....	25	
Total .....	149	
Withdrawn:		
1897 .....	1	
1898 .....	0	
1899 .....	2	
1900 .....	25	
1901 .....	11	39
Net membership, Oct. 1, 1901.....		110

We have at last safely passed the one hundred mark, with the prospect of staying beyond it.

#### THE NEW MEMBERS

1. Washington Water Power Company, Spokane, Wash.
2. Ottawa Railway, Light & Power Company, Ottawa, Ill.
3. Indianapolis & Greenfield Rapid Transit Company, Greenfield, Ind.
4. Citizens' Electric Company, Eureka Springs, Ark.
5. Toledo & Western Railway, Toledo, Ohio.
6. Erie Electric Motor Company, Erie, Pa.
7. St. Louis, Belleville & Suburban Railway, Belleville, Ill.
8. Syracuse Rapid Transit Company, Syracuse, N. Y.
9. Birmingham Railway, Light & Power Company, Birmingham, Ala.
10. Cincinnati Traction Company, Cincinnati, Ohio.
11. Tacoma Railway & Power Company, Tacoma, Wash.
12. Dallas Consolidated Electric Street Railway, Dallas, Texas.
13. York Street Railway, York, Pa.
14. Everett Railway & Electric Company, Everett, Wash.
15. Utica Belt Line Street Railway, Utica, N. Y.
16. Owensboro City Railway, Owensboro, Ky.
17. Camden, Gloucester & Woodbury Railway, Camden, N. J.
18. Rockland, Thomaston & Camden Street Railway, Rockland, Me.
19. Southern Traction Company, Pittsburgh, Pa.
20. Terre Haute Electric Company, Terre Haute, Ind.
21. Youngstown & Sharon Street Railway, Youngstown, Ohio.
22. Chicago Electric Traction Company, Chicago, Ill.
23. St. Louis, St. Charles & Western Railway, Wellston, Mo.
24. Central Rapid Transit Company, Pittsburgh, Pa.
25. Ohio River Electric Railway & Power Company, Pomeroy, Ohio.

Those companies leaving us are:

1. Brockton Street Railway, Brockton, Mass.
2. Aurora & Geneva Railway, Aurora, Ill.
3. Federal District Railway, City of Mexico, Mexico.
4. Concord Street Railway, Concord, N. H.
5. Citizens' Rapid Transit Company, Nashville, Tenn.
6. Third Avenue Railroad, New York, N. Y.
7. St. Joseph & Benton Harbor Railway, St. Joseph, Mich.
8. Union Traction Company of Indiana, Anderson, Ind.
9. Manchester Corporation Tramways, Manchester, England.
10. Portsmouth, Kittery & York Street Railway, Portsmouth, N. H.
11. Winchester Avenue Railway, West Haven, Conn.

One of the helps to this net gain in membership has been our Circular No. 16, which was issued last April. It was very cordially received.

In finances an equally good showing is made:

Cash on hand, Oct. 18, 1900.....	\$895.24	
Received from applications.....	\$500.00	
Received from 1900 dues.....	40.00	
Received from 1901 dues.....	1,520.00	
Received from interest on deposits.....	10.40	2,070.40
		<u>\$2,965.64</u>

Disbursements per vouchers.....1,381.96

Balance on hand, Oct. 1, 1901.....\$1,583.68

The Department of Banks and Forms has received its usual attention, in the way of additions and changes. It will be found somewhat more interesting than usual.

It is again a pleasure to express the thanks of the office for the many kindnesses shown. They are sincerely appreciated.

W. B. BROCKWAY, Secretary and Treasurer.

A paper was then read by J. M. Smith, comptroller of the Toronto Railway Company, on "Car Mileage, and How to Arrive at It Easily." This is published elsewhere in this issue.

A brief discussion followed Mr. Smith's paper. President Ham stated that the greatest trouble in ascertaining car mileage is that the cars may be turned back at any point, which is not known to the accountant's office, and perhaps not even to the division superintendent. The conductors should show just where their car ran on each trip.

Mr. Henry stated that conductors should report all cases of partial trips occasioned by variation from schedule, or otherwise, and that the division superintendent should report the actual facts in all cases. It is, of course, easy to figure car mileage where there is no deviation from the regular runs and schedules.

Mr. Ham inquired as to just what benefit is obtained from individual car mileage.

Mr. Smith, of Toronto, stated that he kept car mileage for the purpose of obtaining the accurate wheel record. His company purchased all wheels on a guarantee that they would run for a certain number of miles. On his line there are few deviations from routes and schedules, and he finds little difficulty in keeping individual car mileage. All the mechanical department was required to do was to make a report when they put any wheel or other device on a car and when they took the same off. The accountant could then figure the exact mileage not only on the individual cars, but on individual appliances.

The discussion did not indicate that individual car mileage was generally recorded or that managers placed much value upon such statistics. Only about one-third of the companies represented kept a record of individual car mileage at all.

The association then adjourned until 2:30 p. m.

#### WEDNESDAY AFTERNOON SESSION.

President Ham called the meeting to order at 2:35 p. m.

Col. T. S. Williams then read the paper on "Capital Accounts from the Viewpoint of the Investor and the Public," which is published elsewhere in this issue.

H. C. Mackay, comptroller, Milwaukee Electric Railway & Light Company, opened the discussion and said that his road believed in creating depreciation accounts. In that way provision was made for any matter that might come up in the future. There was charged to operating expenses, for instance, an amount which they thought would be sufficient to cover all expenses for that year, and the result was that they had a fund on hand. The same thing applied to insurance. They had an insurance reserve, and to cover the depreciation of maintenance of way and buildings, they charged in 10 per cent of their gross earnings. Against this fund they charged all unusual expenses—for instance, renewal of a mile of track—and they had a considerable fund for that. Ten per cent of their gross earnings went to create this depreciation account for maintenance of way and buildings. The injuries and damages account they created in the same way on a smaller scale, 4 per cent on gross earnings going into operating expenses to form that fund. The result had been that they were always on the right side of the ledger, and always had a fund on hand in place of a deficiency.

F. E. Smith, auditor, Chicago Union Traction Company, chairman, then read the report on "Standard Blanks and Accounting for Material and Supplies," which report is published elsewhere.

In reply to the president Mr. Smith stated that the committee had not prepared any blanks, believing that the expense would be too great to attempt that unless it was determined to adopt the report, in which case it would be time enough to devise the rulings necessary to carry out the plan proposed.

In reply to Mr. Mackay Mr. Smith stated that the discount of bills would be handled under the plan proposed by being taken off each item. As to the possible necessity for back entries when bills were not discounted, the committee had not attempted to devise a system that was labor saving merely, or cheap, but a system that was good. It would entail less labor to credit up discounts on



bills to some account, but the committee did not think of that at the time the report was written.

President Ham asked if a payment of 25 cents or so for freight on a bill of \$3 or \$4, covering several items, would be spread over the several items.

Mr. Smith stated that in his opinion that ought to go into store-room expenses.

President Ham thought that it was not consistent to put the freight into the storeroom expenses, but that the credit represented by the discount should be taken from the price of the goods.

Mr. Moore, of Pittsburgh, thought that discounts arising from the operations of the treasury department should be eliminated entirely from the store supply account and credited to the treasury department, as it were.

Mr. Smith said that since writing the report he had had some further light on the subject, and he was inclined to think that it would be well to establish a fund from the cash discounts to take care of obsolete material, and give the treasurer, if desired, credit for building up that fund.

C. L. S. Tingley, secretary, American Railway Company, Philadelphia, agreed with the proposition that the treasurer should have credit for the discount shown on his books. Even if the discount was secured in part through the efforts of the purchasing agent, the treasurer must be in condition to make payment with the promptness necessary to take advantage of the operation.

Mr. Duffy thought the discount question was receiving undue attention. He believed that anything purchased at \$1, 2 off, was bought at 98 cents, and not at \$1. The cost of material, however, should receive the benefit of the discount. The treasurer had nothing to do with it. He (the speaker) had never heard of a discount bill not being discounted. It must be assumed that the discount bills would be paid.

Henry L. Wilson, of Boston, thought it was a matter that did not apply to one more than the other. If the treasurer was unable to pay those discount bills the purchasing agent was unable to buy the goods at a discount.

President Ham thought that it was a comparatively small matter, and yet the theory should be determined upon. In his judgment the storekeeper had nothing to do with it. If a company bought sixty new cars, and instead of getting a discount for cash had to pay interest on notes given in payment, that interest would certainly not be charged to the cost of the new cars.

P. V. Burton, of Columbus, Ohio, said that discount was clearly a matter of purchase, and entered into the cost of the material, while the matter of interest on deferred payments was simply a question of finances.

In reply to the president Mr. Smith stated that the question of combining the purchasing agent and the storekeeper in one individual had been considered by the committee, and the conclusion was that one should act in the two capacities, and run them as two separate departments, just as was done when the same person was treasurer and auditor. As to the use of duplicates in that event, instead of the triplicates mentioned in the report, Mr. Smith stated that there would be some one in the storeroom proper, such as a chief clerk, and he ought to have the data.

Mr. O'Connor, of the Brooklyn Heights system, stated that the original, duplicate and triplicate requisitions proposed in the report were used in the Brooklyn Heights system at the present time, and he invited anyone interested to call at Fifty-Second Street and Second Avenue, Brooklyn, where he would be pleased to show the *modus operandi* of the scheme.

Mr. Moore, of Pittsburgh, Mr. Duffy, Mr. Schurtz and Secretary Broekway each reported the use of the same thing.

The respective merits of the lot-number plan and the keeping of a stock ledger were discussed at great length, and developed quite a decided diversity of practice and opinion as to methods. Many illustrations were given in cases in actual practice, to bring out the advantages or the defects of the plan proposed by the committee, as bearing upon its usefulness in indicating most readily the information to be desired through supply accounts, at the conclusion of which discussion Mr. Smith asked for an expression of opinion from the meeting as to the advisability of using the lot-number system. A call for the ayes and nays upon the question showed twelve companies in favor of and sixteen companies opposed to its adoption.

PRESIDENT HAM: I suppose we are not to understand that the whole thing hinges upon this?

MR. SMITH: Oh, no. You can kill it by inches. (Laughter.)

President Ham then appointed the following committees:

On Resolutions—Messrs. Hibbs, of Jersey City; Boyle, of Louisville, and Goodrich, of Omaha.

On Nominations—Messrs. Henry, of St. Louis; Barnaby, of Brooklyn, and White, of Hartford.

A meeting of the executive committee was announced at the Fifth Avenue Hotel at 10 o'clock on Thursday morning.

J. H. Davies, well known to the association as one of its active members in former years, and now an honorary member, having withdrawn from the street railway business, was invited by the president to address the convention, and responded, briefly expressing his pleasure at being able to meet with the association once more.

On motion, adjourned until Friday, Oct. 11, at 10 a. m.

### Extension of the Snoqualmie Falls Power Company Installation

Two years only have passed since the first current from Snoqualmie Falls was carried into the cities of Seattle and Tacoma, Wash., but in this short time the capacity of the initial installation has become too small, so that the plant is, therefore, to be enlarged to meet the increasing demand for power in these growing Western cities. In the power station at the falls, distant 44 miles, in an air line from Tacoma, and 32 miles from Seattle, are installed four generating units, each consisting of a water-wheel direct-connected to a 2000-hp Westinghouse three-phase alternator. The water-wheels are of the impulse type, and the generating sets are placed in a chamber excavated in the rock.

This power transmission system, now generating and distributing 8000 electrical horse-power, is to be more than doubled in output. At the same transmission voltage now employed, 30,000 volts, it is proposed to carry 12,000 hp more into the cities above mentioned, making a total output of 20,000 electrical horse-power. The electrical machinery is to be wholly furnished by the Westinghouse Electric & Manufacturing Company, of Pittsburgh, but the contracts for the hydraulic machinery have not yet been given. The Abner Doble Company, of San Francisco, which furnished the water-wheel equipment for the initial installation, as well as other companies, are bidding for this part of the work. If an impact wheel is used, there will be a single wheel on each end of each generator shaft, and each wheel will be driven by a single jet of water, 14 ins. in diameter, the two jets combined being sufficient under the existing head of 270 ft. to give the requisite power. The two water-wheels and the generator between will be built on a single hollow shaft, of oil-tempered, nickel steel.

The present underground generating station, which is 200 ft. long, is to be lengthened out 150 ft. up stream, to make room for the new installation. A new penstock is to be built, which will carry 50 per cent more water than the old one. The transmission line, that is to parallel the old line, will require 125 tons of aluminum wire, and the order for it has already been placed. At Tacoma a large and commodious brick and stone sub-station is now being erected. The entire cost of these improvements will be in the neighborhood of \$400,000. The work is to be vigorously prosecuted, and it is expected that the first of the new generators will be delivering current into Seattle and Tacoma within the next nine months. The new generating machinery will consist of three 3000-kw (4000 hp) rotating field generators, of the two-bearing type, generating a three-phase current at 1100 volts and 7200 alternations. The speed is to be 100 r. p. m. Each generator will require an exciting current of 320 amps. approximately, at 125 volts. For exciting these three generators a 200-kw, eight-pole, direct-current generator, of the two-bearing type, is to be used. At 175 r. p. m. it is to deliver, under normal load, a current of 1600 amps., at 125 volts.

The current, which is generated at 1100 volts, is to be raised to a line potential of 30,000 volts by nine 1000-kw, oil-insulated, water-cooled transformers, which are to be delta-connected on both the primary and secondary sides. It is estimated that each transformer will weigh 11,000 lbs., and require 500 gallons of oil. The switch-board that is to be installed is to consist of fourteen panels, of white marble, and is to be of the special type that was furnished for the original installation. Instead of the Niagara-type, single-phase indicating wattmeter that is in use on the present switch-board, a polyphase long-seal indicating wattmeter is to be used. Where formerly a plug switch was used in the field, a double-pole switch is to be employed. The standard equipment of synchronizing lamps is to be replaced by a single-pole plug switch, mounted on the generating panel, and connected to a synchroscope, which will be mounted on the multiplying panel. The increased capacity of the generators will necessitate placing three single-pole main switches instead of one three-pole main switch. The circuit breakers, which are to be non-automatic, will be placed on an extension panel above the main instrument panel.

Practically all the electric railway lines in both Seattle and Tacoma are supplied with power by this company. At Seattle the railway current is supplied by rotary converters, and at Tacoma induction motors drive railway generators. The contemplated additions, therefore, will be of great advantage to these railways, placing at their disposal a large reserve power for future extensions.



## SOME OF THE EXHIBITS

It is, of course, impossible at this early date to give a complete description of the multitude of the extremely interesting exhibits that were crowded into Madison Square Garden. The convention was the largest in this respect, as in all others, that has ever been held. Although the hall was much more roomy than ordinarily, every bit of space was occupied and the aisles were crowded with delegates and sightseers. The obtaining, therefore, of even meager descriptions of the various exhibits was attended at times with great difficulty. Below are given partial descriptions of a few of the attempts of the manufacturers who were present to make their specialty of interest to the attending delegates, but not until next week can justice be done to the most remarkable collection of individual apparatus ever held in Madison Square Garden. In view of the fact that few of the exhibits were in readiness in time for their reproduction, these notes are accompanied by only a few illustrations, which were made from snapshots happily obtained in season.



EXHIBIT OF THE OHIO BRASS CO.

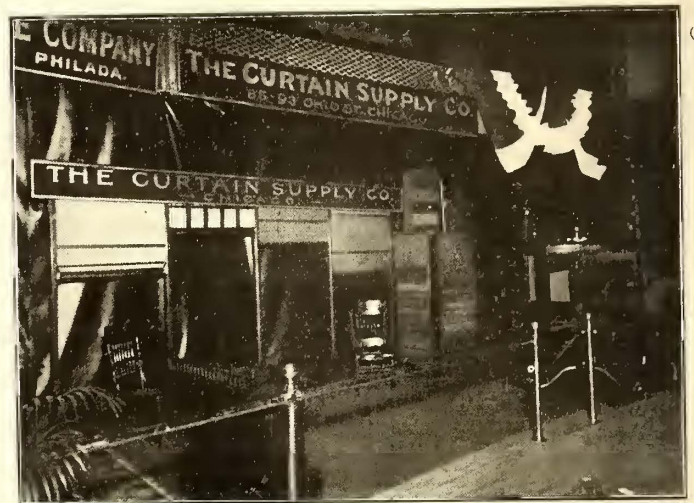


EXHIBIT OF THE CURTAIN SUPPLY CO.

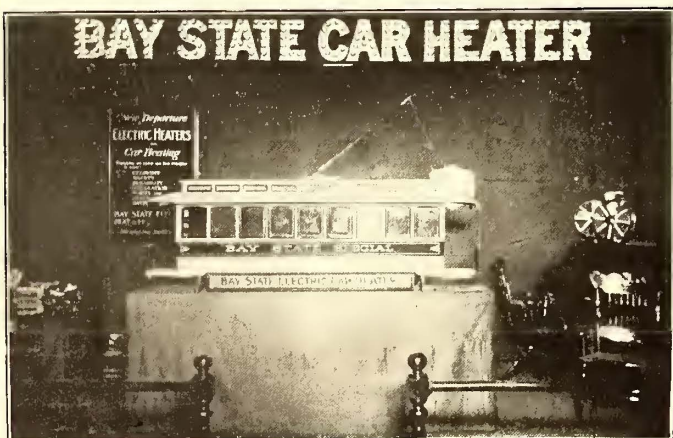


EXHIBIT OF THE BAY STATE CAR HEATER

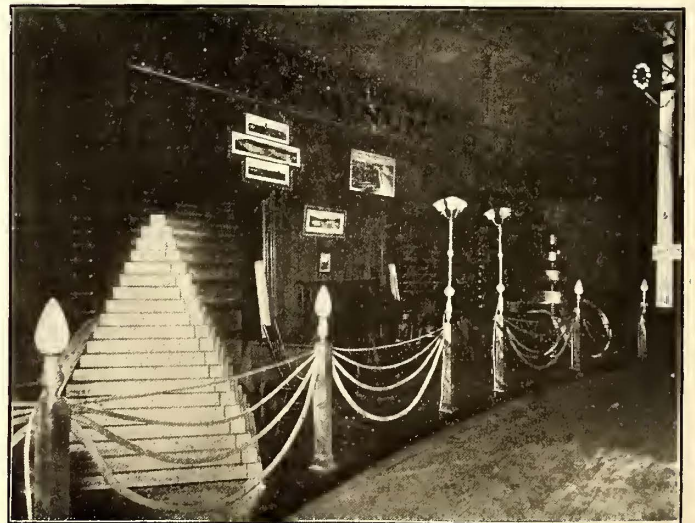


EXHIBIT OF THE PITTSBURGH REDUCTION CO.

THE CURTAIN SUPPLY COMPANY, of Chicago, was fully represented by W. H. Forsyth and A. L. Whipple. As a background for the exhibit was a set of four different types of curtain fixtures for open cars, all of which are made by this company. In addition to this a large assortment of samples of curtain material could be examined. This exhibit occupied a prominent place on the south gallery. The completeness of the line offered was the impressive thing to the delegates, all of whom made a point of visiting this space.

THE OHIO BRASS COMPANY, of Mansfield, Ohio.—One of the most conspicuous displays was that of the Ohio Brass Company, which was located in the first balcony above the main

floor. This exhibit was very attractively arranged, and showed a representative line of overhead material, motor and car supplies and track-bonding devices, which were displayed on a pyramid of shelves, at the back and either end of which two very attractive posters were shown. At either corner and at the center of the exhibit several styles of the well-known "Wood's," "Richmond" and "Detroit" types of flexible pole brackets were shown mounted on iron poles. A very extensive and complete line of overhead materials, such as trolley wire hangers, ears, cross-overs, splicers, strain insulators, were exhibited, including many new types as well as improved forms of existing types of these articles. Among the newer types of trolley wire hangers shown were several forms of twin hangers for both straight line and single and double-curve suspensions. These hangers are designed for supporting two trolley wires on single-track electric roads to avoid the necessary complications of overhead switches and frogs where only one trolley wire is used. One of the well-known specialties manufactured by the Ohio Brass Company is the Monarch track

cleaner, which was shown mounted on a stand in such a way that its construction and operation might be readily seen. The company reports a very large and increasing sale for this device. Two types of adjustable track brush holders adapted to flat and upright guardboards, respectively, were displayed, as well as a variety of steel wire track brooms for them. The Ohio Brass Company was represented by the following gentlemen from the Mansfield office: C. K. King, secretary; G. A. Mead, electrical expert; G. A. Harwood and A. L. Wilkinson; also by R. A. Byrns and A. B. Edes, New York representatives of the company, and Burt Gellatly, of the Pittsburgh office. J. W. Porter and Max. A. Berg, the Chicago representatives of the company, were also on hand.



THE PITTSBURGH REDUCTION COMPANY, of Pittsburgh, had an extensive display of aluminum for electrical purposes. Aluminum cables, aluminum bus-bars and ingots made up the bulk of the exhibit, and with this part most of the delegates were familiar in advance. The most instructive part of the display to those who have not followed closely the progress in the use of aluminum for electrical purposes was the array of various kinds of joints and splices used with aluminum cable. Some of these joints were made by the process of compressing an aluminum sleeve around the ends of the cable. This makes a joint that is stronger than the cable itself. Another joint used extensively is the threaded sleeve, as is also the plain sleeve twisted. A. V. Davis, general manager; J. A. Rutherford, of Cleveland; Percy Hodges, of Boston; S. K. Colby, of New York; A. K. Lowrie, general sales agent, and William Hoopes, electrical engineer, looked after the company's interests.

THE BAY STATE ELECTRIC HEAT & LIGHT COMPANY, of Boston, had a handsome exhibit, consisting of a model of a car equipped with Bay State heaters, and also several full-sized samples of heaters. This heater is placed under the seat, and is supplied with air by a fan motor, which forces a draft of heated air through ducts under the seat and compels a proper diffusion of heat without depending on the uncertainty of natural draft. The principle is one that has been long established in the heating of public buildings. The heaters operate on from 5 amps. to 9 amps. The motors are in series with the heaters, and, as the current is varied in the heaters, field coils of the motor are cut in or out to keep the speed constant. The motor takes about one-sixth horse-power. Edgar S. Gardner, superintendent of the factory, was in charge of the exhibit. H. W. Gardner, superintendent of the heater department, and Gen. Benjamin F. Peach, treasurer of the company, attended the convention also.

THE NEW PROCESS RAWHIDE COMPANY, Syracuse, N. Y., exhibited a case of sample rawhide pinions, complete gears and blanks. The sign above this exhibit was of rawhide, such as is used in the pinions, and the difficulty experienced in putting holes in that sign to fasten it up was one of the best recommendations for the quality of stuff that goes into the new process rawhide pinions. A souvenir rawhide-covered match case and cigar cutter was given away by T. G. Meachem, who was with the exhibit. Secretary A. C. Vosburg was also on hand. A sample of a pinion which had been run 105 miles a day for fourteen months was shown. The teeth were worn to a knife edge, without giving away.

THE W. T. VAN DORN COMPANY, of Chicago, was represented as usual by W. T. Van Dorn, who received visitors in a booth on the south gallery. Photographs, models and blue prints of all the Van Dorn couplers were on exhibition, most of these being so well known to the street railway master mechanics of the United States that a display of the actual couplers was unnecessary. Mr. Van Dorn, however, had on hand a full-sized sample of the new design of couplers with which he is to equip 1000 cars of the Manhattan Elevated Railway Company, of New York, this being the most notable order for couplers ever placed.

THE GOULD STORAGE BATTERY COMPANY, of New York, in its exhibit, emphasized the features in the construction of its plates rather than made an extended display of the assembled cells. A number of samples of both formed and unformed plates illustrated the construction fully. The Gould plates, as is well known by those familiar with storage-battery work, have thin ribs or laminae spun on them from the solid lead sheet. These laminae vary in thickness from .012 in. to .024 in., and the grooves between vary from .008 in. to .012 in. The chemical process of forming which the plates undergo fills the space between laminae with active material. One of the novelties was a cell with an antimony-lead tank for central station use. This had glass plates inside for insulating purposes. This is the type of cell installed for the Lansing Street Railway power house. The antimony-lead cell has the advantage over glass, that it will not break, and the advantage over lead-lined wood tanks that there is no wood to rot. There was also exhibited a couple of 600-amp. hour cells, as installed in the Commercial Building, New York. W. W. Donaldson, sales engineer, was in charge of the exhibit. W. S. Gould, general manager, and A. S. Hubbard, consulting engineer, were also in attendance.

THE MORRIS ELECTRIC COMPANY, of New York, occupied an extensive space in the south gallery with exhibits of the many lines of apparatus which it manufactures and is agent for. George C. Ewing, president; E. P. Morris, treasurer, and H. S. Sanville, secretary, were assisted by Harry De Steese, traveling salesman. The Monarch registers, made by the Morris Electric Company in its new factory at East Orange, N. J., attracted

probably as much favorable attention as anything in this company's space. The Morris rail-bonds and overhead material now being made at the company's own factory were also much in evidence. Among the numerous lines for which this company is agent, and which were on exhibition, may be mentioned those of the Electric Railway Equipment Company, the Garton-Daniels Company, the American Electric Switch Company, the Hunter Illuminated Car Sign Company, the Globe Electric Manufacturing Company, the Erie Exploration Company, and the Bradford Belting Company.

THE GREEN ENGINEERING COMPANY, of Chicago, as announced by P. Albert Poppenhusen, who attended the convention this week, has recently had some changes in its officers. P. Albert Poppenhusen is now president and Herman A. Oppenhusen is treasurer.

THE WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY exhibited a large amount of their railway apparatus in a large space at the center of the main hall. Various types of railway motors, including the Nos. 49, 50, 56, 68, 76 and 81, were shown. A Peckham truck was included, equipped with two No. 49 motors, and a Brill maximum-traction truck equipped with a No. 81 railway motor. A large switchboard was used to control current on the trolley line of 100 ft. of track, upon which a Brill car was running, equipped with the recently perfected Newell magnetic brake being put upon the market by the Standard Traction Brake Company. This was a most complete exhibit, the track being rock ballasted and built on a grade, and the trolley wire being supported by tripartite steel poles, and all the other details of construction being of the most up-to-date character. The exhibit was under the direction of a large corps of well-known Westinghouse men, including C. A. Terry, Calvert Townley, B. H. Warren, F. H. Taylor, W. M. Probasco, L. A. Osburn, E. W. Y. Gray, F. H. B. Paine, C. W. Townsend, J. R. Ellicott, A. J. Brislin, J. M. Duncan, N. W. Storer, A. J. Wurts, F. N. Kollock, Arthur Warren, W. S. Brown, Dudley Pendleton, H. N. Potter.

HAROLD P. BROWN, of New York, had, as the most prominent feature of his exhibit, a testing plant with a dynamo giving 3000 amps., and Weston instruments of the large laboratory type, reading with accuracy to the fifth decimal point. These were used for testing any rail-bonds, switches, fuse blocks, circuit breakers or other electrical devices submitted by any of the visiting railway men. There was also a display of the latest types of plastic rail-bonds and historical samples. Mr. Brown was assisted by James Hollwood, L. F. Jenks, J. Maxwell Coote, E. A. Mardorf, William Temple and John Roach.

THE PENNSYLVANIA STEEL COMPANY, of Steelton, Pa., went into the matter of exhibiting more extensively at this convention than heretofore, and visitors to its section found it to their interest. Among the features of the exhibit one, not entirely new, the anvil-faced frog, attracted the attention of those interested. An anvil-faced frog was shown, such as would be used in electric work, and also one street and steam crossing frog of very acute angle to illustrate the adaptability of this work. Split switches of various designs, which are familiar to railway men connected with interurban or suburban roads, were also shown. A reinforced switch, in which the rail is stiffened by an angle riveted to its web, thus doing away with the necessity of the many switch rods ordinarily used, besides materially strengthening and stiffening the rail, was also shown. In the girder rail work were specimens of "Adamantine" construction, and, in addition to these, the new system of "Iron-Bound" adamantine, in which the hard center plates are placed so that they are practically an integral part of the work. Another point to be noticed in this work is the fact that it is much lighter than any other "iron-bound" work which has been manufactured up to the present time. The general arrangement, surrounded as it was with switch targets and lanterns, made very pleasant impression. The company was represented by H. F. Martin, George W. Parsons, Mason D. Pratt, William C. Cuntz and C. W. Reinoehl, of Steelton; the New York agents, S. W. Baldwin, F. A. Burr and A. E. Aeby; Charles S. Clark, of Boston; Richard Peters, of Philadelphia; John T. Hill, of Baltimore, and F. W. Edmunds, of Chicago.

THE NEW HAVEN CAR REGISTER COMPANY, of New Haven, Conn., exhibited a full line of its various styles of fare registers, including a special duplex register, its new trolley catcher, full lines of punches, badges, trolley cords, leather cords and various styles of rod and cord fixtures for registers. W. M. Anthony, president; F. Coleman Boyd, vice-president; John S. Bradley, secretary and treasurer; M. De F. Yates, F. B. Kennedy and J. M. Hays were in attendance.

THE ROBINS CONVEYING BELT COMPANY, of New York, had in its space two model belt conveyors, with automatic self-reversing tripper, in operation. The scale of the models was

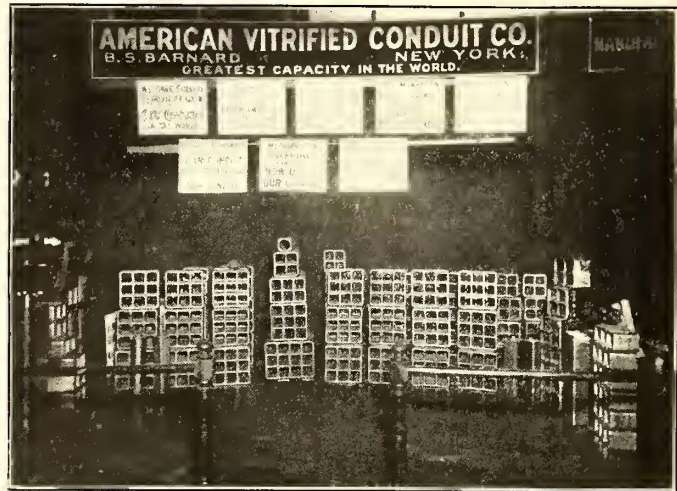


3 ins. to the foot, and they were exact reproductions of the full sized conveyors in every detail. Thomas Robins, Jr., president; Pierre Jay, secretary and treasurer, and C. Kemble Baldwin, chief engineer, were in attendance.

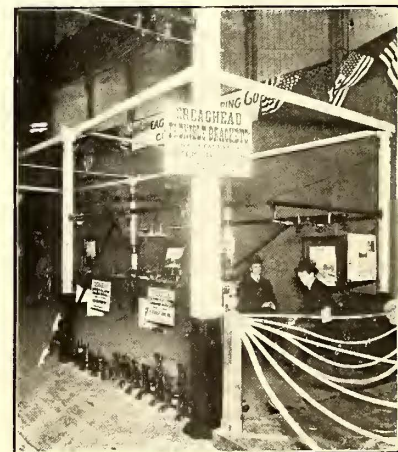
S. G. SCARRITT, of the Scarritt-Comstock Furniture Company, was at the Murray Hill Hotel displaying his car seats in one of the hotel parlors, as he was unable (much to his regret) to obtain space at the Madison Square Garden.

THE BERNSTEIN ELECTRIC COMPANY, of Boston, which makes the "Lowatt" incandescent lamp, had samples of this lamp on exhibition and a fine electric sign. The lamp contains a silvered mirror reflector on the inside of the bulb, which tends to throw the light in a useful direction. It is adapted to all places where a reflector would be used, and also for headlights. Edgar S. Gardner, superintendent of the factory, made an exhibit of this lamp in the booth of the Bay State Electric Heat & Light Company. Gen. B. F. Peach, treasurer of the company, was also on hand the last two days of the convention.

regular Christensen motor compressors for air-brake work, and an axle-driven compressor. Much interest was expressed by the delegates while examining the various pieces of apparatus in the high state of perfection reached in every detail, the aim of the company being thoroughly shown to be the giving of the very best workmanship and design. The exhibit was in charge of J. T. Cunningham and J. H. Dunton, assisted by C. P. Tolman, of the New York office. Besides the main exhibit a not less interesting feature was the recent application of compressed air to the operation of snow plows. On the other side of the hall the Taunton Locomotive Manufacturing Company exhibited one of its latest designed plows, a specialty in this line in which the nose of the plow was raised and lowered by this means without any exertion being made by the motorman. The power was furnished by the same motor compressor which supplied the air brakes, and a guide and scale having a traveling pointer was placed near the valve to enable the operator to retain a perfect knowledge of the position of his plow. The company was represented by N. A. Christensen, Milwaukee, Wis.; F. C. Randall, manager Eastern



EXHIBITS OF HEYWOOD BROS. & WAKEFIELD AND THE AMERICAN VITRIFIED CONDUIT CO.



EXHIBITS OF THE CHRISTENSEN AIR BRAKE CO. AND THE CREAGHEAD ENGINEERING CO.

THE CHRISTENSEN ENGINEERING COMPANY had a most artistically arranged space on the main floor. It was one of the largest spaces allotted, and contained, besides a large amount of the company's well-known air-brake apparatus, ample room for the accommodation of the numerous friends and interested engineers who paid it a visit. The main exhibit of the company consisted of two distinct assemblages of apparatus representing complete car equipments for both automatic and straight air brakes, and included engineers' valves and gages, compressors, storage cylinders and brake cylinders, together with the necessary piping. The compressors, which were of the motor-driven type especially perfected by the Christensen Company, were connected to the electrical mains of the building, so that all the parts were shown in actual operation. These two full car equipments were supplemented by other standard compressors in all four of the

district; James H. Denton, chief engineer, Eastern district; Henry Pels, representative in Germany; George S. Hastings, Western representative; W. A. Grauten, Western representative; J. T. Cunningham, representative Eastern district; George Cadwell, Milwaukee office; R. S. Sutton, Milwaukee office; C. P. Tolman, engineering department, Eastern district; A. B. Brodock, engineering department, Eastern district; W. H. Goble, engineering department, Eastern district; J. F. Dixon, Jr., New York office; J. N. Leet, engineering department, Western district; J. E. Eldred, engineering department, Western district; C. N. Leet, engineering department, Western district.

THE CREAGHEAD ENGINEERING COMPANY, of Cincinnati, was on hand early with a display of its overhead material. This company, as street railway men well know, has always made a specialty of flexible brackets for trolley wire suspension, and



these brackets, artistically arranged, formed the chief feature of the exhibit.

HEYWOOD BROS. & WAKEFIELD COMPANY, Wakefield, Mass., had a small but interesting exhibit of car seats, both of the ordinary type and the revolving-chair type. The latter, which are prominent in the accompanying engraving, were of special interest on account of the new Brooklyn cars which have seats of the same type, and which, on account of its novel seating arrangement, probably attracted as much attention as any exhibit at the convention.

THE AMERICAN VITRIFIED CONDUIT COMPANY, of New York, made a display of conduit in single and multiple forms, presided over by B. S. Barnards, general sales agent. The Manhattan Railway is now putting in 2,000,000 ft. of this conduit, and the street railway systems of Greater New York are extensive users. The number of large companies using vitrified conduit of this make was shown by a set of placards on the back of the booth, the array being a most imposing one. The American Vitrified Conduit Company also makes a third-rail insulator, and 50,000 of these are being supplied for the electrical equipment of the Manhattan Elevated Railway, New York.

THE McROY CONDUIT WORKS was represented by E. F. Kirkpatrick, of Chicago. "Kirk" says that having sold the entire output of their factory for the next year, they have found it necessary to increase their facilities, and they are now installing electrical machinery to operate their entire plant. This will enable them not only to do twice the amount of work, but also to lessen the price of production.

THE TRIPARTITE STEEL POLE.—Much interest and favorable comment was caused at the Garden on Wednesday and Thursday by the attractive exhibit of the Electric Tripartite Steel Pole Company, of New York. Delegates to previous conventions have become familiar with this pole by models which have been exhibited there, but at this convention full sized poles were also on exhibit. They occupied the most conspicuous position in the Garden; that is, they were near the center of the arena, in fact supported the trolley wire used by the electric car of the Westinghouse Electric & Manufacturing Company. In addition, the company referred to poles of this type in use by the Union Railway Company in the northern part of the city. Both Mr. Conger and Giles S. Allison attended to the interests of the Electric Tripartite Steel Pole Company, and were kept busy answering questions about and explaining the merits of the new pole.

THE HAM SAND BOX COMPANY, Troy, N. Y., displayed its various types of boxes, some six in number. No. 4 box for closed cars, intermittent flow. No. 5 box for open cars, where the boxes are placed under the platform, intermittent feed. The No. 7 box under the car seat, intermittent or continuous feed, and the No. 8 box, the most recent of all, this well-known type of box to be marketed, which is practically a continuous flow operating in either direction. The exhibit was under the charge of Francis Granger, the New York agent, while the company was represented by A. W. Ham and A. M. Wight.

ROSSITER, MACGOVERN & COMPANY, New York, was well represented by Frank MacGovern, who is widely known in street railway circles in New York and throughout the country. This company has recently increased its capital stock, and is about to enter into even greater fields of usefulness than before.

THE MCGUIRE MANUFACTURING COMPANY, of Chicago, represented by B. F. Stewart, sales manager of Chicago, and Mr. Davenport, was unfortunately in the allotment of space but had a sample of one of 300 trucks for the Great Northern Railway, of England, on exhibition in the south gallery, and also one of thirty trucks for the Birkenhead Corporation, Birkenhead, England. The Royal Flush fender was also shown. The shipment of such large orders of trucks from Chicago to England was a source of much notable comment favorable to the goods that could command such orders in spite of such distances.

GENERAL ELECTRIC COMPANY.—Conspicuous at the main entrance to the garden was the exhibit of the General Electric Company, covering about 250 sq. ft. The general arrangement of the exhibit was such as to permit the public to easily examine all of the material shown. The principal feature was the type-M train control for electric railway motors, of which about 1000 equipments have been ordered by the Manhattan (Elevated) Railway. This is shown in actual operation; a sign with incandescent lamps being substituted for the motors, by means of which the rise in voltage, which is comparable with the rise of speed in electric motors, was shown by the varying brilliancy of the filaments of the lamps. Of considerable importance was the electrically operated oil circuit breaker for 11,000 volts, which was also shown in practical operation. This is the type of switch to be used extensively by the Manhattan (Elevated) Railway. There

were also direct and alternating-current switchboard panels similar to those furnished this company for use in New York City. Another feature was the section of underground conduit showing the construction followed by the Metropolitan Street Railway Company in this work, the electrical equipment for which is furnished by the General Electric Company. Two of the big G. E.-66, 125-hp motors which will be used by the Manhattan Railway were also to be seen in the General Electric Company's space. Other railway motors of the various types used in modern railway apparatus are shown by the company as indicating the present development along these lines. Electric brakes were also shown. Grooved trolley wire and the various line material required in its installation form an interesting part of the exhibit. There are also collections of various repair parts and supplies made by this company, in which electric railway men are particularly interested. At the middle part of the company's space a comfortable reception space was arranged. The following is a list of the General Electric Company's representatives at the convention: J. R. Lovejoy, W. B. Potter, R. H. Beach, C. C. Pierce, J. J. Mahoney, E. H. Mullin, T. P. Bailey, J. W. Buell, R. E. Moore, S. W. Trawick, F. H. Strieby, G. D. Rosenthal, F. F. Barbour, J. C. Calisch, H. H. Coreon, F. Cutts, J. G. Barry, A. H. Armstrong, T. B. Whitted.

THE CRANE COMPANY, Chicago, had a large collection of valves, pipe fittings, etc., in both brass and iron. The background and sides of the company's space was formed by numbers of the Crane specialties built up into peculiar shapes by connecting various sizes of pipe and accessories. Near the front were placed large valves and other separate pieces of standard stock. Sections of both gate and globe valves were shown by partially cutting away the metal, the details of construction being clearly shown by this method. A 24-in. gate valve at the corner and several examples of extra-heavy brass globe valves and gate valves, together with a valve intended for 800 lbs. per square inch working pressure, attracted the notice of all interested in hydraulic appliances. A tree made of piping had been constructed in the rear of the exhibit, and bore many varieties of oil cups, bib and compression cocks, gage cocks, nozzles, grease cups, whistles, etc., etc. An extra heavy valve, intended for a working pressure of 250 lbs., was also shown. This valve had an outside screw and yoke, and was fitted with a by-pass. The exhibit was in charge of P. A. Kimburg.

THE TAUNTON LOCOMOTIVE MANUFACTURING COMPANY, Taunton, Mass., had a complete snow plow on exhibition in the northeast corner of the main hall. A great novelty in the operation of this machine was the utilization of compressed air for the raising and lowering of the nose of the plow. Instead of having to move a heavy lever in order to change the position and so necessitate the employment of another man, the new Taunton plow can be easily adjusted by the motorman himself as easily as his air brake can be applied. A cylinder similar to a brake cylinder is the mechanism used to obtain the pull on the plow, and it is operated by an ordinary air-brake equipment. A Christensen A-1 motor-driven air compressor is used, as well as Christensen valves and gages. A straight gage carrying a pointer is always under the motorman's eye, and indicates accurately the height of the plow's nose above the rails.

EDWIN H. CHAPIN, of the Rochester Car Wheel Company, had many friends at the Garden, and was one of those who seemed to know everybody. He has attended a large number of conventions, but this is the first one at which he has been present as the representative of the Rochester Car Wheel Works. He had a very attractive souvenir, which was very popular with all.

THE RELIANCE MANUFACTURING COMPANY, of Brockton, Mass., made an exhibit of the Valentine automatic block signal for single and double-track roads and crossings. These signals have been previously described in these columns. D. Valentine, the inventor, was in attendance and explained the system to many interested operators of interurbans.

FRANCIS GRANGER, New York, had the largest and most prominently situated space in the annex, attracting the attention of all who entered this section. Mr. Granger is manufacturers' agent for a large number of different out-of-town concerns making different parts of railroad equipment and appurtenances, and numbers among his agencies the Corning Brake-Shoe Company, of Corning, N. Y.; the R. Bliss Manufacturing Company, of Pawtucket, R. I.; the Ham Sand Box Company, of Troy, N. Y.; the Lehigh Car Wheel & Axle Works, of Catasauqua, Pa.; the Hipwood-Barrett Car & Vehicle Fender Company, of Laconia, N. H.; the New Haven Car Register Company, of New Haven, Conn.; Messrs. McJilton & Company, of Brooklyn, N. Y., and the Sterling Electrical Manufacturing Company, of Warren, Ohio. In Mr. Granger's space the New Haven Car Register Company exhibited its various styles of registers on a shield, the company having a regular exhibit in another part of the building. There was also displayed an elaborate assortment of conductors' badges,



punches, trolley cords, trolley tenders and various other railway appurtenances and small supplies that were of great interest to the visiting delegates. Mr. Granger's personal staff consisted of himself, William Hibbard, A. B. Dalby and E. J. Richter, who all did their utmost to entertain the delegates with the many superior, practical and standard devices that were being presented.

UNION STOP SIGNAL COMPANY, of Fall River, Mass., was one of the new exhibitors. This company makes a signal which is intended to be operated in connection with a telephone despatching system. The signal is operated by a machine at the dispatcher's office, which automatically records the date, time and number of signal operated, whenever any signal on the line is set to stop a car. It has always been one of the admitted weak points

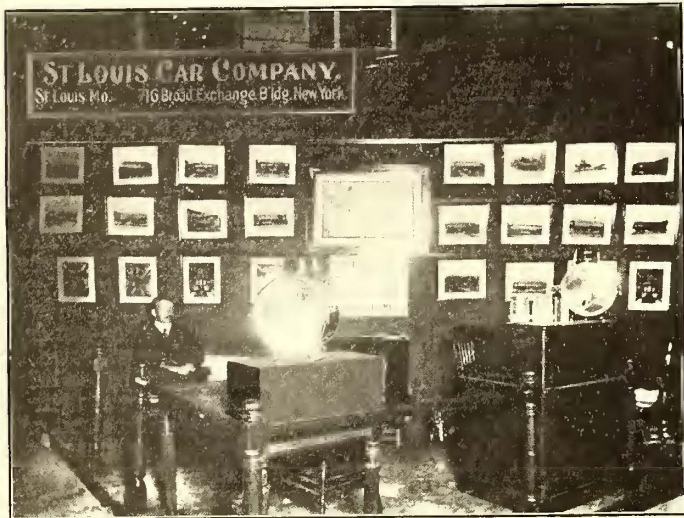


EXHIBIT OF THE ST. LOUIS CAR COMPANY

of the telephone despatching system, as used on electric roads, that the dispatcher cannot always communicate with the train crews operating on the line, because at times when there are delays it is sometimes necessary to stop cars which are on time and running on the regular schedule. The conductors of such cars could not be expected to call in the dispatcher at every telephone station on the line, because by so doing in ordinary operation there would be unnecessary delay. With a signal at each telephone station which can be set to indicate to conductors that the dispatcher has a message, the telephone despatching system is rendered much more valuable. O. W. Hart, general manager of the company, attended the convention, and called attention to the fact that the use of the "Union" stop signal, together with the telephone system, puts electric lines on the same basis as the steam roads which have telegraph operators at every station.

THE UNITED STATES ELECTRIC SIGNAL COMPANY, of Watertown, Mass., which has made a long study of the block-signal problem for single-track roads, and which has reached a high state of perfection with its apparatus, made its usual exhibit of a pair of signals and trolley wire instruments for operating signals. The car entering the block operates the trolley wire instrument, which throws the signal ahead of it at the end of the block to danger, displaying a red light. The signal behind the car is set to caution, displaying a white or other colored light, as the company using it may desire. Two signal wires are required. One of the most difficult things to perfect was a trolley wire instrument which could be operated at all speeds by the trolley. In this respect the United States Electric Signal Company has been unusually successful. Dr. F. E. Withee, secretary; J. J. Ruddick, superintendent, and James H. Nickerson, were at the convention. The Henderson car sign, which this company manufactures, was also shown.

THE EUREKA BOILER COMPOUND COMPANY distributed circulars liberally among the delegates through Mr. Palmer, the general manager of the company, who made his headquarters in the space of Francis Granger.

THE STERLING ELECTRICAL MANUFACTURING COMPANY, of Warren, Ohio, lighted the annex with its special lamps, and samples were shown of the various types and descriptions in the enclosure of Francis Granger. William Coale represented the company.

THE ST. LOUIS CAR COMPANY, St. Louis, Mo., showed many handsome photographs of the fine cars turned out, and had one of its improved headlights on exhibition. The exhibit of the company was in charge of F. E. Huntress.

THE HIPWOOD-BARRETT CAR & VEHICLE FENDER COMPANY, New York, exhibited a full-sized platform and fender, equipped for practical demonstration, while a small model was fitted up to run on a model track, showing the operation of the fender on an uneven roadbed. The model was in quarter scale, and the rail and roadbed built proportionately. The roadbed was made to imitate Belgium blocks, and the fender shown in operation going over such depressions and unevenness of road as to make the street commissioners hold up their hands in holy horror. The company also displayed in various parts of the building, as well as their own booth, perpetual mutoscopes, giving actual tests of the fender. The exhibit was under the charge of Francis Granger and his personal staff, while the company was represented by A. B. Dalby and Messrs. Hipwood and Barrett.



EXHIBIT OF THE NATIONAL LEAD COMPANY

THE CORNING BRAKE-SHOE COMPANY, Corning, N. Y., displays various types of brake-shoes. The standard type of shoe used by the Brooklyn Heights, surface and elevated cars; the standard of Coney Island & Brooklyn, Manhattan Elevated, and various other railroads operating in greater New York were shown. They also showed sections of broken shoes, showing the position of the insert, or soft iron center, and a recent departure in the shape of a third-rail contact shoe, which this company has just brought out. Insert blocks of various descriptions and styles were on exhibition, and the company presented the delegates with a rather tasty catalogue, which attracted considerable admiration. The exhibit was under the direct charge of the company's Eastern agent, Francis Granger, New York, and other representatives of the company, as well as its officers, J. B. Terbell, president; C. G. Bacon, vice-president, and H. T. Mercur, general salesagent, were in attendance.

THE HUNTER ILLUMINATED CAR SIGN COMPANY, of Cincinnati, had an extensive exhibit of its illuminated car signs and also a special rotary advertising sign for general advertisers. This sign attracted a great deal of attention. It is constructed to work automatically, being run by a motor operating on the outside of the sign. This motor operates curtains on which are displayed advertisements of general advertisers, such as appear in street cars, magazines, newspapers, etc. These signs are intended to be placed in the front of business houses of the larger cities. It is one of the most unique advertising devices ever invented. The representatives of the company present at the convention were Lytle J. Hunter, E. L. Hawkins and William Willing.

STANLEY ELECTRIC MANUFACTURING COMPANY, Pittsfield, Mass., is now entering the railway field, and Samuel T. Dodd, manager of the railway department, visited the convention to interest street railway men in his company's new work in that line. The company was also represented by Charles E. Bibber and Messrs. Kelly and Jackson, of the engineering department.

THE BIERBAUM & MERRICK METAL COMPANY, Buffalo, N. Y., represented by William H. Barr and E. P. Sharp, had a neat little display of lumen-bronze bearings and steel-flange trolley wheels. A programme in condensed form, which this company issued and sent to all street railway men, was much appreciated because of its excellent arrangement for ready reference.



ADAMS & WESTLAKE COMPANY, of Chicago, was represented by W. W. Willets, vice-president and general manager; W. S. Bartholomew, Eastern manager; E. H. Stearns, A. S. Anderson and J. A. Foster. The display of this company consisted of arc headlights, interior arc lamps, signal lamps, both oil and electric, and brake handles. This company has always played an important part in the railway lamp business, and the exhibit indicated that it intends to keep the place under the changed conditions brought about by higher speed electric railroading.

THE KINNEAR MANUFACTURING COMPANY, of Columbus, Ohio, exhibited, in charge of Ferdinand C. Schmidt, secretary, the Kinnear car-house doors for large openings equipped with trolley-wire connections. This company furnishes a great many doors for car houses, and also for other purposes where a fireproof door is required, not only for use in America but in Europe.

THE H. B. CAMP COMPANY, of Akron, Ohio, manufacturers of vitrified clay conduit duct, made a display of samples under the charge of Charles C. Baird, of the New York office, who was prepared at any time to take delegates out over conduit work being done with Camp conduit in New York and vicinity.

THE BISHOP GUTTA PERCHA COMPANY, of New York, had a neat display in charge of H. D. Reed, superintendent of the company, and I. W. Smith. In this exhibit a specialty was made of railway cables, this company having been unusually successful in supplying wires for car wiring where moisture-resisting qualities are especially needed. Some pieces of raw gutta percha and para rubber were instructive as to the origin of our most valuable insulating material.

THE R. BLISS MANUFACTURING COMPANY, Pawtucket, R. I., owner and manufacturer of the Wood patent safety car gate, displayed a full-sized platform, mounted and equipped on one side with the standard gate, which is so extensively used on the Brooklyn Heights Railroad, Boston Elevated, Union Railroad, Jersey City, Hoboken & Paterson Railroad, Third Avenue Railroad, and various others throughout the country, too numerous to mention. The other side of the platform was equipped with a double folding gate, applicable to vestibuled cars, wide platforms or narrow bulkheads cars, as the gate folds in half its span. Various other styles of gates were on exhibition. The exhibit was under the charge of Francis Granger, and his personal staff, while the company was represented by General Manager N. H. Colwell.

THROUGH THE COURTESY OF THE COMPRESSED AIR COMPANY, New York, the delegates were invited to inspect the works of the company, at Rome, N. Y. The length of the journey and the inability to arrange for sufficient time for the extended trip during the regular programme of the convention prevented the Compressed Air Company from giving a special excursion, but tickets to Rome could be obtained for the asking, and the well-known generosity in such matters of H. D. Cooke, the president, guarantees that anyone accepting the invitation will be well entertained. The Compressed Air Company has recently perfected some special designs of motors for the independent operation of cars, and the opportunity afforded for investigating this most important subject in both city and interurban traction work will probably be utilized by many of the delegates. Tickets can be had at the company's office, 621 Broadway.

GEORGE L. R. ELDRIDGE, president of the Acme Switch Company, Hartford, Conn., was in attendance at the convention. Much interest was manifested in the new Acme Time Switch, which Mr. Eldridge explained, and which is designed to cut in or throw out lights, motors, etc., at given hours.

THE KEYSTONE ELECTRICAL INSTRUMENT COMPANY, Philadelphia, was represented by J. F. Stevens. It exhibited a full line of switchboard and portable instruments in various types and ranges, contained in cases, showing a number of attractive styles of finish. A feature of the exhibit was a new vehicle volt-ammeter. This instrument is the result of much practical and successful experience. The black enamel case adopted as a standard finish is attractive and serviceable. The exhibit was placed in the Morris Electric Company's booth.

THE STERLING VARNISH COMPANY and the PITTSBURGH INSULATING COMPANY, of Pittsburgh, had a very attractive exhibit in charge of H. Lee Bragg, several salesagents and S. C. Schenk, Eastern representative. They showed samples of their new insulating fabrics, made by applying Sterling insulating varnish to various grades of paper and linen. These fabrics have a guaranteed insulation of from 8000 to 15,000 volts puncture test. Sample books containing specimens of the various grades were distributed. A feature of this exhibit was a number of sheets of Penn Sterling varnish obtained by applying the varnish to glass, baking, and stripping.

THE CLING SURFACE MANUFACTURING COMPANY, Buffalo, N. Y., had a space in the balcony, where Charles F. Chase, Eastern manager, explained that "the days of tight bolts are over," and showed what Cling Surface will do. An attractive circular illustrating belts treated with Cling Surface in many shops was distributed.

THE FRANKLIN ELECTRIC MANUFACTURING COMPANY, Hartford, Conn., makers of "Femco" incandescent lamps, was represented by Jonathan Camp, manager. This company is making a special street railway lamp, and Mr. Camp found many opportunities to present this department of its business.

THE CONSOLIDATED CAR FENDER COMPANY, of New York, showed full-sized samples of its various types of fenders and other specialties. The fenders were attached to car platforms, and could be examined at pleasure by the delegates—most of them, however, being familiar with the "Providence" principles from personal observation on their own roads. Col. A. C. Woodworth was constantly in attendance, and in the first two days of the convention he sold more than twice as many of the fenders as at any entire convention ever held in his seven years' experience. A

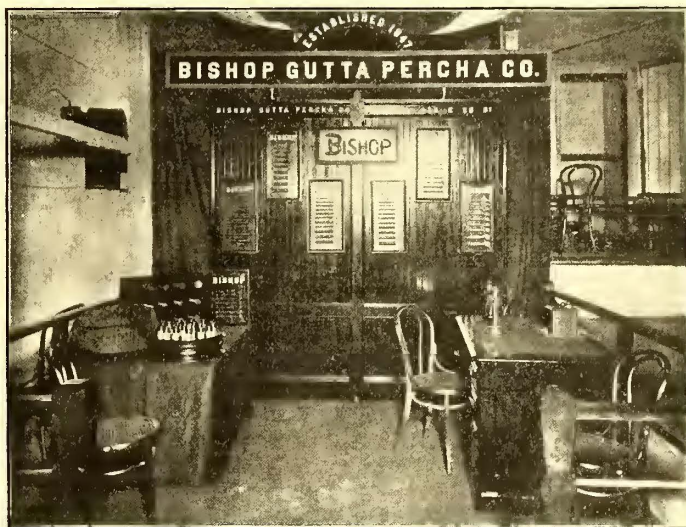


EXHIBIT OF BISHOP GUTTA PERCHA COMPANY

more detailed description of the Providence renders, Millen car-step lifter, Campbell snow broom and other specialties which he had on exhibition will be given next week. The exhibit of the Consolidated Car Fender Company, of New York, as usual, attracted wide interest, and its popularity was enhanced by two very neat souvenirs, which immediately became very popular. One was a treatise on life savers in general, although it did not refer to Consolidated car fenders. The other souvenir, like the Consolidated fender, was a drawing feature, and, in spite of the fact that the popular Colonel had laid in a large supply of these souvenirs, their number soon became exhausted.

THE J. G. BRILL COMPANY, of Philadelphia, had an extensive exhibit of the recently perfected specialties in rolling stock which it has produced. This included many new types of cars and trucks, all of which were ably described and their merits clearly brought out by a corps of gentlemen headed by W. H. Heulings, Jr., who devoted his time to the interests of his company by utilizing the knowledge he has of every detail of construction of the Brill products in helping the visiting delegates to thoroughly appreciate the advantages of the novelties recently invented by John A. Brill and other members of the company's staff. In the Brill exhibit itself no car was shown in its entirety, although an excellent example of Brill construction was given by the large vestibuled car which was used with the Standard Brake Company's operating exhibit in the Westinghouse space. Three sections of cross-seat cars, each extending two seats in length, was quite sufficient, however, to arouse great interest in the new designs, especially in the type of car particularly adapted to suburban summer service, which was indicated as the "Narragansett." It consisted of a two-step open body, which allowed sufficient space beneath to accommodate the large trucks necessary in four-motor operation. The upper step of this car is peculiarly formed by joining two angle-irons together in the form of a "Z," thus making a very rigid construction in the minimum amount of space for sills. The manner of attaching the side bars is also novel, heavy iron pockets being provided in addition to the ordinary round seat end panels. The other two sections of cars show, respectively, the Brill convertible and semi-convertible



types, and the cut being made through the portion between the side posts the action of the sash and panels is entirely exposed for inspection, while opening and closing the sides. Beside the car sections were placed a 27-G truck having a four-wheel base for city and suburban traffic, and the No. 27 truck which is being supplied to the Brooklyn elevated railroads. This latter type of truck represents possibly the greatest advancement in some years in the design of the standard Master Car Builders' truck, as, owing to the peculiarities of its construction, it runs with great smoothness, and has the least possible tendency to kick up upon the application of the brakes. Other trucks were placed nearby.

THE ALBERT & J. M. ANDERSON COMPANY, of Boston, Mass., was represented by Albert Anderson, of the home office, and Ernest Woltman, the New York manager. The company showed a large amount of the high-class street railway supplies which have made its name familiar in connection with line material and switchboard accessories, and both Messrs. Anderson and Woltman explained the more unique features found in some recent developments in high-current work to the delegates. Not the least interesting of the articles in the booth were some specimens of Anderson apparatus which had been subjected to most severe usage and had withstood the effects with remarkable results. A trolley-wheel was shown which had traveled 10,000 miles on the Jungfrau Mountain Railway, and which had worn through in several places at the hub. The absolutely even wear shown by this trolley-wheel made further remarks on the excellence of the material of which it was composed unnecessary. An example of the stability of the Anderson insulating materials was shown by a trolley ear which had been subjected to a short-circuit which had completely fused away one side of the ear and melted the iron casing of the insulation. This immense heat had, however, failed to effect the insulation to any appreciable extent. The space was flanked on each side by very large direct-current switches, one of which was designed by T. H. Tapley, chief electrician of the Government Printing Office, for use in Washington, and the other by the engineers of the New York Edison Company, for use in New York. This latter switch had a capacity for carrying easily 10,000 amps., and weighed 2500 pounds. It is practically a complete switchboard in itself, consisting of seven independent switches between massive bars of copper, and is mounted on a 5-in. slate base. The switch for the Washington printing office was a 6000-amp., double-pole, double-throw, double-break switch. In front of the booth were two "Monarc" enclosed-arc lamps especially designed for use on trolley circuits, and at the back were two boards containing small supplies. The one on the right showed a full line of the Ætna and Hecla specialties in overhead line material and third-rail insulators; while the one on the left contained many types of standard Anderson switches, etc. In the center of this latter board was a large 200-amp. switch and many types of quick-break switches were shown. The special type of switch used under the hoods of the Brooklyn Elevated Railroad cars and quick-break feeder switches for attaching to trolley poles, as well as an example of the well-known Ajax quick-break feeder switches, were also exhibited. In the center of the booth at the back were model panels for both feeder and generator sections of street railway switchboards.

THE NATIONAL LEAD COMPANY, of New York, exhibited a full line of the well-known Phoenix metal, solder wire, solder bars, Perfection anti-friction metal, Sterling journal metal and white lead and linseed oil. The company had had dies made of handsome medals, a trifle larger than a half-dollar, containing the picture of President Vreeland, of the Metropolitan Street Railway, and from these dies medals had been struck in Phoenix metal for distribution. The recipients were requested to try the toughness and durability of the metal with a hammer, and if they desired to obtain another souvenir they could have it by writing to the company. The National Lead Company is putting up a large amount of solder in small pieces, each piece being just large enough to solder a can or doing other small work. In this way a manufacturing house can prevent in a simple manner the stealing of solder by its employees, as there being so many pieces of solder per pound, it is extremely simple to keep an absolute check upon the work in hand. John Hadcock, Robert Boyd and E. L. Weithas represented the company.

THE TAYLOR ELECTRIC TRUCK COMPANY, of Troy, N. Y., had a number of its special electric traction trucks for both single and double-truck cars on exhibition. The exhibit was in charge of John Taylor, A. J. Tupper and Robert Kasson, and contained a standard 7-ft. wheel-base single truck and an extra heavy 8-ft. wheel-base single truck. Among the double trucks were two of the latest designs in short wheel-base trucks having outside hung motors, and an example of what is known as the Empire State radial truck. The regular swing-motion truck, with equalizer, and the extra heavy swing-motion truck, with equalizer, for high-speed interurban service were also shown.

THE CONSOLIDATED CAR HEATING COMPANY, of Albany, had a handsome exhibit of the standard car heaters which are in such general use throughout the country, and which have been adopted by so many roads recently around the vicinity of New York. C. S. Hawley, of the New York office, was in charge of this space, and some of the figures which he quoted regarding recent sales created considerable surprise among the attending delegates. The special heater which has been designed for use in the New York elevated cars after the electrical equipment of the road was shown in a prominent position, and in a new type of Brooklyn Rapid Transit car near by a new single coil heater for use on the side of the car was shown installed, a full equipment being provided.

THE SPRAGUE ELECTRIC COMPANY, of New York, exhibited a complete Sprague multiple-unit equipment as it would be installed on a three-car train consisting of two four-motor cars and a trailer. F. J. Sprague was in charge of the exhibit, and explained the details of his system to the delegates. Four Lorain motors in a row represented the motor equipment of one car, and four motors placed on Peckham trucks in the Peckham space adjoining represented the motors of the second car. The trailer was simply indicated by a long flexible connecting cable. With these three cars Mr. Sprague could make twenty-one combinations in coupling up, showing the great flexibility of the system, its adaptability to elevated service where there is small room for switching, and trains are made up in the shortest time possible.

THE LORAIN STEEL COMPANY, of Lorain, Ohio, had a handsome exhibit on the south aisle. This company not only showed a large amount of its special work for street railway service, but also had an extensive exhibit of its electric traction motors. A 37-hp motor was shown complete, open for inspection, and 50-hp and 75-hp motors were also included. A 50-hp armature was shown with the casing removed, so that the construction could be inspected. The company had, besides the railway motors shown in the booth, four 50-hp Lorain motors, with gears and case complete, in the space occupied by the Sprague Electric Company and operated by the Sprague multiple-unit system. A No. 64 controller for four-motor equipments and a No. 38 controller for two-motor equipments were also placed in the Lorain exhibit. A good deal of attention was attracted by the new parallel ground throw switch which has recently been brought out by the company. This switch operates by a cam movement in such a manner as to be practically proof against freezing or other ordinary impediments to perfect reliability, and is easily and surely operated at all times. Several frogs are shown with removable hardened steel plates at the points of greatest wear. Almost the entire front of the exhibit is lined with a row of short-rail sections placed on end, which show the almost infinite variety of rails for street railway work which are manufactured by the company. Major H. C. Evans, of the New York office, was in charge of the exhibit, and ably entertained the numerous friends who paid many a pleasant visit to the enclosure.

THE SHERWIN-WILLIAMS PAINT COMPANY, of Cleveland, Ohio, had a handsome indication of their importance in the railway field in the shape of two large signs, one on each side of the entrance to the annex. The design on these placards, representing a pot of red paint "covering the earth," is the familiar mark of the company, but many of the railway delegates were surprised to learn from the representatives of the company in attendance the large business with street railways which is being built up. Although the home office of the company is located at Cleveland, the many branches in New York, Chicago, Newark, Montreal, Toronto, Boston, San Francisco and Kansas City make it extremely accessible to all street railway managers, and the excellence of the company's product has influenced a large number to adopt it for their work. The members of the company in attendance at the convention were E. M. Williams, manager street railway sales department; J. F. Doyle, special street railway representatives; E. M. Richardson, manager marine department, and W. B. Albright, manager Eastern railway department.

THE GOLD CAR HEATING COMPANY, of New York, had in operation in its space a display of heaters which represented the full standard elevated railway equipment, consisting of eighteen heaters on a long wooden frame. The Gold Company in its new regulating three-point switch has perfected a device which fully meets the requirements of this heavy type of service, carrying in safety 60 amps., and breaking the circuit at this load on 650 volts without injury. The new switch is one of the principal features, in fact, of the exhibit. At the back of the space two handsomely finished boards represent two seat risers. The upper one contains three heaters which are recessed, or panel heaters, and the lower board contains three more which stand out from the riser. Several cross seats of the "Walkover" pattern are exhibited, equipped with the standard types of Gold heaters for this work. Edward E. Gold, William E. Banks, J. E. Ward and Frank Cahill had no



difficulty in keeping the interest of the numerous friends of the company who frequented the space, and distributed a handsome souvenir badge representing the "America" cup, which has recently been occupying so many minds.

THE LEHIGH CAR WHEEL & AXLE WORKS, of Catawqua, Pa., had a very interesting exhibit of their well-known car wheels in the space, under the direction of their Eastern agent, Francis Granger. The company showed a 33-in. spoke wheel, a 33-in. single plate wheel, and a 20-in. pony wheel for maximum traction trucks, which are all representative samples of the extensive business carried on by this company in street railway work. Some of the interesting features of the exhibit were chill blocks and other important factors connected with the manufacture of car wheels and sections of broken wheels, showing the chill were so placed that the delegates could readily examine into the excellence of the Lehigh Car Wheel & Axle Works' products. The exhibit was made under the direction of Francis Granger, the Eastern agent, while the company was represented by B. F. Swartz and J. W. Fuller.

THE PECKHAM MANUFACTURING COMPANY, of New York, had a large space in the central portion of the hall, which was filled with its well-known trucks and accessories. The exhibit was directly under the supervision of Edgar Peckham, who was assisted by W. G. Price, A. W. Field, B. R. Stare, G. W. Bowers, W. H. Stare, Warren Boyer, and J. A. Hanna, the Western agent of the company. Two maximum traction trucks, two city service trucks, with four-motor equipments and 33-in. wheels; one Excelsior single truck, and four high-speed interurban trucks for specially heavy service, were shown in the company's own space, and in the Westinghouse section, near by, was exhibited a Metropolitan special truck, equipped with Westinghouse motors. Several examples of the recently perfected Price hydraulic brake were shown, and the operation was practically illustrated by one brake, which was attached to a truck equipped with motors, and so arranged that it could be operated at pleasure.

WILLIAM WHARTON, JR., & COMPANY, Incorporated, of Philadelphia, had a handsome exhibit in the main hall at the right of the entrance, containing some very fine examples of special work, and photographs of various track layouts, installed by this company. A full-sized switch was placed on end in the middle of the space, which contained manganese steel sections at all the points of maximum wear, and in the center of this fine piece of work was hung a blue print of the famous Dewey Square layout at Boston, one of the most difficult pieces of special work ever made in this country. The exhibit was in charge of William Wharton, Jr., Victor Angerer, W. Rodman Wharton, W. J. Burns and R. C. McCoy.

### The Wabash Special from Chicago

A large number of street railway officials and supply men left Chicago for New York Monday at 3 p. m. The train consisted of four Pullman cars, a dinner and baggage car. It was in charge of W. C. Keeran, of the Wabash road, and had the right of way over all other trains. Detroit was reached in six and one-half hours. All enjoyed the ferry ride, the American and Canadian shores showing brilliantly by electric lights. The train passed through Buffalo Tuesday morning before many of the travelers were astir, but at 7 o'clock the porter roused every one with his call for breakfast. The dining service and menu on these cars was excellent. At Syracuse the train took the famous Empire Express engine 999. All day the beautiful scenery of New York State was viewed with delight, as the train rolled rapidly over the New York Central and West Shore tracks. A brief halt was made in the morning, where a collision between freight trains had wrecked two engines and several freight cars. The train arrived at Weehawken station at 4:45 p. m. Every one was well pleased with the services of both the Wabash and West Shore roads, and great credit is due Mr. Keeran for his attention to the personal comfort of the passengers. The party numbered seventy-seven persons, many gentlemen being accompanied by their wives. The following were on board:

H. B. Abbott, STREET RAILWAY JOURNAL, Chicago.  
 F. O. Adams, Mark Equipment Company, Chicago.  
 W. L. Arnold and wife, Arnold Electric Power Station Company, Chicago.  
 R. G. Arnold, Arnold Electric Power Station Company, Chicago.  
 G. H. Atkin, General Western Agent, Electric Vehicle Company, Chicago.  
 J. M. Atkinson, Chicago.

Theo. P. Bailey and wife, General Electric Company, Chicago.  
 Harry Beardsley, Kansas City Star, Kansas City, Mo.  
 David A. Belden, Aurora Street Railway Company, Aurora, Ill.  
 M. A. Berg, Porter & Berg, Chicago.  
 George S. Bigelow, Railway Department Chicago Varnish Company.  
 H. T. Bigelow, the Hale & Kilburn Manufacturing Company, Chicago.  
 James W. Buell, General Electric Company, Chicago.  
 George J. Caldwell, Christensen Engineering Company, Milwaukee.  
 W. P. Cospser and wife, Consolidated Car Heating Company, Albany, N. Y.  
 F. W. Edmunds and wife, Railway Supply Company, Chicago.  
 D. J. Evans and wife, Lorain Steel Company, Chicago.  
 Fred H. Fitch, Denison & Sherman Railway Company, Denison, Texas.  
 Harvey B. Fleming, Chicago City Railway Company, Chicago.  
 D. H. Goodrich, Omaha Street Railway Company, Omaha, Neb.  
 William A. Grauten, Christensen Engineering Company, Milwaukee.  
 Edward R. Grier, Bryant Electric Company, Chicago.  
 Thomas G. Grier, American Circular Loom Company, Chicago.  
 Harry M. Grier, Pantasote Company, Chicago.  
 J. A. Hanna, Chicago.  
 George S. Hastings, Christensen Engineering Company, Milwaukee.  
 T. A. Henderson, Chicago Union Traction Company, Chicago.  
 A. A. Hinton, St. Louis Car Wheel Company.  
 A. L. Hutchinson, Weyauwega, Wis.  
 J. H. Jagoe, Traveling Passenger Agent, West Shore Railroad, Chicago.  
 Leon Jewell, Chicago City Railway Company, Chicago.  
 N. C. Keeran, City Passenger and Ticket Agent, Wabash Line, Chicago.  
 William E. Keily, Western Electrician, Chicago.  
 E. F. Kirkpatrick, Western Manager, McRoy Clay Works, Chicago.  
 C. K. Knickerbocker, Griffin Wheel Company, Chicago.  
 John P. Laird, Kansas City, Mo.  
 M. W. Low, Little Wolf River Telephone Company, Fond du Lac, Wis.  
 C. E. Lund, Chicago City Railway Company.  
 J. H. McGill, Chicago.  
 J. G. McMichael and wife, Atlas Railway Supply Company, Chicago.  
 Richard McCulloch, Chicago City Railway Company.  
 John Millar, Master Mechanic Chicago Union Traction Company.  
 John S. Minary, Louisville City Railway Company.  
 J. Z. Murphy, Chief Engineer Chicago Union Traction Company.  
 P. Needham, Chicago Union Traction Company.  
 Edgar S. Nethercut and wife, Paige Iron Works, Chicago.  
 Michael O'Brien and wife, Master Mechanic Chicago City Railway Company.  
 R. H. Pierce, Pierce, Richardson & Neiler, Chicago.  
 J. W. Porter, Porter & Berg, Chicago.  
 W. D. Ray, Detroit Construction Company, Detroit.  
 W. E. Read, Consolidated Railway & Power Company, Salt Lake City.  
 Charles Remelius, Indianapolis Street Railway Company, Indianapolis.  
 W. P. Read, Consolidated Railway & Power Company, Salt Lake City, Utah.  
 F. W. Renshaw, Lappin Brake-Shoe Company, Chicago.  
 H. C. Schwitzgebel, Metropolitan Street Railway Company, Kansas City, Mo.  
 H. M. Sloan, General Manager the Calumet Electric Street Railway Company, Chicago.  
 W. A. Smith, General Manager Omaha Street Railway, Omaha, Neb.  
 William M. Smith, Secretary and Treasurer Chicago Insulated Wire Company, Chicago.  
 W. T. Van Dorn, Manager W. T. Van Dorn Company, Chicago.  
 Albert von Hoffmann, President Castweld & Construction Company.  
 William Walmsley and wife, Superintendent Chicago City Railway Company, South Chicago.  
 C. E. Wilson and Wife, Chicago City Railway Company, Chicago.  
 M. M. Wood, General Electric Company, Chicago.  
 Frank M. Zimmerman, General Manager the Elgin, Aurora & Southern Traction Company, Aurora, Ill.



### Annual Meeting of the Metropolitan Street Railway Association

The excellent work accomplished by the Metropolitan Street Railway Association, of New York, which goes on steadily through the year, comes to public notice prominently once in twelve months when the association holds its annual meeting. This occurred on the evening of Oct. 5, when the members of the association and their friends met at Carnegie Hall, listened to a report of President Vreeland on the year's work, and were afterward entertained by a first-class vaudeville performance, which lasted till late in the evening.

This association is composed of employees of the Metropolitan Street Railway Company, and was organized five years ago. Its main objects are: To secure to its members free medical attendance, about one-half of their wages when illness overtakes them, and \$150 in case of death, at an expense of 50 cents per month. It pays no salaries and its members are consequently entitled to receive a larger actual cash percentage of the dues paid than in any other known mutual assessment association.

In five years its membership has increased from 100 to 4071. In that time it has paid out, in sick and death benefits, \$61,208. It has a surplus invested in five bonds of the Metropolitan Street Railway Company and ten bonds of the Third Avenue Railroad Company, representing a cash value of \$16,000, from which it has an annual income of \$650. It has a library of 1500 of the best authors, which, with the bookcases, tables, chairs, six pool tables, etc., represent an outlay of about \$8,000. It owns a bed in St. Vincent's Hospital, the gift of President Vreeland.

Fifty cents a month from the earnings of any man in steady employment is a scarcely perceptible tax, and, considering the benefits it secures, is the most economical investment one can make for his family.

The progress of the association is shown by the following table:

	1897	1897-98	1898-99	1899-00	1900-01	Total
Dues and initiation fees.....	\$ 7,877.99	\$ 14,711.50	\$ 15,100.00	\$ 19,636.00	\$ 20,070.00	\$ 77,395.49
Entertainments, interest, etc.	.....	2,356.52	5,283.91	5,742.68	8,399.44	21,782.55
Sick benefits paid.....	1,666.00	9,255.00	10,870.00	10,225.00	14,193.00	46,209.00
Death claims paid.....	450.00	3,547.50	3,600.00	4,302.50	3,099.00	14,999.00
Membership.....	2,263	2,604	2,620	3,319	4,071	

Although Carnegie Hall has a seating capacity of about 6000, it was filled to overcrowding by the members and their families, a most striking commentary on the interest taken in the association. In this connection it is interesting to note that the management of the association made an attempt to secure for the annual meeting the Metropolitan Opera House, and would have done so except that an engagement of several weeks' duration prevented the lease of that theater for the purposes of the meeting. Carnegie Hall is the next largest building in New York suitable for the purpose, but there was hardly standing room for all those who wished to attend. The address of the president, Mr. Vreeland, on that occasion is given below.

#### PRESIDENT'S ADDRESS

This is the fifth time that I have had occasion to make an annual address to you. Considering this, and the frequent opportunities I have during the year to talk with you, as it were, in lodge, at the association's club rooms, we are fairly well acquainted, and it would not be unreasonable to suppose I had already said all that could be said, or that it is necessary to say.

If nothing had changed with us in all these years I would be silent now, not alone because of an exhausted subject, but of disappointment and regret. I am happy to say, however, that instead of wearying of the subject and the occasion, I find each year a new stimulus in reviewing the accomplishments of the twelve months too quickly passed.

Never before, however, has the stimulation been so great as to-night, for in glancing over the little span since last we met in this hall, the gratification is greater than ever before, and astonishment grows as I realize the amazing material gains we have made in membership and means. Our membership has grown in five years from 2263 to 4071; the total amount of sick benefits paid, \$46,209; the total amount of death claims paid, \$14,999; the total number of cases attended by the association's physician in 1901 approximate 13,000. All this growth and good work is a justifiable cause of pride to us; but from my viewpoint the figures only constitute a half-told tale.

On an occasion of this kind and treating of a subject like this—a subject involving more than the material things of this world—I do not care to linger on statistics which only indicate physical growth and fattening fortune, for, believe me, the more enduring

and precious things of this life cannot be so measured. Good fellowship, charity and personal loyalty! Can any one state their force or influence in figures? Can the sweet sympathy evoked and strengthened in sickness and trouble be computed in tables?

It is in the reflections suggested by these figures that I take most pride and pleasure to-night, for by them I realize that never before have there been so many of us together banded for the purpose of mutual assistance; that never before were there so many of us awake to the pleasant duty of fraternity.

I feel that indeed we are growing on broad lines of human sympathy, and that behind this growth another feeling is cropping up—a feeling of distinction as a body of men. It is the same feeling which is engendered among soldiers long in the field and well acquainted, "the spirit of the whole," as it is called—a something over and above the price of self. It is pride in one's class and calling, pride in the strength and power of comradeship. It is this feeling that raises us up and develops the best that is in us, and I notice its growth with increasing satisfaction. Twice since I have been the responsible head of the property on which we are all employed I have felt its amazing force, and cannot but be assured for the future as I notice its steady development.

In the frequent reflection I give to our association it has naturally occurred to me to contrast it with other departments having charge of public duties, such as the supplying of water, maintenance and regulation of docks, the supervision of persons and property, and the construction of public works of various kinds, within this, the second greatest city of the world, and I find the comparison flattering. Certainly in no department of the city government is there any such numerical strength, good fellowship and cohesion as ours. And in the importance of the public duty we discharge we are, in my opinion, second to none of them.

How infrequent is the contact between the everyday citizen and the police force, the tax gatherer or the magistrate, for instance? And with us how frequent? Twice a day they come to us, 600,000 strong, and, relying on the efficiency of our service, most of them regulate their business engagements. Comparisons are odious; but from this standpoint we cannot avoid a feeling of congratulation. The more thoroughly we appreciate our sense of responsibility in this matter, the stronger will grow this "spirit of the whole" to which I have referred, and when there is added the realizing sense that we are making co-operative provision for our individual needs and furnishing one another, through this association, aids to bridge over the rough spots in the road before us, we may gladly welcome the recurrence of reunions like this.

### Annual Report of the Brooklyn Rapid Transit

The annual report of the Brooklyn Rapid Transit Company for the year ended June 30, 1901, was issued Oct. 8. It shows total receipts of \$12,135,559, total expenses of \$7,216,008, and net earnings of \$4,919,551, as compared with net earnings last year of \$4,662,177. After payment of fixed charges, etc., there is left a surplus of \$577,803, as against \$526,772 last year. The total surplus is \$972,551, compared with \$623,426 in 1900, this after dividends to stockholders of constituent companies, allowance for depreciation, etc. The report says:

"During the fiscal year the Brooklyn Rapid Transit Company availed itself of an opportunity to dispose of the bonds in the treasury which had been retained for construction purposes on acquired lines. The proceeds from the sale of these bonds and other cash on hand are sufficient to pay for all outstanding contracts for additions and improvements, including the conversion of the elevated railroads into electric railroads and furnishing all equipment and power therefor."

Exactly what the total of this bond sale is the report does not show.

During the year personal injury claims paid out amounted to \$971,876, while, with the expenses of the legal departments, the total would be brought up to \$1,143,962—"10 per cent of the total receipts," as the report points out. Of these damages \$371,904 were paid for the current year. On this subject the report, after referring to the growth of these damage claims, makes reference to the "low standard of professional ethics" now prevailing, and adds:

"A large part of these excessive payments is unjustly exacted from the company by conditions which should be the concern of every good citizen, and which, if not mitigated, will not only pollute the fountain of justice, but poison the morals of the community."

The report refers to the company's difficulty because of lack of power, and calls attention to the letting of the contract for the new power house.

The general comparative statement for 1900 and 1901 follows:



RECEIPTS

	1901	1900
Passengers .....	\$11,718,942	\$11,206,716
Freight, mail and express.....	58,394	61,305
Advertising .....	122,501	108,783
Rent of land and building.....	67,595	70,763
Rent of tracks and structure.....	100,226	96,490
Miscellaneous .....	67,901	* 224,493
<b>Total .....</b>	<b>\$12,135,559</b>	<b>\$11,768,550</b>
<b>Total increase .....</b>	<b>367,009</b>	

EXPENSES

Maintenance of way.....	\$378,800	\$415,729
Maintenance of equipment.....	891,986	882,183
Operation of power plant.....	1,019,686	964,665
Time-table cost .....	2,414,062	2,490,224
Other operation of cars.....	895,120	1,061,252
Damage and legal expenses.....	1,157,593	913,292
General expenses .....	458,761	379,028
<b>Total increase .....</b>	<b>\$7,216,008</b>	<b>\$7,106,373</b>
<b>Net earnings .....</b>	<b>4,919,551</b>	<b>4,662,177</b>

\* Decrease.

DEDUCTIONS

Taxes .....	\$754,626	\$736,721
Net fixed charges.....	3,587,122	3,398,684
<b>Total .....</b>	<b>\$4,341,748</b>	<b>\$4,135,405</b>
<b>Surplus .....</b>	<b>577,803</b>	<b>526,772</b>
Surplus previous year.....	623,426	96,654
<b>Total surplus .....</b>	<b>\$1,201,229</b>	<b>\$623,426</b>

OTHER DEDUCTIONS

For dividends to stockholders other than B. R. T. Co..	\$23,689
For additions and betterments on lines of constituent companies not chargeable to construction.....	116,263
For depreciation, loss by fire, etc.....	134,300
<b>Total .....</b>	<b>\$274,252</b>
<b>Less credits to profits and loss during year.....</b>	<b>45,574</b>

<b>Total .....</b>	<b>\$228,678</b>
<b>Total surplus June 30, 1901.....</b>	<b>972,551</b>

The operations of the Kings County Elevated for July, August and September, 1899, are not included in the above, the company having been operated independently during that period.

The income account shows as follows:

RECEIPTS

Interest on bonds owned.....	\$374,064.40
Dividend on stock of constituent companies owned..	364,226.80
Net profits, the Brooklyn Heights Railroad Company	297,219.94
Interest on deposits.....	37,870.15
Other income .....	8,407.83
<b>Total .....</b>	<b>\$1,081,789.12</b>

EXPENSES

Interest on bonds and loans.....	\$411,352.10
Taxes on capital stock.....	60,000.00
Sundry expenses .....	58,355.41
<b>Surplus .....</b>	<b>\$529,707.51</b>
<b>Surplus June 30, 1900.....</b>	<b>552,081.61</b>
<b>Total .....</b>	<b>\$852,766.17</b>
Deductions from surplus	
For additions, etc., not chargeable to construction .....	\$116,263.32
For depreciation, loss by fire, etc.....	133,159.90
<b>Total .....</b>	<b>249,421.22</b>
<b>Total .....</b>	<b>\$603,344.95</b>
<b>Surplus constituent companies.....</b>	<b>369,205.55</b>
<b>Total surplus June 30, 1901.....</b>	<b>\$972,550.50</b>

The Storage Battery in Railway Work

In an announcement which appeared in the STREET RAILWAY JOURNAL last week, the Electric Storage Battery Company, of Philadelphia, showed "three lessons in railway economy" by re-

producing load diagrams of storage batteries and generators working in conjunction. The maximum loads on line, generators and battery were given in connection with the first diagram, and through a printer's error were made, respectively, 250 amps., 900 amps. and 160 amps., instead of 250 amps., 90 amps. and 160 amps.

Contracts for Electrical Apparatus, New York Rapid Transit Subway

The Rapid Transit Subway Construction Company, of New York, which is to operate the Rapid Transit tunnel when completed, as already noted in these columns, has let contracts for the steam equipment of its power house. The contract for the electric generating apparatus, it is now announced, has been let to the Westinghouse Electric & Manufacturing Company. This contract includes six 5000-kw, 11,000-volt, three-phase generators of the revolving field type, running at 75 r. p. m., at a frequency of 25 cycles. They will have 40 poles, and the frame will be built in seven sections. The fields will constitute the fly-wheel of the engine. These alternators will be of exactly the same capacity, the generators being built for the Manhattan Railway, New York. They are rated at 263 amps. per terminal, non-inductive load. The exciters for these machines are of 250-kw capacity, three in number. They will operate at 240 r. p. m., with a voltage of 250.

For the sub-stations twenty-six rotary converters of 1500-kw capacity each are contracted for. These are to give a voltage on the direct-current side of 625, and will run at 250 r. p. m. For starting these rotary converters in the various sub-stations there are to be eight motor generator sets, consisting of induction motors, coupled to direct-current generators.

The contract also includes seventy-eight step-down transformers, of 550-kw capacity each, arranged for giving 390 volts on the secondary terminals, with primary voltages of 9500, 9750, 10,000, 10,250 and 10,500.

Street Railway Patents

[This department is conducted by W. A. Rosenbaum, patent attorney, 177 Times Building, New York.]

UNITED STATES PATENTS ISSUED SEPT. 24, 1901

683,026. Trolley Catcher; C. I. Earl, New York, N. Y. App. filed Feb. 26, 1901. The trolley rope passes around a drum which is controlled by two springs, a lighter one to keep the rope taut and a heavy one which is tripped into action when the wheel leaves the wire to wind up the rope.

683,045. Electric Coupling for Conductors; C. Holzmann, Buda-Pest, Austria-Hungary. App. filed March 5, 1901. A rail-bond consisting of a metal rod fixed into both rails, one end of the rod being split lengthwise to furnish flexibility.

683,052. Armature Core for Electric Machines; G. Koppelman, Schuttorf, Germany. App. filed June 15, 1901.

683,224. Automatically-Operated Railway Switch; I. Robbins, Philadelphia, Pa. App. filed Oct. 29, 1900. Means whereby certain mechanism may be set by electric action to cause the motion of a primary device due to the wheel of a car bearing against the same.

683,230. Electric Circuit Closer for Railway Tracks; F. Sock, Magdeburg, Germany. App. filed Feb. 25, 1901. A circuit-closing shoe, adapted to be struck by the wheel of the car, is mounted to yield longitudinally, as well as downwardly, to avoid breakage.

683,250. Electric Rail-Bond; S. P. Cowardin, Richmond, Va. App. filed Feb. 19, 1901. The end of the bond is formed with a ring which is clamped in a hole in the flange of the rail by means of an eyelet.

683,279. Control System for Electric Cars; C. Hochenegg, Vienna, Austria-Hungary. App. filed Jan. 22, 1900. The controllers on each car of the train are power-driven from the axle, means being provided for throwing each power device into and out of operation from any car.

683,283. Electromagnetic Traction Increasing Apparatus; A. A. Honey, Tacoma, Wash. App. filed Nov. 20, 1900. An arrangement of an electric coil on the axle whereby the axle and wheels can be transformed into a magnet to increase traction.

683,284. Electromagnetic Brake; A. A. Honey, Tacoma, Wash. App. filed Nov. 22, 1900. The brake beam, shoes, wheels and axle form the magnetic circuit of a coil on the axle, the brake being applied by energizing the coil.



683,332. Electromagnetic Brake; A. A. Robertson, Titusville, Pa. App. filed April 18, 1901. A fixed ring containing a magnet coil surrounds the axle and faces another ring or armature carried by the axle, the retarding effect being produced by setting up eddy current in the ring on the axle.

683,370. Car-Checking Device; A. M. Acklin, Pittsburgh, Pa. App. filed June 15, 1900. While the car is passing down a grade it is in engagement with a retarded traveler, which automatically trips out of engagement with the car at the bottom of the grade.

683,371. Car-Checking Device; A. M. Acklin, Pittsburgh, Pa. App. filed Jan. 26, 1901. Detailed improvements on the preceding patent.

UNITED STATES PATENTS ISSUED OCT. 1, 1901

683,471. Fare Register; W. G. Kirchhoff, St. Louis, Mo. App. filed July 7, 1900. The register gives the total of each kind of fares collected, and prints on two strips the said amounts, one strip being retained in the register and the other removable by the conductor.

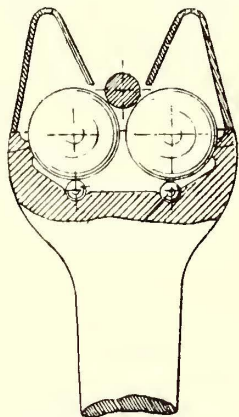
683,479. Railway Switch; M. D. Moore, Waveland, Ind. App. filed April 5, 1900. Details.

683,507. Apparatus for Removing Snow; R. Shirreffs, Boston, Mass. App. filed Feb. 23, 1899. The machine collects the snow and compresses it into dense blocks, ready for carting away.

683,534. Trolley; E. A. Wakefield, Pelham, Mass. App. filed May 31, 1901. Two trolley arms pivoted on a common axis, and connected together by a spring; one is used for traveling in one direction and the other for the other direction.

683,601. Electric Brake; E. A. Henry, Crestline, Kan. App. filed Sept. 17, 1900. A number of magnets are movable along a spindle; shoulders on the spindle limit their motion. As each magnet is energized it pulls on the brake rigging.

683,654. Car Mover; A. J. Maine, Appleton, Wis. App. filed July 1, 1901. An arrangement of pinch-bar and levers.



PATENT NO. 683,663

683,663. Device for Taking Off Current for Electric Tramways; A. Reineck, Neuges, Germany. App. filed April 12, 1901. Two balls mounted in sockets at the upper end of the trolley arm take the place of the trolley wheel; the wire rests between them.

683,709. Controller for Electrical Apparatus; G. W. Schilling, Philadelphia, Pa. App. filed May 16, 1901. To prevent too rapid movement of the controller, the lever carries a spring bolt, which rides over projections placed in its path.

683,710. Brake for Street Cars; W. T. Shryock, Allegheny, Pa. App. filed Aug. 8, 1900. Details.

683,719. Car Fender; E. Amrein, St. Louis, Mo. App. filed Dec. 3, 1900. Cylindrical rotary brushes mounted in front of the truck.

683,838. Turntable for Inclined Tracks; P. Best, Bochum, Germany. App. filed Feb. 7, 1901. For transferring a car from a horizontal to an inclined track, the table is mounted on a center joint permitting of universal motions.

683,839. Contact Shoe Carrier; J. F. Bjurlund, Richmond Hill, N. Y. App. filed Dec. 5, 1900. An elliptical spring inserted between the bracket and the shoe.

PERSONAL MENTION

COL. WILLIAM A. GASTON has resigned as chairman of the board of directors and member of the executive committee of the Boston Elevated Railway Company. Colonel Gaston remains a director of the road, but retires from the active management by reason of other pressing business connections.

MR. W. B. PARSONS, chief engineer of the Rapid Transit Commission, has sailed for Europe. Mr. Parsons will first go to London, where he will meet Mr. August Belmont, who financed the tunnel company, and then both, together with others who are interested in the tunnel, will inspect the London underground systems. Paris will also be visited, and Mr. Parsons stated before leaving that other Continental cities would probably be visited.

MR. C. N. WILCOXON has resigned as manager and superintendent of the Decatur Traction & Electric Company, of Decatur, Ill., to become superintendent of the Western Ohio Railway Company, of Piqua, Ohio, which has an extended system of interurban lines under construction. The position in Ohio, besides being more lucrative, offers to Mr. Wilcoxon a larger field for operation. The employees of the Decatur Traction & Electric Company presented Mr. Wilcoxon with a handsome gold cane as a token of their esteem for him.

MR. J. J. FRANKLIN, formerly superintendent of the Montreal Street Railway, of Montreal, Quebec, died Sept. 22 at Toronto. Mr. Franklin was fifty-four years of age. He entered the employ of the Montreal Street Railway Company in 1880 and resigned two years later to accept a position in Toronto. Mr. Franklin re-entered the employ of the Montreal Street Railway Company in 1892, when the electric system was being adopted. Mr. Franklin's title was then superintendent, and he retained the position for two years. He then resigned to assume the management of a system of omnibus lines established in Paris by an American syndicate.

MR. ROBERT HAMMOND, an eminent English electrical engineer and member of the Electric Engineers' Association of Great Britain, who is making a tour of this country, visited Cleveland recently with a view to securing data relative to the roads radiating from that city. Mr. Hammond was shown over the interurban lines by Mr. James Fitzgerald, Mr. Everett's private secretary, and expressed himself as highly pleased and astonished at the progress that had been made in this country. Mr. Hammond was taken over the Lorain & Cleveland and the Akron, Bedford & Cleveland Railways, and efforts at continued high speed were made on both lines. A speed of 65 miles an hour was maintained on the Lorain & Cleveland Railway and a speed of 60 miles an hour was attained on the Akron, Bedford & Cleveland, which road has never been noted for its speed or level roadbed. Mr. Hammond is having prepared a large map of the Everett-Moore system, showing the various power houses on the lines, with capacity and other data, and will use this in presenting a paper before his association in London.

MR. C. E. FREDERICK AND MR. C. R. STURDEVANT have become connected with E. P. Roberts & Company, of Cleveland. Mr. Frederick has had widespread experience in railway installation of all kinds. He was electrician and master mechanic for the Omaha Street Railway for eighteen months, having charge of construction and operation. For two years he was electrical engineer and master mechanic for the Tri-City Street Railway, of Davenport, Ia., where he installed all machinery and built all overhead lines. Two years following he was superintendent of construction for the Chicago North Shore Street Railway, and had full charge of the operation and maintenance of the road. For eighteen months he was general manager of the Cicero & Proviso Railway, of Chicago, and rebuilt 57 miles of line and track, and built a new 2000-hp station. Mr. Frederick was later connected with the Cripple Creek Railway, and for two years was in charge of the road, building all transmission lines and installing all machinery. His last position was with the Northwestern Elevated, of Chicago, where he was chief inspector in charge of steel construction. Mr. Frederick is at present located at Fort Worth, Tex., as resident engineer for the Northern Texas Traction Company, which is being built by E. P. Roberts & Company. Mr. Sturdevant graduated from Cornell in 1892 with a degree of M. E. During his vacation he worked for Reynolds & Lang, engine builders, Ithaca. After graduating he spent a year in the testing department of the Chicago, Burlington & Quincy Railway. Mr. Sturdevant then spent two and one-half years with the Chicago Edison Company as inspector of high potential installations, after which he served two years as teacher of physics at the Manuel Training and High School, of Louisville, Ky. Four years ago he became professor of electrical engineering at the Kentucky State College, Lexington, Ky., during which time he did considerable consulting engineering work for lighting and railway plants. Mr. Sturdevant will act as consulting engineer at the headquarters of the firm.



## FINANCIAL INTELLIGENCE

### THE MARKETS

#### The Money Market

WALL STREET, Oct. 9, 1901.

The offer made by the Secretary of the Treasury on Sept. 10, to redeem \$20,000,000 of the long-term government bonds around the prevailing market prices, met with a remarkably full response. The designated limit was reached a week ago, and according to the terms of the official circular, the purchases came to an end. But the operation had served to raise the New York surplus reserve to approximately \$16,000,000, in face of an excess government revenue amounting to over \$12,000,000 during September, and in face of currency withdrawals by the interior averaging \$3,000,000 a week. It is commonly recognized that had not the Treasury thus come promptly to the rescue the money market would have run into a severe stringency, the remedy for which would have had to come through forced imports of gold and heavy curtailment of credits to local borrowers. The question before the community now is whether there is any chance of another crisis like this arising during the next month or so. Usually the pressure of the crop-moving demands does not cease before the early part of November, and during October the outflow from New York continues very heavy. A year ago this month between \$20,000,000 and \$30,000,000 went out, mostly on demands from the cotton sections of the South. This year the cotton movement is late, and it is fully expected that the requirements will be as large as they were in 1900. The Treasury bond purchases having stopped, moreover, the banks are liable to a renewal of the drain from that quarter, unless some immediate and unexpected change occurs in the relations of the government revenue. It seems to be a question of one of three ways out of the present difficulty: either piecing bank reserves along by loan contraction and the scattering gold arrivals from Alaska and Australia, or advancing money rates high enough to attract gold from Europe, or looking to the Treasury for further assistance. Whichever of these means is taken, it is practically certain that the surplus of the banks will be heavily reduced during the next month, and that the money market will develop increasing firmness. So far no important change has occurred in rates. Money on call ranges from  $3\frac{1}{2}$  and 4 per cent, and time loans on good collateral are quoted at  $4\frac{1}{2}$  per cent for all dates.

#### The Stock Market

The local traction stocks have been among the most vulnerable in the recent unsettled speculation on the Stock Exchange. No one can be surprised at the downfall in Brooklyn Rapid Transit shares who has reasoned at all from the evidence submitted from time to time during the last twelve months of what the road's earning capacity in relation to its enormous load of debt actually is. For two years the public have waited for some fulfilment of the promises, which friends of the property have constantly made, of a substantial reduction in the operating ratio. It is in this way only that there has been any hope of the stock ever reaching a dividend basis, for the traffic of the system has developed to the point where further increases must admittedly be slow. Yet so far from this hope being realized, it is now seemingly as far removed as it ever was. The long-delayed annual report, just given out, shows that out of the \$367,000 increase in gross earnings \$109,000 is gone into extra operating outlay and \$206,000 into increased charges, leaving a surplus only \$51,000 larger than a year ago. Even worse than this are the figures for July and August of the current fiscal year—which show that the increase in operating expenses far more than consumed the increase in gross earnings, and left net earnings decidedly smaller than in 1900. This exhibit in itself is discouraging enough, but it is made worse from the knowledge that the extra expenditures were not devoted to betterments, but were incurred chiefly in the excessive damage claims which the company has had to meet. The year's report states that these damage payments in the last twelve months have amounted, with the entailed legal expense, to \$1,157,000. Liquidation of Brooklyn shares has been extremely heavy, and it was only the support of strong financial interests which averted a more severe break. The other traction stocks have sympathized with this decline, but not to any important extent. The strong clique operating in Manhattan has succeeded in keeping the stock fairly steady, and Metropolitan has been well taken by strong houses which regularly appear as buyers when the price is low.

Apart from the traction group, weakness has centered mainly in the industrial quarter of the market. An exceedingly bad series of annual statements submitted by the newly-created trusts is

primarily responsible for this. But in addition attention has been unfavorably directed again to the secrecy which these concerns maintain in regard to their operations and the absolute foolhardiness of outside investors putting their money into enterprises regarding which the most meager information is volunteered only once a year. The disposition to discriminate against industrial securities is growing stronger, both among investors and speculators and among the banks which are asked to lend money on them. Considering, however, the strain to which this obvious element of weakness has subjected the general market, the important railroad stocks have stood up remarkably well. They have gone off sharply at times, but have recovered easily and completely as soon as the selling pressure relaxed. Altogether, it looks as if the majority of these securities have about reached the level where they are attractive to substantial buyers. That no rise of importance is likely to occur, with the money outlook so uncertain, is commonly recognized. But conservative opinion is equally disinclined to believe that the material for a further considerable decline is at hand.

#### Philadelphia

Nearly all the important stocks in the Philadelphia street railway market are lower as compared with a fortnight ago. To a large extent this is due to the reactionary movement in the general market, which at the same time has served to encourage rumors of an unfavorable nature regarding the individual properties. The decline of a point in Union Traction has been accompanied by talk that the Widener-Elkins syndicate has disposed of its holdings, and an equal recession in Consolidated Traction, of Pittsburgh, has been associated with predictions that the deal with the Philadelphia company will be a failure. It looks, however, as if these stories had been put in circulation merely to serve the purpose of the general speculation for the decline. So far as the Pittsburgh deal is concerned, the best information is that the delay in the final consummation of the project is due to the fact that the original proposition has been considerably enlarged, and that fresh negotiations have lately begun to extend the enterprise to a general consolidation of the lighting and traction interests of Allegheny County. In addition to the United Traction, which is already owned by the Philadelphia company, and the Consolidated Traction, the control of which has been virtually secured, the deal contemplates the acquisition of the so-called Mellon interests—the Monongahela Street Railway, the Pittsburgh & Birmingham Traction, the Suburban Traction and the Southern Traction. These companies together comprise a system of 285 miles and a total capitalization of \$110,000,000. Although the new and enlarged undertaking is still only in process of negotiation, the subsidiary arrangement by which control of the Consolidated Traction passes into the hands of the Philadelphia company has been completed. The terms of the exchange of stock have already been announced; it is provided that the deposits of the Consolidated securities for conversion must be made before Nov. 1. The stockholders of the Railways Company General, at the meeting on Sept. 30, ratified the proposal to reduce the share capital, and their action has stimulated trading in the stock, which has risen from 2 to  $2\frac{1}{2}$ . Scattering sales of Consolidated Traction of New Jersey are reported at  $67\frac{1}{2}$ , and of American Railways at  $40\frac{3}{4}$ . Electric-Peoples Traction 4s are strong, selling up to  $97\frac{3}{4}$ . Small sales occurred in People's Passenger 4s at  $106\frac{1}{2}$ , in Second Avenue, of Pittsburgh, 5s at 115, and in Reading Traction 6s at 126. Indianapolis Street Railway 4s have been actively dealt in between  $83\frac{1}{2}$  and 84. An unofficial estimate places the increase in the company's earnings during the year at \$160,000, and claims that in addition to providing the full interest of \$423,000 on the bonds, a balance equal to 3 per cent will be left for the stock.

#### Chicago

With one or two exceptions, the Chicago traction securities have not changed materially during the last fortnight. Odd lots of Chicago City Railway have sold on a range down from 207 to 201, but the real quotation for a full lot is well above the latter figure. Lake Street has declined on liquidation due to the strike of its employees. The strike now appears, however, to have been a fizzle. Metropolitan and Northwestern shares have held very firm on the brilliant traffic, showing now being made by their companies. The Northwestern in September carried a daily average of 54,065 passengers, against 47,092 a year ago; the Metropolitan carried 88,226, against 82,000, and the South Side, 67,627, against 65,062. On top of this comes the statement that the Metropolitan's traffic so far this month has increased 10 per cent even over the September record, while traffic on the other lines maintains an equal rate



of increase over a year ago. The South Side management has decided to do nothing about the proposed laying of the third rail until the Supreme Court of Illinois next month hands down its decision regarding the validity of the present company's franchise.

Considerable interest attaches to the deliberations of the City Council upon the question of fares. A disposition is shown to take the matter into its own hands, and resolutions have already been passed which, if adopted, will not allow the surface roads to collect more than 4 cents in cases where no seat is provided, and which will compel the companies to issue transfers to all their respective branches.

**Other Traction Securities**

The securities of the St. Louis company have declined under pretty strong pressure for a week or more. United Railways preferred, which recently sold up as high as 82½, has fallen to 80¼, and the 4 per cent bonds have dropped from 89¾ to 89½. A sale of \$50,000 at the latter figure was reported on the New York curb yesterday. St. Louis Transit has declined gradually from 27½ to 26¼. No news, however, has developed in connection with the movement. New Orleans City and Lake securities are reported moderately active in their local market, and somewhat lower. The common is selling around 30 against 31 two weeks ago, and the preferred is down from 106½ to 105½. This reaction is due apparently to realizing by speculators who bought some time ago on the prospects of the consolidation deal. According to the latest reports, gross earnings for the eight months from Jan. 1 to Sept. 1 increased \$100,000 over last year, and net earnings increased \$77,000. During the first two weeks of September there was a further increase in the gross earnings of \$6,200. No changes of note in the other traction specialties are reported either on the New York curb or in the local markets.

**Stock Quotations**

The following table shows present bid quotations for the leading traction stocks, and the active bonds, as compared with a week ago; also the high and low since Jan. 1, 1900:

	Jan. 1, 1900		1901	
	High	Low	Sept. 24	Oct. 8
American Railways Co.....	48¼	27	40¾	40½
Boston Elevated .....	192	b95	170	170
Brooklyn R. T. ....	887½	47¼	66½	57¾
Chicago City .....	†285	200	a206	201
Chicago Union Tr. (common).....	..	..	17¾	17¾
Chicago Union Tr. (preferred).....	..	..	58	58
Columbus (common) .....	48	20	45	45¼
Columbus (preferred) .....	104	80	104	102½
Consolidated Traction of N. J.....	69½	57	66	66
Consolidated Traction of N. J. 5s.....	110	..	109	108½
Consolidated Trac. of Pittsburgh (common).....	30¼	20¼	23¾	23¾
Indianapolis Street Railway .....	48¾	15	43	45
Lake Street Elevated .....	16¼	6½	12	11½
Manhattan Ry. ....	131¾	84	1247½	118½
Massachusetts Elec. Cos. (common).....	43¼	15	34	36
Massachusetts Elec. Cos. (preferred).....	96	70	91¾	91
Metropolitan Elevated, Chicago (common).....	39	24½	39½	38¾
Metropolitan Elevated, Chicago.....	98½	70	92½	91½
Metropolitan Street .....	182	143¾	166	158
Nassau Electric 4s.....	97½	..	97½	97½
New Orleans (common).....	33½	18¼	30¼	29
New Orleans (preferred).....	108	90	105½	102
North American .....	*106	*74	96	91¼
North Jersey .....	36	21	23½	23½
Northwestern Elevated, Chicago (common).....	52	..	38½	37
Northwestern Elevated, Chicago (preferred).....	97½	..	85	86
Rochester .....	31½	12	30¾	30
St. Louis Transit Co. (common).....	35	16½	26	25¾
South Side Elevated (Chicago).....	119	93	109	108
Syracuse (common) .....	25	10½	25	21
Syracuse (preferred) .....	b65	25	63	62
Third Ave. ....	135½	45¼	120	117
Twin City, Minneapolis (common).....	105¼	58½	101	98
United Railways, St. Louis (preferred).....	82½	..	82¼	80
United Railways, St. Louis, 4s.....	91½	..	89½	89
Union Traction (Philadelphia).....	40½	24¼	28¾	27¾
United Traction (Providence).....	110	107	109	109

a Asked. b Bid. \* Quotation of new stock. † High quotation previous to the issue of new stock.

**Iron and Steel**

The whole iron and steel market is very strong, and heavy business and a rising tendency are reported all along the line. Enormous sales of Bessemer pig in the Central West and of foundry pig at the Western distributing centers have occurred. Contracts are being freely made for 1902 delivery, and premiums are being paid for spot delivery. The make of steel rails is something unprecedented, the estimates being that 3,000,000 tons have been booked this year, an increase of 650,000 tons over last year, which was

the best previous year in the trade. At least 300,000 tons of this business will have to be carried over into 1902, and in addition the mills have received orders for next year already amounting to 600,000 tons. In structural material, steel bars, beams and angles the demand is so active that productive facilities are being taxed to the utmost to meet it.

Quotations are \$16 for Bessemer pig; \$26 for steel billets, and \$28 for steel rails.

**Metals**

Quotations are: Copper, 16½ cents; tin, 24¼ cents; lead, 4¾ cents, and spelter, 4¼ cents.

STAMFORD, CONN.—E. H. Gay & Company, of Boston, offer investors \$350,000 New York & Stamford Railway Company first mortgage 5 per cent thirty-year gold bonds at 111½ and interest, at which price they net over 4.30 per cent. The New York & Stamford Railway Company was incorporated Aug. 3, 1901, as a consolidation of the Port Chester Street Railway and the Larchmont Railway, and consists at present of about 15 miles of track. There is \$450,000 capital stock and \$450,000 first mortgage bonds, \$100,000 of which are held in escrow by the trustee to be issued for additions to the property.

CHICAGO, ILL.—George F. Harding has made further offers for the street railway franchises which expire in 1903. He says he will grant 3-cent fares, and will, in addition, give the city 20 per cent of his profits as compensation, with universal transfers and the privilege of riding from one end of the city to the other for one fare. Another offer by Mr. Harding is to pay the city \$5,000,000 a year as rental for the existing street railway lines, and also to pay 20 per cent of the net profits as compensation, with through rides and universal transfers. As a condition, Mr. Harding asks for a lease of the street railway lines for twenty years, from July 31, 1903, his lease to be terminable at six months' notice by the city.

BANGOR, MAINE.—It is said that Charles W. Morse, of New York, has acquired the controlling interest in the Rockland, Thomaston & Camden Street Railway.

BOSTON, MASS.—The Boston News Bureau says: "The fiscal year of the Massachusetts Electric Companies closed Sept. 30, and it was the best year in the history of the thirty or more properties which go to make up the system. Gross earnings will show an increase of nearly \$1,000,000 over annual gross earnings of the companies at the time the Massachusetts Electric Companies were formed two years ago. When the annual report is issued there may be some slight disappointment as to the showing of net earnings of the Massachusetts Electric Companies. It has been the policy of the Massachusetts Electric Companies to only declare subcompany dividends sufficient to meet the preferred stock dividends and a small surplus in addition. The balance of earnings has been going into the property and the property has increased in value to just such an extent."

ST. LOUIS, MO.—The St. Louis Transit Company has declared the regular dividend of 1¼ per cent on the preferred stock, payable Oct. 10. The transfer books closed Sept. 30 and will be opened Oct. 11.

ST. LOUIS, MO.—The report of the Transit Company's earnings, just made, shows August to be the best month in the history of the company. The gross earnings were \$509,048, which is an increase of \$3,320 over any month's report so far. The earnings from the first of the year were \$3,801,409, as against \$2,657,716 of last year, a gain of over 30 per cent.

ST. LOUIS, MO.—The St. Louis, St. Charles & Western Railroad Company has leased the St. Louis County Street Railway, and will operate it as a part of its system.

UTICA, N. Y.—The last step in the consolidation of the Utica Belt Line Street Railroad, Utica & Mohawk Street Railroad, Utica & Suburban Railway, Utica & Deerfield Railway and Herkimer, Mohawk, Ilion & Frankfort Electric Railway, as the Utica & Mohawk Valley Railway was taken Sept. 27.

CITY ISLAND, N. Y.—The Pelham Bay Park & City Island Railroad, which is operated between Bartow Station and Belden's Point, will, it is said, be purchased by the P. H. Flynn syndicate, which owns the New York, Westchester & Connecticut Traction Company's Railroad at Mount Vernon. The road is the only one in the borough of the Bronx not controlled by the Metropolitan system, and it is one of the few remaining horse car lines within the limits of Greater New York.

CORTLAND, N. Y.—The Cortland & Homer Traction Company reports earnings as follows:

	1901	1900
1 car ending June 30		
Gross receipts .....	\$31,453	\$28,783
Operating expenses .....	19,857	16,927
Earnings from operation.....	\$11,596	\$11,856
Receipts from other sources.....	171	142
Gross income .....	\$11,767	\$11,998
Fixed charges .....	7,297	22,129
Net earnings .....	\$4,470	*10,131

\* Deficit.



CINCINNATI, OHIO.—The Cincinnati, Georgetown & Portsmouth Railway, which heretofore has been operated by local owners, passed into the hands of Comstock Brothers, of Detroit, Oct. 2. The road will be changed to standard gage and operated by electricity. The road now extends to Georgetown, 45 miles from Cincinnati, and will be extended to Ripley at once and later to Portsmouth, Ironton and other points. A. W. Comstock will remove to Cincinnati and succeed Ralph Peters as president of the company.

CLEVELAND, OHIO.—Mr. Baker, the partner of E. W. Moore in the Boston firm of Moore, Baker & Company, bankers and brokers, has been in Cleveland the past few days arranging to handle the securities of the Everett-Moore syndicate in a new office which the firm is to open at Pittsburgh.

CLEVELAND, OHIO.—The Detroit & Toledo Shore Line, one of the properties of the Everett-Moore syndicate, has executed with the Detroit Trust Company as trustee a mortgage covering the line from Toledo to Trenton, Mich., for \$2,500,000 to cover 5 per cent bonds to be issued for the completion of the road. A portion of these bonds will be floated in Detroit and a portion in the East. Cars are expected to be running between Toledo and Detroit by Nov. 15.

DAYTON, OHIO.—The Dayton, Covington & Piqua Traction Company has just increased its capital stock from \$50,000 to \$1,150,000, of which \$550,000 is to be 5 per cent preferred stock. Dennis Dwyer is the president of the company and Joseph Weil is secretary.

TOLEDO, OHIO.—As the result of the purchase by the Everett-Moore syndicate of the Toledo & Maumee Valley Railway and the Toledo, Waterville & Southern Railway, an extension of the former, several important documents have been filed by A. K. Detwiler, formerly principal owner of the companies. Mr. Detwiler, as trustee, conveys to the Toledo, Waterville & Southern Railway Company deeds for the property of the road now under construction to the amount of \$80,000, which was the figure paid by the new purchasers. The Toledo & Lima Traction Company, which is being promoted by Mr. Detwiler, has filed a copy of an agreement with the Toledo, Waterville & Southern Railway Company, whereby the former's cars are to enter Toledo over the latter's tracks. The Waterville Company will pay the Lima Company 2½ cents per car mile for the use of the Lima cars while on the Waterville tracks, and the Waterville Company will receive five-eighths of a cent for every mile a passenger is carried in Lima cars over its tracks. The Maumee Valley Electric Company has leased its power plant and fixtures to the Toledo & Maumee Valley Company. The latter company is to pay the 5 per cent interest on bonds of \$100,000 held by the Security Trust Company, as payment, for twenty-five years. After five years from July 1, 1900, and during the remaining twenty years, there will be an additional rent for every five years. This indicates that the Everett-Moore people will use the Maumee lighting plant in operating the roads purchased.

CLEVELAND, OHIO.—The receipts of the Cleveland Electric Railway for the month of September were the largest on record. It is figured that the company carried 450,000 more passengers than during the month of July, which was a record-breaking month, by reason of the heavy traffic to Euclid Beach Park and other resorts. The receipts for the month of September were \$228,808, a gain of \$54,276.87 over the same month last year. The figures for July, the previous heaviest month, were \$206,842.

COLUMBUS, OHIO.—A mortgage for \$40,000 made by the Columbus, Grove City & Southwestern Railway to A. G. Grant has been canceled. It was made July 6, 1901, payable Oct. 1, 1901. Mr. Grant was the owner of the Grove City & Southwestern Railway before it was purchased by the Appleyard-Fisher syndicate, of Columbus.

CLEVELAND, OHIO.—The Cleveland City Railway Company has declared a quarterly dividend of 1¼ per cent.

CLEVELAND, OHIO.—The securing of an option by the Everett-Moore syndicate on the property of the Toledo, Bowling Green & Southern Railway appears to have put a damper on the plans of the Pomeroy-Mandelbaum syndicate, which had figured on securing a traffic arrangement with this line for its through line from Cincinnati to Toledo. This road will shortly operate to Findlay, which city will be the northern terminus of the Western Ohio Railway. The plan of the syndicate for securing a terminal in Toledo and for the route which may be followed in connecting the Western Ohio system with the Cleveland, Elyria & Western, thus forming the through line from Cleveland to Cincinnati and from Cleveland to Toledo, consists of securing control of or making traffic arrangements with two existing lines, the Toledo, Fostoria & Findlay Railway and the Tiffin, Fostoria & Eastern Railway. The first-mentioned is in operation between Fostoria and Fremont, and is under construction from Fostoria to Toledo. This would make a trifle longer route to Toledo than over the Bowling Green road, but the Toledo, Fostoria & Findlay is a modern road built for high speeds, whereas the Bowling Green road is not. The Tiffin, Fostoria & Eastern would be utilized from Fostoria to Tiffin. The western terminus of the Cleveland, Elyria & Western is only about 25 miles from Tiffin to Norwalk, and a road has already been surveyed, but nothing further has been accomplished.

TORONTO, ONT.—The Toronto Street Railway Company has declared a dividend of 1¼ per cent for the quarter just ended.

TORONTO, ONT.—The directors of the Toronto Street Railway have adopted a resolution to increase the stock of the company \$1,000,000 for the purpose of purchasing the Metropolitan and Toronto Suburban Electric Railways. The Metropolitan, whose president is C. D. Warren, is 30 miles in length, extending from Toronto to Newmarket, and will connect with the Schomberg & Aurora Electric Railway, now building; its Toronto terminal is at the city borders, close to the terminus of the Toronto Street Railway Company's lines. The Toronto Suburban Street Railway, whose president is F. Turner, is 12 miles long, and connects with the Toronto Street Railway by transfer at Toronto Junction.

Tables of Recent Traction Earnings

NAME	LATEST GROSS EARNINGS		LATEST NET EARNINGS		
	Week or Month	1901	1900	1901	1900
American Rys. Co.....	Aug.	\$91,176	\$81,813	\$.....	\$.....
Binghamton Ry. Co.....	Aug.	21,490	19,539	10,604	9,684
Brooklyn R. T. Co.....	Aug.	1,139,611	1,061,804	379,528	399,606
Chicago & Mil.El.Ry.Co.	Aug.	24,042	20,702	16,563	14,644
Cincinnati, Newport & Covington Ry. Co.....	June	72,201	73,965	42,452	42,700
City Elec. (Rome, Ga.)..	July	3,873	.....	e 260	.....
Cleveland & Eastern... .	Aug.	10,671	5,363	6,133	3,781
Cleveland El. Ry. Co....	Aug.	209,462	182,940	93,315	89,582
Cleve., Elyria & Western	Aug.	27,307	.....	14,936	.....
Cleveland, Painesville & Eastern.....	Aug.	20,770	16,838	11,154	11,167
Consolid. Tr. (Pittsburgh)	Aug.	289,103	268,919	163,345	159,788
Denver City Tramway... .	Aug.	142,390	124,718	64,216	61,949
Detroit United Ry.....	Aug.	288,575	261,810	138,160	125,363
Duluth Superior Tr....	Aug.	41,763	.....	21,873	.....
Elgin, Aurora & So. Tr.	Sept.	34,172	29,486	e16,734	e11,865
Herkimer, Mohawk, Ilion & Frankfort Ry. Co...	May	4,508	4,146	1,935	908
International Tr.....	Aug.	686,826	285,150	434,933	170,518
London St. Ry.....	Aug.	16,260	12,449	6,913	5,104
Montreal Street Ry.....	Aug.	179,587	173,584	.....	.....
Northern Ohio Traction..	Aug.	67,693	57,954	33,669	24,064
Olean St. Ry. Co.....	July	5,954	5,115	3,748	3,199
Richmond Traction Co..	Aug.	21,985	18,133	6,757	7,837
Rochester Ry. Co.....	Aug.	89,379	84,272	41,234	35,514
St. Louis Transit Co....	Aug.	509,048	505,728	.....	.....
Scranton Ry. Co.....	Aug.	63,763	57,647	30,019	27,713
Southern Ohio Trac. Co.	Aug.	39,915	30,201	21,465	14,996
Syracuse R. T. Ry. Co... .	Aug.	54,943	51,015	24,729	22,639
Toledo Ry. Co.....	Aug.	124,491	108,730	71,134	52,197
Twin City Rapid Transit.	Aug.	283,589	254,737	161,554	148,498
United Tr. Co. (Albany).	July	134,370	126,121	54,732	47,466
United Tr.Co.(Pittsburgh)	Mar.	157,792	148,009	70,741	65,511

NAME	Period Ending	GROSS FROM JULY 1 TO LATEST DATE		NET FROM JULY 1 TO LATEST DATE	
		1901	1900	1901	1900
American Rys. Co..	Aug. 31	\$180,834	\$166,412	\$.....	\$.....
Binghamton St. Ry.	Aug. 31	43,970	39,414	22,932	21,035
Brooklyn R. T. Co.	Aug. 31	2,343,372	2,206,993	e24,794	e874,147
Chicago & Milwaukee El. Ry. Co...	aAug.31	112,962	92,267	63,391	55,472
Cincinnati, Newport & Covington Ry. Co.....	a]June30	384,638	369,938	223,546	220,145
City El.(Rome,Ga.)	a]July 31	24,138	.....	e 2,970	.....
Cleveland El.Ry.Co	aAug.31	1,474,082	1,330,593	658,542	601,153
Cleveland, Elyria & Western Ry. Co.	aAug.31	158,563	112,186	70,122	40,349
Cleveland, Painesville & Eastern... .	aAug.31	105,362	91,692	51,768	46,882
Consolid. Tr. Co. (Pittsburg).....	dAug.31	1,448,854	1,379,544	822,662	785,039
Denver City Tram.	aAug.31	980,891	847,019	412,484	366,798
Detroit United Ry..	aAug.31	1,843,510	1,643,786	855,626	729,227
Duluth Superior Tr.	aAug.31	290,085	.....	134,475	.....
Elgin, Aurora & So. Tr.....	aSept.30	275,504	234,125	e122,560	e84,274
Herkimer, Mohawk, Ilion & Frankfort Ry. Co.....	May 31	48,895	47,026	20,247	21,063
International Tr....	Aug. 31	1,215,762	536,149	723,867	297,235
London St. Ry. ...	aAug.31	91,676	73,593	33,601	18,580
Milwaukee El. Ry. & Lt. Co.....	d]June 30	918,104	830,674	426,071	389,333
Montreal Street Ry.	*Aug. 31	1,706,384	1,601,032	.....	.....
Olean St. Ry. Co....	June 30	52,018	48,700	25,790	22,997
Richmond Trac.Co.	*Aug. 31	197,579	182,330	73,705	89,902
Rochester Ry.....	Aug. 31	180,457	167,452	84,025	70,977
St. Louis Transit Co	aAug.31	3,801,409	2,657,716	.....	.....
Scranton Ry. Co....	Aug. 31	127,958	116,843	62,318	55,507
Seattle Elec. Co... .	d]May 31	514,386	412,705	193,192	97,253
Southern Ohio Tr.	a Aug. 31	218,736	188,056	96,257	89,168
Syracuse R. T. Ry. Co	Aug. 31	114,376	99,434	52,542	44,322
Toledo Ry. Co....	Aug. 31	245,504	213,744	138,533	103,442
Twin City R. T. Co.	aAug.31	2,031,771	1,830,378	1,086,056	955,931
United Tr. Co. (Albany).....	June 30	1,340,356	.....	186,131	.....

\* Eleven months. † Caused by strike of employees. a From Jan. 1. b Three months. d Five months. e After deducting taxes.



## NEWS OF THE WEEK

### CONSTRUCTION NOTES

**FRESNO, CAL.**—The Fresno City Railway Company, which was recently incorporated, will construct 43 miles of lines. The company is capitalized at \$500,000, of which amount \$43,000 has been subscribed. The directors of the company are: W. H. McKenzie, S. N. Griffith, F. M. Helm, W. M. Wyatt, W. T. Porter, H. A. Voorman, H. C. Tilden and A. C. Jewett.

**HARTFORD, CONN.**—The Selectmen of Brimfield have voted to grant the Hartford & Worcester Street Railway Company a franchise through Brimfield on its way from Hartford to Worcester. The location to be given the company is about 3 miles in length in the south part of the town, running through Brimfield from Wales to Sturbridge. Charles H. Wilson and F. C. Hinds, of Boston; R. A. Stewart, of Worcester, and Thomas C. Perkins, of Hartford, Conn., are among those interested in the company. Construction work will be begun, so it is said, as soon as the Massachusetts franchises are obtained.

**EDWARDSVILLE, ILL.**—The City Council granted permission Oct. 1 to the St. Louis & Illinois Electric Railway Company to construct an electric railway through the city. The company will build to Edwardsville from Granite City.

**GALESBURG, ILL.**—The entire capital stock of the People's Traction Company has been subscribed, and the organization of the company has been perfected. The company will construct an electric railway from Galesburg to Abingdon. The officers of the company are: Luke W. Sanborn, president; E. B. Hardy, vice-president; Frank W. Latimer, secretary and treasurer; P. N. Granville, treasurer. The directors of the company are: Luke W. Sanborn, George W. Prince, George B. Churchill, P. N. Granville, F. W. Latimer, Wilfred Arnold, Charles S. Harris, L. W. Peterson and A. P. Higgins, of Galesburg, and E. B. Hardy, of Abingdon.

**NEW ALBANY, IND.**—William Rothrock, the proprietor of a large flour mill at White Cloud, is interested in a plan to construct an electric railway from New Albany to Wyandotte, by way of Corydon. The proposed electric railway would penetrate a fine agricultural country which is thickly populated. Mr. Rothrock owns valuable water rights, from which sufficient power to operate the line could be generated.

**ELWOOD, IND.**—The Union Traction Company is now distributing the rails for the laying of its track between Elwood and Tipton, and the new branch of the large system will be in operation by the first of the year.

**GREENFIELD, IND.**—The Greenfield Interurban Company is distributing material for the extension of its line from Greenfield to Knightstown, and it is expected that the line will be finished in two months.

**INDIANAPOLIS, IND.**—Track laying has begun on the Indianapolis & Martinsville Rapid Transit Company's line between Indianapolis and Mooresville. Grading and bridge-building on the last division is progressing rapidly.

**PRINCETON, IND.**—The Council has granted E. J. Baldwin a fifty-year franchise for the construction of an electric railway here. Mr. Baldwin plans to construct an electric railway from Princeton to Petersburg.

**COLUMBUS, IND.**—In accordance with the plan announced several weeks ago, the Pennsylvania Railroad Company is now wiring its lines for the purpose of competing with the Indianapolis, Greenwood & Franklin Electric Railway. The Pennsylvania Railroad is, as has already been announced, planning to electrify a portion of its lines in Ohio, in order to meet the competition of the electric railways.

**MARION, IND.**—The Marion Transit Railway Company, which was recently purchased by the Union Traction Company, of Indiana, with headquarters at Anderson, has been reorganized, Union Traction interests being elected to the company. There will be no formal merger of the company with the Union Traction Company, and the line will be operated independently, so it is said. A special committee has been appointed to consider the matter of making improvements and outlining of a plan of operation. The new officers of the company are: E. H. Ferree, president; C. W. McGuire, vice-president and general manager; J. A. Van Osdol, secretary; W. C. Sampson, treasurer; A. S. Wade, E. H. Ferree, Harry Williamson, W. T. Cammack, Pasco Peele, J. A. Gauntt and T. E. Petrie, directors.

**INDIANAPOLIS, IND.**—Townsend, Reed & Company, of Chicago, have closed a contract for the construction of the Indianapolis, Shelbyville & Southeastern Railway, and are in the market for one 800-hp cross-compound engine, one 50-hp high-speed engine, one 425-kw generator, seven 48-ft. vestibuled cars, four 50-hp motor equipments for each car, machinery for two sub-stations, copper wire, poles, overhead material, etc. The Indianapolis, Shelbyville & Southeastern Railway Company was recently incorporated, with a capital stock of \$600,000, and its purpose is to build an electric railway from Shelbyville to Indianapolis. The officers of the company are: Edward K. Adams, of Shelbyville, president; Albert De Prez, of Shelbyville, vice-president; Thomas E. Goodrich, of Shelbyville, secretary; John R. Messick, treasurer. The directors of the company are: Edward K. Adams, Thomas E. Goodrich, Charles M. Cooper, John R. Messick, Albert De Prez, William N. Harding and Sherman P. Minear. Townsend, Reed & Company can be addressed at the Stevenson Building, Indianapolis.

**DES MOINES, IA.**—The Des Moines City Railway Company has commenced the work of extending the Clark Street line westward to the city limits. The company has just completed the extension of the University Street line westward a half mile, and is now planning the construction of extensions of several other lines within the city limits. The company has made some improvements on the Union Park line, and may possibly extend

this line north to the Danish College, a distance of three-quarters of a mile, some time this fall or next spring.

**BURLINGTON, IA.**—A representative of St. Louis capitalists who was in the city recently made a proposition to the Council to furnish the city with additional electric lights and electric railway service, provided franchises can be secured. A general lighting franchise is desired, and a thirty-year street railway franchise is wanted. The lighting contract is to be an exclusive one, but provision is made for the purchase of the lighting plant and the street railway system, at the expiration of ten years, by the city. The proposition of the promoter also contains provision for beginning work on the line, operating the first car, and for return to the city for the franchise grant.

**DES MOINES, IA.**—The Des Moines Union and the Interurban Railway companies have finally settled out of court the fight over the disputed right of way in the north part of the city. By the terms of the agreement the Interurban Company is to have undisputed possession of the contested right of way across the property of the Flint Brick Company; is to build an electric freight line from the terminus of the Flint Valley line of the Des Moines City Railway north past the Oak Park Coal Company's mines and out to a connection with the Chicago Great Western and the Chicago & Northwestern lines, and is to deliver freight to those roads from the brick plant. A further condition of the contract, and the one which induced the Des Moines Union to relinquish its claim to the contested right of way, is that the Interurban will not make it a business to build lines into the factory and coal mining districts surrounding the city and now reached by the Des Moines Union, and will confine itself wholly to extensions into rural territory and the mining and factory interests along the Des Moines River in the north part of the city. On the other hand, there is nothing in the agreement to keep the Des Moines Union from building a belt line around the city, except that it must not invade the territory conceded to the Interurban in the said agreement. The interurban has already commenced work on the line from the terminus of the Flint Valley line northward and eastward to a connection with the Great Western and the Northwestern lines, and expects to have this extension completed some time this fall.

**LOUISVILLE, KY.**—The Louisville Railway Company was the only bidder for the Frankfort Avenue franchise recently offered for sale here, and secured the franchise for \$100. The franchise is for a period of twenty years, and is in compliance with an ordinance adopted by the Council.

**BALTIMORE, MD.**—The Maryland Electric Railway Company has had an ordinance introduced in the Baltimore City Council for a right to construct an electric railway on a number of Baltimore streets. The company offers to sell six tickets for 25 cents and to turn over 9 per cent of gross receipts to the city. Free transfers are to be issued on all the company's lines.

**WORCESTER, MASS.**—The Boston & Worcester Street Railway Company has been granted a franchise through Newton, giving the company a connecting link in its through road between Boston & Worcester. The company will have to pay \$15,000 toward land damaged, grant free transfers and reduced fares to school children, file a bond of \$100,000 with the city, and have the road running in nine months.

**DETROIT, MICH.**—It is reported that the Detroit City & Suburban Electric & Lighting Company is now back of the scheme to build an electric railway from Detroit to Lansing via Leslie, and that it will now be built.

**GRAND RAPIDS, MICH.**—Officials of the Grand Rapids, Grand Haven & Muskegon Railway Company state that as soon as their line is completed work will be begun on an extension to Ionia and Belding. It is said that right of way is now being secured between Jackson and Lansing via Leslie, leaving only a gap between Lansing and Ionia, and that within a short time a complete line will be in operation between Detroit and Muskegon passing through Ypsilanti, Ann Arbor, Jackson, Mason, Lansing, Ionia and Grand Rapids, making a short line across the State of Michigan.

**GRAND RAPIDS, MICH.**—The Grand Rapids, Holland & Lake Michigan Railway Company has its brick depot at Zeeland nearly ready for occupancy. The company is also building depots at all the stations on its line, and is building all necessary turnout tracks, so that the traffic may be handled as rapidly as the business demands.

**FARMINGTON, MO.**—The stock of St. Francois County Electric Railroad Company has just been increased from \$50,000 to \$150,000, and an issue of \$100,000 bonds has been authorized. The entire right of way for the company's proposed road has been paid for and bids for construction will be asked in the near future. The proposed line will connect De Lassue, Farmington and Flat River; five motor cars and two trail cars will be operated, but the specifications for the power house equipment have not been drawn. It is expected that construction work will be begun within thirty days. The officers of the company are: Peter Giessing, president; J. P. Cayce, secretary; W. R. Lang, treasurer; W. H. Hipolite, chief engineer.

**ST. JOSEPH, MO.**—The County Court has at last granted the Kansas City, Parkville & St. Joseph Electric Railway a franchise for the construction of an electric railway through Buchanan County. No less than six different applications had been presented before the final passage of the ordinance, and it is the second franchise granted for electric railways between Kansas City and St. Joseph within six months. The franchise stipulates that the road be completed within two years.

**ST. LOUIS, MO.**—It is stated that the St. Louis, St. Charles & Western Electric Railway will shortly construct a 3-mile extension to Ferguson.