

# Electric Railway Journal

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## ATTENDANCE AT THE MID-YEAR MEETING

The large attendance at the mid-year meeting at Chicago yesterday is proof of the wisdom of its selection for the winter meeting. First, it was somewhat of an experiment because it is the first mid-year meeting to be held away from the Atlantic seaboard and only the second mid-year meeting which has been held away from New York. Undoubtedly the attractive program in the way of papers arranged by the subjects committee had much to do with the large attendance. The topics chosen were very timely and were ably treated in the papers presented. They held the undivided attention of those present. Nevertheless, the record-breaking attendance at both the meetings during the day, and the total registration, showed that no mistake was made in the choice of Chicago. The banquet in the evening was brilliant as usual, a condition which was enhanced by the distinguished character of the speakers.

## CHANGES IN THE CONSTITUTION

The subject of greatest internal interest in the affairs of the association discussed at the mid-year meeting was, of course, that of the proposed changes in the constitution admitting manufacturers, bankers, consulting engineers, publishing houses and others interested in the electric railway business as full company members of the association. This matter was not reached until late Friday afternoon, but the vote of the railway companies taken after the discussion showed that the members were unanimous in approving the plan. In this we believe the association acted wisely. As Mr. Brady and General Harries explained, the effect of the amendments adopted is simply to offer the opportunity to any company or individual who is interested in the policies and purposes of the association to join its membership. The change will interfere in no way with the present Manufacturers' Association, and in our opinion it should not be allowed to do so as long as the manufacturers want to retain their present organization. The Manufacturers' Association has been of great assistance to the industry in the past, but, as we said last week, we are strongly convinced of the importance of still greater co-operation between the manufacturing and operating sides of electric railways, and this the plan now adopted offers. The American Association is to be congratulated upon opening its doors wider than they have been before. Membership in it is a great honor and offers an opportunity which we hope many will embrace, for co-operating in the larger work to which the American Association had set its hand.

## COMPETITION WITH OTHER INVESTMENTS

Mr. Willcox's paper at the mid-year convention was a clear exposition of the present needs of the electric railway industry, so far as the investor is concerned. Legislatures, commissions and courts can declare what they consider is a fair return on railway investments, but no pronouncement by them on this subject can compel anyone to invest money in railway enterprises, no matter how important such may be to the development of a community. There is certainly no dearth of opportunities for good investments now. Practically the entire world is asking the United States to assist in the financing of industrial and railway undertakings, and a number of foreign governments are offering bonds in our markets at attractive rates of interest. It is this condition which determines what is a "fair rate of return," at least for new investments, not what the legislatures, the commissions or the courts think. As for the investor in existing properties, his rate of return is indeed more subject to their control, but, as Mr. Willcox says, the adoption of anything except a liberal policy here would be less disastrous to the investor than to the public. His loss would be limited to the money which he had in the property, but in the aggregate this would be small compared with that which would be suffered by the community through stunted growth, because if rapid transit brings growth, progress and enhanced opportunity and values, the lack of it certainly will obstruct and prevent them.

## EXPORTS AND GOVERNMENT CO-OPERATION

The average American has little knowledge about foreign trade, or his interests heretofore have been largely domestic, but the present world trade situation and the undeniable advantages of an expanding foreign trade through its stabilizing influence on home industry make it imperative that every citizen begin to take a lively interest in this subject and use his influence to secure a proper treatment thereof. We wish that every citizen would thoroughly acquaint himself with the need for a successful development of our foreign trade, and to that end we can do no better than to refer him to the proceedings of the foreign trade convention held in New Orleans last week. The important point is that the government through its consular and commercial attaché services professes to and indeed does aid in our foreign trade extension, but the endeavors along this line are more than negated by the legal obstacles raised by Congress. Three agencies we could make invaluable use of in expanding our foreign trade—American investment and banking in foreign lands, co-operation of American manufacturers and

a merchant marine—but in each case there is hampering legislation. According to Chairman Davies, the Federal Trade Commission stands ready to aid in bettering conditions along these lines, but we want to see on the part of the whole government an active co-operation with American export business. It is highly important that all restrictive legislation be removed from our export field, and the country is waiting for deeds, not words. The present administration, in now asking for a halt in transportation legislation, seems to give hope of other improvements, but it must do much more before we can be certain that the government's attitude of hostility toward business in general has been transmuted into beneficent co-operation.

#### WHAT RAILWAY REGULATION NEEDS

Owing to the peculiar form of our government, with its inherent state rights and its delegated federal powers, the steam railroads have for some time been compelled to obey the often conflicting mandates of the Interstate Commerce Commission and all state commissions within whose jurisdictions they operate. Indeed, although the dominance of the federal commission is clearly established for questions involving interstate commerce, the powers of the state commissions over intra-state matters have been so exercised along selfish lines that the steam carriers have really been burdened with the rule of forty-nine different masters. The inefficiency and foolishness of such a regulatory system seem now more widely recognized, and without doubt the time is ripe for bringing about a physical centralization of control over steam carriers in the hands of a federal commission.

From our indorsement of this proposal made by Senator Underwood at the mid-year meeting, however, it must not be concluded that we favor the same form of centralized control for the electric railways of the country. The steam railroads are primarily constructed for and used in interstate commerce and are so national in scope that centralized federal control is the only logical plan. On the other hand, electric railways as a whole and other public utilities are so local in character that the limit of centralization of control in such cases is the state commission instead of heterogeneous municipal boards. Some electric railways cross state lines, it is true, but this fact is a geographical incident that generally detracts nothing from the local character of such carriers. In all doubtful cases we believe that state regulation should be given the preference, and we thoroughly deprecate any attempt on the part of the Interstate Commerce Commission to assume control over electric carriers on narrow technical grounds.

The electric railway industry, therefore, has no need for a physical centralization of control, but one improvement can be made in the regulatory practices of state commissions governing such carriers. We refer to what might be called a mental centralization—a close adherence by all state commissioners to standard basic principles of regulation. State commissions have been too prone to keep their attention entirely on local prob-

lems or else to study general regulatory practices simply to be able to exploit some different theory whose only merit, if it can be called such, was its novelty. More than enough regulatory theories and practices have now been evolved, and commissions should begin to give up their individual foibles and aid in the establishment of a broad and unified basis of regulation that would embody the best regulatory practices of the different states. There is danger, of course, that in the search for basic principles the commissions might adopt concrete standards in such matters as safety regulations, electrical codes and the like so as to fit only conditions surrounding the operation of large companies and thus inflict inequitable regulations upon the smaller utilities. If the program were worked out with calm judgment, however, so as to treat all utilities with equal fairness, much could be done toward unifying regulatory precepts and procedure. Fairness must be shown in all things, if regulation is not to break down and thus open the way for wholly undesirable government ownership, which Senator Underwood rightly disapproves so strongly. The public should, therefore, take a vital interest in removing all handicaps and in supporting utilities through a fair unified system of regulation.

#### VALUATION OF UTILITIES

The problem of valuation is of paramount importance in the electric railway field, at least on its non-technical side, and it fully merits the attention paid to it at the mid-year meeting in Chicago. The whole question, of course, is so filled with perplexities and complicated by a multitude of conflicting opinions as to what the law is, or ought to be, that no definite solution can be expected at one conference, but if the addresses and the accompanying discussion have clarified some of the main issues involved, a notable advance has been made.

The main address, presented by Mr. Guernsey, was a meritorious exposition of the general theory of valuation and its application to rate-making. We agree with Mr. Guernsey that the primary meaning of value is intrinsic worth as measured by exchangeability in open market, but we feel that valuation is not a problem to be restricted by definitions drawn from the immature and changing science of economics. True, the Supreme Court has created the term "fair value," but we believe in passing over all abstractions as to the reconciliation of this term with economic precepts, and in basing our views upon what was really intended. The court was simply trying to designate an amount upon which earnings might fairly be allowed, just as it at other times has set a fair basis for taxation or acquisition of property. The fair amount in all these cases is made up of many factors, whose varying importance and recognition cause the fair basis to increase or decrease in particular instances. In cases of property purchase or condemnation, earning capacity and the franchise are property rights that will be protected in the absence of contractual prohibitions, while in capitalization cases franchise allowances are restricted to actual payments

therefor, and in rate-making cases the earning capacity has often been considered of only collateral interest and franchise rights have often been disregarded.

The point is that the determination of a fair basis in utility valuation for various purposes has been a matter of considering all the relevant facts involved and bestowing upon each factor what was deemed to be its proper degree of importance. It is true that no artificial formula can be made to govern valuation cases, but it seems as if some advancement could be made along the line of ascertaining what valuation factors should receive primary attention in particular kinds of cases. For instance, the Supreme Court has held that in establishing a rate-making basis the original cost of construction, the cost of permanent improvements, reproduction cost, market value of stocks and bonds, probable earning capacity under particular rates prescribed by statute, operating expenses and all other material factors must be given such weight as may be just and right. But is there any single factor in rate-making cases that should by its very nature receive prime consideration? The two great elements are original cost and reproduction cost—which of these should predominate? The courts have held that where accurate evidence of original cost is presented, it should not be considered irrelevant in determining fair value, but they have refrained from saying that reproduction cost should receive major consideration, and they have not said that the adoption of one or the other basis of valuation by law would be unconstitutional.

We mention this situation simply because of the uncertainty that it indicates in valuation work. The question of a rate basis for the future has not been so difficult of solution, for it is generally admitted that the real criterion should be the actual legitimate investment honestly made. For the past, it has also been generally admitted that equitable considerations should govern, but in actual practice both the utilities and the public have been fearful of the results if one definite basis of valuation should be adopted. The utilities have feared that the original-cost basis would presuppose an admission of the agency theory, with its assumption of control but lack of responsibility on the part of the public, while the public too has opposed this basis because it was not prepared to deal fairly and liberally with money invested pursuant to all past legal requirements. On the other hand, the utilities have sometimes opposed the reproduction-cost basis because of the inability of the public to recognize all the necessary details that are involved in utility development outside of the mere up-building of the physical framework, while the public has vociferously asserted that the utilities favor this method only in order to take advantage of unearned increments of value on their property.

Thus the whole situation has been complicated by suspicion and uncertainty, but the time is rapidly approaching when a more definite understanding must be reached if the industry is to continue its appeal to the investor and the public is to receive the increased service that the country's growth demands. We do not presume to state conclusively whether original cost or reproduction

cost should be adopted in order to dissolve the present uncertainty, although we believe that on account of the many vicissitudes and changes of equipment in the electric railway field the original-cost basis is the better one in general for recompensing the investor for his sacrifice. What we want, however, is a definite standard of valuation one way or the other, so that investors will know through the public treatment of utilities how to judge them in the competitive field. A unification of valuation terms, as Mr. Kealy suggests, would aid in reaching a standard. And this standard may well be liberal at the outset, for otherwise the public will suffer more than the early investors.

#### THE RATE OF RETURN

Quite naturally the rate of return for electric railways was a subject for full discussion at Chicago, for the granting of a proper return is as vital a matter as the determination of a just valuation. All phases of the subject were thoroughly reviewed, but we wish to comment particularly on the future aspects of the problem. As Mr. Mortimer pointed out, speculation about the future rate of return needed to attract new capital involves an inquiry into the magnitude of the actual returns, their record of stability, the tendency exhibited by them and the general hazards of the electric railway business.

Facts presented along these lines by Mr. McGrath and other speakers clearly show the restraints upon the investment of new capital in electric railways. If the future is to bring that development of the industry needed for the public welfare, the investor must be reassured in regard to the sanctity of private property and its right to freedom from public attack and to the enjoyment of a just and equitable return. What such a return will be, numerically, we cannot say, but we do know that it will not be that adjudged by the courts to be just outside the confiscatory minimum. What is a fair return in any case is decided by the stability of the investment, the return yielded by other investments of a similar character and the prevailing rate of interest. In other words, the return must be determined with the fact in mind that the capital which must be had can be secured only in a competitive field where relative stability of investment is of prime consideration.

Electric railways have a right to expect a rate of return that, instead of being restricted as near the confiscatory limit as possible, approaches the maximum limit, or a return which under honest accounting and management will attract the capital needed for the development the public wants. If the public insists on a low rate of return, this will have to be guaranteed by the government if the hazard of the industry is to be offset, but how much simpler it would be to allow a rate of return commensurate with the risks involved and the ends to be obtained. The investor has long been sustained by his faith in a just attitude of government toward utilities, but the country is sorely in need of a faith in utilities that is based on constructive public assistance rather than maintained in spite of incessant public attacks and restrictions.

# What the Electric Railway Wants

In His Address at the Mid-Year Banquet President Henry Told of the Present Needs of the Electric Railways and How All Can Be of Much Help in Relieving the Existing Situation of Many of Its Burdens

By CHARLES L. HENRY

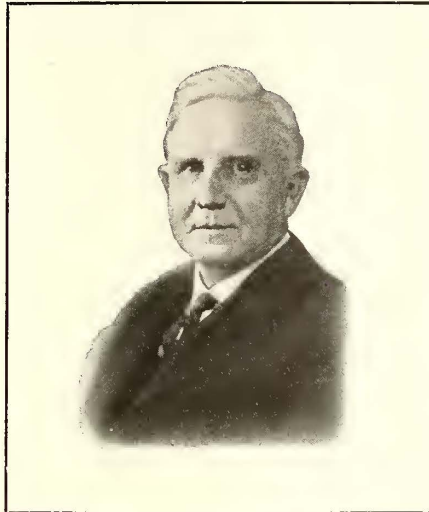
President American Electric Railway Association

**P**RESIDENT CHARLES L. HENRY of the American Electric Railway Association was the first speaker at the banquet on Feb. 4 at the Congress Hotel. In his opening remarks he referred to previous mid-year meetings of the association and gave a sketch of the work accomplished by the association during the past year. He then said, in part:

## THE STATUS OF PUBLIC SERVICE REGULATION

"Our electric railway companies occupy a peculiar and in some respects a very difficult position. So far as the ownership of the properties is concerned, they are private companies in every sense of the word, but so far as the management and control of these properties are concerned, they are subject to the regulations and control of public service bodies. Congress through the Interstate Commerce Commission, the State through the public service commission, the city through its council, board of aldermen and other governing bodies, all tell us what we can and must do, and what we cannot and must not do. We occupy this peculiar position because we are public utilities—that is, we are companies serving the public under and by virtue of grants of some kind or character from the public authorities. We are, in fact, transacting a public business, a business which the public, through the State or the city might itself transact, but which it has delegated to us because it has been demonstrated that it can be and is more satisfactorily done by private companies. The public, represented by the nation, the State or the city, commissions the company to operate its cars upon specified terms and conditions, the company always being required, however, to provide all of the money necessary for construction and to take all of the risks incident to the business.

"On account of the business being of a public character, these public authorities referred to are vested with the power of regulation so as to protect the interests of the public in the operation of the railway property. The company is not permitted to proceed independently along lines it may decide upon, like any other business organization, but must constantly listen to and heed the regulations of the various governing bodies. They tell us how many and what kind of cars we shall operate, what signals we must install, what provision must be made against accidents at grade crossings, what protection there must be against electrolysis, what portion of the streets on which our tracks are located we must pave and keep in repair, the speed at which we shall operate our cars, the number of stops we must make, the transfers we must give from line to line, the compensation that must be arranged for between the com-



CHARLES L. HENRY

pany and its employees in case of injury by accident; in short, to a very large extent, they take from us the right of determining how our business shall be conducted and oftentimes put upon us the burden of payment for things for which we are very remotely, if at all, responsible.

"As in the beginning the public in no way provides any of the capital necessary for the construction of the electric railway property, so it assumes no responsibility for the financial results of the operation of the property, and even if regulations prescribed by its governing bodies cause loss to the company, the public does not make good such loss. The natural result of this peculiar relation which we occupy to the public is that the companies are sometimes

very seriously embarrassed in the management of their property. It not unfrequently happens that by reason of burdens in the way of taxes, street improvements, additional service, the making of unreasonable regulations regarding transfers and otherwise, it is made impossible for a company to earn enough to pay operating expenses, including these burdens, and have anything left to pay a reasonable income upon the capital invested. In other words, the persons who have furnished the money to build the property and thus make it possible for the people to enjoy its benefits and advantages are compelled to go without any compensation or pay for the use of the money thus provided. It is plain to see that if such a condition is brought about in even a few cases, holders of money for investment become frightened and afraid to invest in such property further, and then the public also suffers, because, without sufficient capital, electric railway properties, like any other business, cannot be properly maintained or operated, the necessary improvements and additions cannot be made, and the public then cannot have the transportation facilities which it ought to have.

"If public supervision is intelligently and properly exercised, then instead of public supervision being an injury either to the company or to the public, it should be of very great benefit to the company and of very much greater benefit to the public—though I feel compelled to say that so far as my observation has gone, supervision of such a character is, up to date, largely theoretical and not often manifest in actual practice. It is entirely proper that the public should have an oversight of the construction of electric railway properties to the end that they be constructed and equipped so as to give the best results in their proposed service for the public. It is also entirely proper that the public should have a supervising hand in the operation of these properties so that the purpose for which they are constructed and being operated shall be fully and satis-

factorily met. The great difficulty, however, especially during such times as we have been passing through for the last few years, has been the disposition largely dominating the public mind, on the one hand, unjustly to criticise and find fault and, on the other hand, to call for additional service and the placing of additional burdens on the railway company. These calls and additional burdens are very frequently imposed without any careful or comprehensive consideration of the question, and quite generally without regard to the financial effect upon the electric railway company, and, therefore, upon the service it is called upon to render the public.

#### BURDENSOME CONDITIONS

"On account of this condition of the public mind, many things have been required of electric railway companies without any semblance of justice, and apparently without any reason except that the public has the power to require it. Take as an illustration the requirement frequently—yes, generally—made of electric railway companies, to pave and keep in repair certain portions of the street along which the railway is operated. This is a requirement not at all in the interest of the public, but solely in the interest of the abutting property owners. If the street railway were not there, the abutting property owners would pay for the improvement of the street but, as there is a street railway along the street, the company owning it is compelled to pave and keep in repair a large portion of the street and in some cases the entire street. The idea first originated in connection with the horse-car lines when, indeed, they occupied and used the street in such a way as to injure it and, therefore, made frequent repairs necessary, thus furnishing some reason for the practice. But it is otherwise with electric cars. They touch no part of the street except the rails. They carry no dirt upon the street. They do not wear it out and, in fact, furnish a way many times for other vehicles, especially after snow storms, when otherwise they could not go up and down the street.

"Within the last two years a peculiarly fine illustration has been given of the fallacies of the claim that street railway companies should be required to pave and keep in repair the streets on which their tracks are located. All of a sudden jitney buses came into use. This system of freebooter transportation sprang up in the various communities, and the principal reasons why it was thought to be profitable were that these bandits could pick out and follow the short routes and use without any charge the pavements which the street railways had built. What could be more unjust or unfair? How long do you suppose such a condition would have been allowed to continue if the city itself had owned and was itself operating the street railway lines? Every dollar that the street railway company is compelled to pay in the improvement of streets unjustly adds just one dollar to the cost of transportation; that is, the man who rides upon the cars must pay his part of that dollar for the improvement of the street which should be paid for by the owner of the abutting property.

"Take another illustration. It quite generally happens that there is a tendency to require the street railway companies to give, without additional compensation, numerous transfers from cars of one line to cars of other lines, thereby increasing the length of ride which a passenger may take for the original and only fare paid by him. This has been carried, I understand, in the city of Chicago to such an extent that a passenger may actually ride 30 miles for a 5-cent fare. No one will pretend for a moment that 5 cents is a reasonable or proper fare for such a ride, and it necessarily follows that the man who receives such a ride for 5

cents is riding part of the way at the expense of other patrons of the company. Without being dishonest to those holding the company's obligations, one man cannot ride for less than his ride is worth unless another man pays more than his ride is worth. The company cannot in fair honesty to all pay—in fact, donate—the expense of street improvements properly chargeable to abutting property owners, nor can it carry a passenger a longer ride than he pays the value of, without those who ride upon the cars contributing just that much to the finances of the company.

"The spirit of unfairness in the public mind, to which I have referred, is also strongly manifest in another department. An idea seems to have grown up in most communities that an electric street railway is a natural and proper prey for any and all kinds of demands, whether just or unjust, and this manifests itself in connection with damage claims as much as in any other way. People will make claims against an electric railway company wholly without any foundation or right when they would not think of doing so against an individual or a mercantile concern. When it comes to questions regarding accident claims, there seems to be a very great dearth of any sense of honesty or integrity on the part of claimants and their friends. They are wholly unable to see that the company should not be responsible for what the claimant himself is to blame, and they shut their eyes entirely to all the fair and equitable requirements which rest upon a claimant in connection with these matters.

#### IS THERE A PUBLIC CIVIC CONSCIENCE?

"It would be easy for us to spend hours going over the various things illustrative of the public mind which I have mentioned and after we have spent much time on them we are led to ask ourselves the question: 'Is there indeed any public civic conscience?' It seems sometimes that there is not, but, upon further reflection, we will, I think, conclude that there is a civic conscience, but that apparent self-interest blinds and smothers it so that in time it becomes and is wholly inactive.

"It needs no extended argument to show that we must fear for the future of electric railway companies unless this condition of the public mind and this inclination on the part of the public can be changed from what it now is.

"We have a right to expect from people who have been advanced to public office that they will be fair-minded and give such questions a full examination resulting in a course of action that will be right as between all concerned, and quite usually this is the case. We must not, however, be surprised, with the public mind as it is, that sometimes persons occupying these official positions—legislative, judicial and executive, whether national or state or city—still act along the lines of such public opinions. They are only a part of the general public and when for a time, whether short or long, they, coming out of the masses, are intrusted with public authority, sometimes do not rise to a full realization of their duties but continue to reflect in their public acts the principles which actuate the public mind. Some candidates in their campaigns discuss and promise things which they think will make them the most popular with their constituents, and when elected they feel called upon to carry out the things which they have advocated in their campaign speeches.

It follows then beyond question that the public at large needs to be educated along right lines on all questions involving civic conduct and on all questions concerning which the public has to deal with electric railway companies. If this can be brought about, then

the future prosperity of electric railway properties is assured.

#### A WAY IN WHICH ALL CAN ASSIST

"I take it, therefore, that the most important thing to which electric railway people can devote themselves is the education of the public mind upon these questions, and right here is where every person interested in the industry can assist. The electric railways of the country employ more than a quarter of a million of people in their maintenance and operation. Add to these those who are members of their families or dependent upon them for support and we have a vast army of people interested in the business and financial success of the electric railway properties. These people constitute a large and respectable portion of the various communities, and if they will thoroughly advise themselves regarding all questions of importance in connection with the building, financing and operation of their roads and during their idle as well as their working hours will keep these questions in mind, they will become an intelligent and influential body of instructors upon these questions, and their influence will soon manifest itself. The manufacturers, with their vast army of salesmen and other employees, can also greatly aid in this work which so badly needs to be done.

"However, we cannot hope to influence the people unless they are at least in a friendly state of mind. If they are irritated and angry at things that have occurred on our lines or in connection with our business they will not be found ready to receive any explanation of the affairs of the company. They must first be gotten in a good humor with us. We must, as far as possible, try to explain satisfactorily any thing that has aggrieved them, and in doing this it will be proper and advisable to show the difficulties of the situation and why the company should not be censured. Moreover, the manner in which we perform our duties will have much to do with the influence which we have upon the thoughts of those about us. The conduct of employees is to most people the one thing which determines their view of the company. Courteous conduct on the part of trainmen, agents and other employees of the company who come directly in contact with the public will go very far toward disarming the public of prejudicial feeling against electric railway companies, and this same kind of conduct on the part of the president and the general manager and their hundreds of assistants will add materially toward winning the contest in which we are engaged. We must have the public friendly to us.

"By what I have said, I do not mean that we should concede unjust or unlawful things in order to placate any of the public, for I believe that the man or company who stands squarely by what is right in demanding what is due him stands better before the public than he who cringingly concedes what is unjustly demanded for fear of making enemies. Nevertheless, it is so easy to be wrong and unfair in our own view that it is quite a dangerous thing to act upon the theory that we are entirely right and others entirely wrong. Usually there is at least an element of right on the other side, and even when we cannot see any, it is always better to pour oil on the wound and be sure not to add any additional irritant.

#### WHAT THE RAILWAYS WANT

"What is it we want to teach the public? What change is it we want made in the public mind? In the first place, we want them fully to appreciate, feel and know that we are really their agents transacting their business for them, doing for them what they have dele-

gated to us, because, as stated, it has been demonstrated that private companies can and do operate electric railway properties more satisfactorily and more to the interest of the public than this public could itself operate them. We want them to understand that while thus acting as their agents we are entitled as such to just and fair consideration and treatment, and that if we are not accorded this we cannot on our part properly perform our part of the compact. Instead of the public being required to advance the money necessary for building these railways, we have taken that burden and risk upon ourselves. We have induced people to invest in and become holders of our bonds and capital stock—this was the only way we could raise the money to build the properties—and now we cannot pay the interest and dividends which this money thus invested entitles them to unless we can receive for the services we perform fair and proper pay and compensation. If the public owned and operated the railways themselves, they would surely insist upon and see that every one who patronized the cars paid what the service rendered was worth. Why should we then as the agents of the public not be accorded the same treatment? Again, if the companies are required to do and pay for things they should not do and pay for, just to that extent they are deprived of ability to meet their obligations for operating expenses, taxes, interest and dividends.

"Exactly the same would be true with the public if it owned and operated the railways. Would the public, if it owned and operated the electric railways, consent, as a charge against these properties, to improve streets for the benefit of abutting property owners, pay damage claims that were unjust or submit to the payment of anything that was not equitably and properly a charge against the railway properties themselves or the operation thereof? In brief, what we want the public to learn and act upon is that when a demand is made of any of our companies it should be answered the same as if the public itself owned and operated the properties which we own and operate. Let the acid test be applied, namely, that we should have for our services the same compensation the public would demand, that we should have the same rights and privileges guaranteed to us which the public would demand and that we, as the agents of the public, should be oppressed with no burdens that the public would not allow the same properties to be oppressed with if it owned and were itself operating them.

"Of course, all this that I have said is on the assumption that the railway companies on their part strive to their utmost to give the public the best service possible, for, after all, this is the foundation and the only foundation upon which we are permitted to rest our demands of the public.

"If all of us interested in the industry strive to carry out the principles and do the educational work which I have indicated here to-night, it will not be many years, or even months, before a different feeling on the part of the public toward the electric railway companies will be apparent. Then it will not be possible for anyone successfully to make demands upon us for unjust claims, nor will unjust burdens be laid upon our shoulders, but we should secure proper and satisfactory compensation for the service which we render to our patrons.

"In my opinion, the public will be fair and just when it understands the questions it is to act upon. Some people may not be able to lay aside their prejudice and selfish interest, but the large body of the public will be inclined to do what is fair and will want to see justice done between the companies and the individuals constituting the general public."

# Railways and Government Regulation\*

Speaker Points Out Difficulties of Regulation and Reasons for Lessened Borrowing Power of Railroads—Rates Must Be Increased—Regulation Problem Must Be Solved Along Line of Private Ownership and Centralized Government Control

By OSCAR W. UNDERWOOD

United States Senator from Alabama

NO more important question now pending before the American people waits proper solution than the settlement along just and economic lines of the vexed problems of transportation. The President of the United States in his recent message to Congress recommended that a commission be appointed to give a thorough investigation to all the problems that confront us in this field. As I understand the purpose of this investigation, it is not to hold an inquest on what has happened in the past. If errors have been committed or injuries have been done, that is a question for the courts and not a question of legislation. The real purpose to be accomplished by the investigation is to give an opportunity for all concerned—the farmer, the merchant, those directly engaged in transportation, the Interstate Commerce Commission and the railroad managers—to appear before a committee of Congress and state their views in reference to the solution of this great problem to guide our legislative course.

You may ask me, why the need of an investigation at all? There may be those present who believe that the transportation companies of the United States are engaged in private business and that they should not be interfered with by government regulation. To them I can only say that the transportation of the commerce of this country by the carriers is so closely allied to the healthy growth and the economic business development of the nation that its regulation was inevitable from the beginning. If we are unable successfully and fairly to regulate the transportation systems of America, the country will demand that we go forward, and the next step ahead is the government ownership of the railroad lines. A step in that direction would be most unfortunate, and it would lead to many evils that we dream not of to-day. To avoid these, we must work out a satisfactory system of government regulation, both for those engaged in the shipment of freights and those who have their money invested in the means of transportation—and this as soon as possible.

## DIFFICULTY OF REGULATION IN UNITED STATES

In almost all countries the railroad question is one of first importance. In other countries the problem has not been so difficult of solution as in our own, owing primarily to two causes. Our large population and vast natural resources located far inland and at great distances from water transportation makes railroad carriage indispensable, and industrial freedom could be guaranteed only by just regulation. The most serious difficulty that has in the past prevented the solution of



Photo by C. V. Buck

OSCAR W. UNDERWOOD

the problem here and is not met abroad, is a political one. Our system of government, under which the states possess certain inherent governmental rights and the federal government the great powers that were delegated to it in the beginning by the states, increases the difficulties and uncertainties that surround the problem before us.

It has been said that "No man can serve two masters," and under the regulation of to-day the transportation companies of America must obey the mandate of the federal government and at the same time the orders of each state through which the railroad line makes its way. All of the important railroad lines run through two or more states and are subject to different laws and regulations whenever a train crosses a state line. Go into the baggage car of an express train leaving Chicago and you will find a package that will reach its destination within Illinois resting against a parcel whose destination is beyond the state line. Consider for a moment that the one package is subject to the rule of one master and the other must obey the mandate of at least three masters. The courts have held that under the protection of the federal constitution the right of the railroads to charge rates that will produce a reasonable income on invested capital must be held inviolable, but how can we successfully determine what is a reasonable charge to be allowed for invested capital when we leave the determination to three or more sovereignties, each acting in its individual sphere?

## LESSEned BORROWING POWER OF RAILROADS

Low rates and adequate facilities are demanded by the public, but the granting of one is often the denial of the other. Adequate facilities very often require the expenditure of large sums of money, but low rates prevent the accumulation of surplus capital and lessen the borrowing power of the roads. Without new railroad facilities commerce cannot be expanded beyond the present limitation and trade has met a permanent barrier to its future development.

Two decades ago the great trunk lines of the country were able to borrow in this country and abroad the money necessary to increase their facilities at 4 and 4½ per cent interest. Railroad bonds were considered by the investing public a first-class investment. How is it to-day? It is often with great difficulty that the best transportation systems in the United States are able to renew their old loans or place new ones. Practically none of these loans can now be placed at 4 per cent interest. A large majority of the bonds or notes sold in the last year earn above 5½ per cent interest and some are placed at rates as high as 7 and 7½ per cent. What

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.

is the effect of this condition on the shipping public? It must be borne in mind that of every \$1 that is earned by the transportation companies of America, 88 cents must go to pay wages, up-keep and operating expenses, and only 12 cents goes to the capital account. It must also be borne in mind that there is no speculative enhancement in the value of the railroads that can be converted in the coffers of the company because the property of the railroad is needed for its operation, and when the lines are once built the operation must continue in the interest of the public, and whatever their relative value may be does not affect the earning capacity of the company.

The sole source of revenue for the maintenance, development and expansion of railroad systems must come from the men who ride on the trains as passengers and from the men who ship their goods over the railroad lines. If the interest rates are increased, the transportation companies must pay. In the end, however, they must get the money to meet the increases either by the reduction of wages, curtailment of facilities or an additional charge on passenger and shippers of freight.

From a practical point of view, the last alternative is the one that must be adopted. When a transportation company twenty years ago placed its bonds at 4 per cent interest and renews them to-day at 6 per cent, so far as the public is concerned it is identically the same as if the company had increased its bonded indebtedness by one-half at the old rate of interest. And yet the public derives no benefit whatever from the increased charge. It is, therefore, necessary in the interest of the public even more so than in the interest of invested capital, that the credit of the transportation companies should be so good that they can secure the capital for their present maintenance and their future development at the lowest possible charge.

#### WHY STATUS OF RAILROAD SECURITIES HAS CHANGED

There may be many reasons to account for the changed status of railroad securities as investments in recent years. You may say that it is due to adverse legislation that has alarmed the investing public. Whether the legislation has been unwise and ill-considered, or whether it has been just and fair, there can be no question that the investing public has become alarmed as to the solvency of railroad securities. It is also true that recent legislation of Congress exempting state and municipal bonds from national taxation has invited capital into that field of investment. Again, it is true that the past generation regarded industrial securities as a more or less speculative investment, but the development of the great industries of to-day along safe and conservative lines has opened a field for the use of capital at higher rates of interest than the transportation companies of America can afford to pay, because there is no governmental limitation on the profits that can be made in industry and there is a hard and fast limitation, fixed by law, on the earning capacity of railroad securities.

Moreover, the opening of new fields for investment has taken away from the transportation lines much of the market they enjoyed for their securities in the past. The rates of taxation have increased in every state. Wages have gone up. The cost of equipment and supplies has greatly increased. If it had not been for economic management, many of the railroads that are running to-day would have been forced into the hands of receivers.

In short, the transportation companies of America have been unable to earn sufficient capital to enable them to meet operating expenses and interest charges and accumulate a surplus with which to provide for bet-

terments and improved and safer facilities, and their credit has been so seriously disturbed that they are unable to borrow money for the new improvements at reasonable rates of interest. In fact, it can be said without expectation of contradiction that taken as a whole the transportation system of the United States, as far as performing its proper functions in the transportation of freight to the ultimate markets and the carriage of passengers to their destination with safety and economy, is breaking down.

#### HOW THE PROBLEM SHOULD BE SOLVED

What then must we do to restore confidence in the minds of the investing public as to railroad securities, to insure rapid transportation of passengers and freight at reasonable rates, and to provide for the safety of transportation and the increased facilities that are necessary to transport the growing business of the nation? These results cannot be accomplished by moving backward or divorcing the transportation system from government control.

In my judgment, we must find the golden mean. We must solve the problem along lines of private ownership and government regulation. We must consider the wisdom of substituting one master for the forty-nine masters that regulate commerce to-day. We must consider the wisdom of government supervision over the issuance of all transportation securities with the assurance to the public that new capital will be invested to secure proper facilities and used for legitimate purposes—not for speculation. We must assure the public that we stand for a system of regulation which will allow the transportation companies to charge such rates for carriage as will enable them promptly to meet their interest payments as well as their operating expenses. We must perfect a system of regulation that will recognize that the transportation lines are great public highways in which the people are as much interested as those who have invested their capital in them, that every shipper in America must have equal rights in the transportation of his goods along those highways, and that rebates and discriminations of all kinds must be of the past and prohibited in the future. Furthermore, we must recognize that the man who is willing to invest his money at a moderate rate of interest in railroad securities is not exploiting the public but is a public benefactor.

In my opinion an adequate transportation system means:

1. Roadbeds must be made more secure and more permanent.
2. Trackage must be enormously increased and many roads double tracked.
3. Safe equipment must be sufficient to satisfy requirements at any and all times.
4. Terminal facilities must be greatly improved and largely increased.

Stated briefly, then, the question is whether the American people are willing to put up with an unsafe, inferior and inadequate transportation system or have the intelligence to pay for one that will supply their needs and protect the lives of the people. The main trouble with the regulation of railways is that corporate law has been destructive, not constructive, has been piecemeal, not comprehensive.

To solve these problems, it is proposed that a committee of Congress shall give a thorough and complete hearing to all who desire to present their views. Let us hope that the result of the investigation will be productive of wise legislation—legislation that will build up and not destroy—legislation that will be helpful and not hurtful—legislation that will bring lasting and complete prosperity to the people of America.



# Principles of Railway Valuation\*

What Value Consists of, How It Should Be Ascertained and What Use Should Be Made of It—General Discussion of Relevant Facts to Be Considered in Valuation Work, with Particular Exposition of Reproduction Cost Theory

By NATHANIEL T. GUERNSEY

General Counsel American Telephone & Telegraph Company

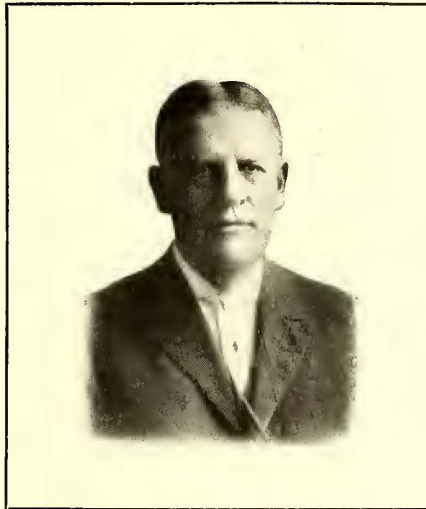
**E**MINENT engineers have contended that value should be determined by cost, or fixed by the cost of reproduction, with or without the deduction of depreciation, or that it should be something ascertained by capitalizing earnings. Each contention is an attempt by a forced definition of the word value, to work out the result which the facts under consideration seem to demand as just; and so we have a cost value, a reproduction value, an investment value, a rate-making value, a taxable value, the adjective in every instance being in effect a confession that what is under consideration is not value, or fair present value, but something which the adjective distinguishes from it.

Value, when applied to the property of public utilities, means what it means when applied, under like conditions, to any other class of property. It is what the property is worth. It is, adopting the language of the dictionary, the "price equal to the intrinsic worth of the thing," its "real equivalent." Just as soon as it is conceded, for the purpose of working out an equitable result in one case, that value may be construed to mean something other than value, the door has been opened for construing value to mean something other than value in order to work out an inequitable result in any case. It will not serve the interests of either the utilities or the public (which, in the final analysis, are not antagonistic), to attempt to solve any of the questions that are presented by juggling with the meaning of words, or by giving them an arbitrary definition. Any inequalities in the law may be more surely and promptly corrected by facing them squarely.

## HOW IS VALUE TO BE ASCERTAINED?

The value of any public utility at any particular time is a fact which must be deduced from the application of trained, intelligent, honest judgment to a great many other facts. The Supreme Court said in the Minnesota rate cases (230 U. S. 434) that the ascertainment of value is not a matter of formulas, but there must be a reasonable judgment properly considering all relevant facts.

The knowledge which will enable one to distinguish the relevant from the irrelevant facts and to assign to each relevant fact its proper weight is something that cannot be attained without experience. The fact that value is the result of trained judgment should tend to restrict the field, if not to entirely eliminate the class, of so-called experts, who are not experts at all but who are



N. T. GUERNSEY

mere theorists, and who are dangerous because of their eagerness to apply to the property of others their theories, honest but absolutely unsupported by the results of practical experience, and therefore untrustworthy.

## RELEVANT FACTS TO BE CONSIDERED

The fact that value is something to be determined by the application of reasonable judgment to all of the relevant facts, leads naturally to the inquiry, What are the relevant factors bearing upon the value of an electric railway or of any other public utility? As long ago as 1898, in the case of *Smyth vs. Ames* (169 U. S. 466-546) the Supreme Court called attention to the more important of these factors as follows:

"And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property."

This statement, which has been referred to with approval in practically every subsequent case involving a like question, specifies as important factors the original cost of the property, the cost of its reproduction, its capitalization and its revenue. It clearly leaves the door open for the consideration of every other material factor.

It is probable that no person could enumerate all of the factors which should be taken into account, or which are in fact actually taken into account, in a proper determination of the value of any public utility, because it is improbable that any person of trained judgment, even though exercising that judgment soundly along correct lines, would be able to specify every factor which consciously or unconsciously had affected his conclusion. Consistently with this fact, and probably because of this fact, the courts, while specifying certain factors as pertinent and entitled to consideration, have never attempted to specify all of the material factors and have been careful not to exclude from consideration anything which may actually affect the value of the property in question. The cases decided by the courts overwhelmingly negative the proposition that any single thing or any single factor can of itself be a measure of value, doing this sometimes by direct statement and more often inferentially but not less certainly.

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4. Discussion on this address by George Weston and P. J. Kealy appear later in this issue.

Just as there is no formula through the application of which value may be ascertained, there can be no formula which will determine the relative weight which the various factors affecting value should have in any particular case. The weight to which they are entitled is to be determined by the facts and circumstances of the particular inquiry. This is very aptly illustrated by evidence as to cost. Such evidence is competent under the authorities. This is settled beyond room for controversy. But the weight to which this evidence of cost is entitled, and it may vary from nothing to almost controlling importance, depends upon the circumstances of the case.

Many valuers, who have never made the analysis of the situation which leads to the formulation of this rule, have recognized its soundness through their practical application of it in their own work. Original costs, where a long period of time has elapsed and where the conditions when the costs were incurred vary radically from the conditions which exist at the time of the valuation, can have but very little, if any, appreciable weight in determining the question. Recent costs, incurred in the immediate past, where there has been no such variation of conditions, are accepted as most persuasive evidence of what present costs would be, while for the item of work under construction, the actual expenditures, where known, are usually adopted. Cost, while not a measure of value, is a legitimate and valuable factor in arriving at value, if it be intelligently and properly applied.

Capitalization is another material fact, whose weight depends wholly upon the surrounding circumstances. Securities recently issued for cash are entitled to and receive serious consideration. Securities issued long ago, under circumstances that may not be now ascertained with definiteness or certainty, are entitled to and in fact receive much less consideration.

The facts as to net revenue are without exception held to be material, and they are in fact material, notwithstanding the interdependence between earnings and rates. What conclusively establishes their materiality is not the unanimous holding of the courts, but the fact that this holding accords with the experience of every person who has ever tried to buy or sell a public utility.

The courts through their decisions cannot make a factor material which is not in fact material, nor do they attempt to do this. What they attempt to do is simply to declare the principles which have been developed out of innumerable business transactions.

#### REPRODUCTION COST

The other factor specifically mentioned in *Smyth vs. Ames* is what is now usually called the cost of reproduction. Practice has properly recognized this as, under normal conditions, the most important single factor affecting the determination of the value of a public utility. In a nutshell, the reproduction method is nothing more than a refinement and application of the rule of common experience which has taught everyone who wishes to buy something to test the reasonableness of the price by what it would cost him to obtain the same thing either by constructing it himself or by procuring it from another source.

The estimated cost of reproduction should be the estimated cost of reproducing a duplicate of the going plant, not the cost of reproducing something that it is believed would be a satisfactory equivalent. What is to be ascertained is the value of the existing plant, not the value of some other plant which it is expected (but not all expectations are realized) would perform the same functions or accomplish the same results. To the extent that the hypothetical plant departs from the

existing plant, there is injected an element of uncertainty which tends to impair the accuracy of the estimated cost of reproduction. In cases where the existing plant contains elements which obviously would not be incorporated in a new plant intended to perform the same service, the valuer will do just exactly what the prospective purchaser would do under like circumstances, that is, he will take these factors into account in determining the weight which the estimated cost of reproduction shall have in connection with his ultimate conclusion as to value.

The proper application of the reproduction theory calls for the exercise not only of judgment and technical training of the highest order, but of imagination as well. The value of the conclusions reached is affected not only by the accuracy of cost estimates, such as unit prices and allowances for what are usually designated as overhead items, but, underlying and to a certain extent controlling these things, by an accurate conception of just what the process of reproduction involves. It must include in connection with the hypothetical plant every step which would be involved in the reproduction of the existing plant, because each one of these steps involves the expenditure of money, and even with the greatest care in this connection it is almost certain that there will be omissions. It is not probable that the valuer will erroneously include matters which are not incidental to the reproduction of the property, but it is almost inevitable that he will be unable to anticipate everything, and that there will therefore be some omissions.

Because it is necessary to include all factors to make the work of the valuer as accurate as possible, he must put himself in the position of a person about to reproduce the utility in question, and as a preliminary matter must attempt to reproduce in his mind every step which would be taken, from the inception of the idea to the completion of the plant in its present condition, including such attributes of the property as its business and earning power.

In making an estimate of this kind some of the steps which would naturally be taken are the following:

a—The conception of the idea and the consideration of it.

b—The discussion of it with other persons whom it might be necessary to interest in the project.

c—The employment of engineers to estimate in a very rough way the amount of capital which it might be necessary to acquire.

d—The consideration of this report and the determination whether the project seemed practicable and to promise a profit.

e—The employment of counsel and securing of advice in a preliminary way upon franchise and organization questions.

f—The preparation of a franchise by counsel, negotiations between counsel and the municipality with reference to the adoption of the franchise, and the time and effort which would be required to secure its adoption.

g—The organization of a corporation to take over the franchise and construct the plant.

h—The preliminary survey of the territory with a view to laying out the plant, determining the location of the necessary real estate for works and things of that kind.

i—The optioning and acquisition of the necessary real estate.

j—The preparation of definite engineering and architects' plans which could be made the basis of definite contracts for material and construction of such parts of the work as would be contracted.

k—The creation of a definite preliminary organization

which would take charge of the doing of the actual work of construction, the securing of the necessary capital and its disbursement, and the creation of an operating organization which probably would be created gradually, contemporaneously with the work of construction.

l—The actual work of construction.

m—In connection with the work of construction, the building up of the business and operating force and business organization.

In connection with the consideration of these various steps the valuer will determine the time which will probably be required for the work. In determining this, he will be governed by the point of view of the prospective purchaser, who may elect to either buy or build. This purchaser would take the period which, all things being considered, would in his judgment be most economical.

This general outline is sufficient to make it clear that the proper application of the reproduction method involves much more than a mere listing of the physical property and the application to the quantities thus obtained of unit prices. This is an important part of the process, but it is by no means all of it, and any practice which is based upon the erroneous assumption that this listing of the physical property and application of unit prices is the entire process, must inevitably lead to conclusions grossly unfair to the utilities.

The accuracy of the estimate must depend to a considerable degree upon an accurate inventory of the property which goes to make up the utility. Such an inventory, however carefully taken, will involve more or less in the way of omissions. These will be comparatively unimportant. Something of much greater importance is the fact that the inventory of a completed property cannot, in the very nature of things, show the temporary work incident to its construction.

This is very strikingly illustrated by the subway construction which is now under way in the city of New York. The cost of the temporary surface for the street and of restoring the permanent surface, the cost of the temporary sidewalks and of restoring the sidewalks, the cost of the temporary elevated railroad structure and of its permanent supports, the cost of the temporary facilities for the water, gas, telephone, telegraph and lighting properties, and of providing for them permanently, are all of them, with perhaps some minor deductions, a part of the cost of the subway, and yet they are each of them items that any inventory which may be taken in the future will fail to disclose. Factors of this nature are involved in every estimate of the reproduction cost of a utility.

#### DATE OF VALUATION

The date as of which the valuation should be made is a question which has furnished a subject for considerable theoretical discussion. There is an answer to the question which is as sound as it is simple. Like many other questions relating to this matter, it can be solved best by putting one's self in the position of the prospective purchaser who is invoking the estimate of the cost of reproduction to check the price, and asking what he would do. With a prospective purchaser, this is not a merely theoretical matter. It is a concrete, practical matter. The alternative that is presented to him is either the purchase of the actual property or the construction of a like property, and the course which he will pursue is determined by the question of cost. It is perfectly clear that he cannot, having this question presented to him, put himself back three or four or five years and begin the construction then. He must construct in the future. For this reason, the repro-

duction theory, properly applied, requires that the building of the hypothetical plant shall be after the date of the valuation, and not prior to that date.

#### OVERHEAD CHARGES AND UNIT PRICES

There are certain other items of expense which are just as inevitably a part of the cost of the structure, which cannot be definitely ascribed to the specific items which go to make up the structure. These are illustrated by the cost of engineering and the interest during construction, contingencies, omissions, taxes, insurance, personal injuries and many other items of a like general character. These overhead items, together with the results deduced from the application of the unit costs, will give what is frequently, but not strictly accurately, called the cost of reproducing the physical property.

The unit prices and the overhead estimates are interdependent. Perhaps the best and most usual practice is to include in the unit prices all items going to the cost of the labor and material, including the wages of the foreman superintending the labor, incurred up to the time that the material is put in place in the structure. But there are wide differences in the practices of valuers upon this question, and there is undoubtedly a middle ground which includes a number of debatable items which may with propriety be classified either with the unit costs or with the overhead allowances. The essential thing is that there be the proper co-ordination of these two classes of items, so that taken together they will properly provide for each item of expense which reproduction would involve.

Unit prices are not to be determined by the market price upon the date as of which the valuation is to be made, or upon any other particular day. During the period of reconstruction, the prospective purchaser has every reason to believe that there will be variations in the prices of labor and material. In determining whether or not he shall buy or build, he will take this factor into account. He will consider all of the available information as to prices of both labor and material, and all of the other facts which will help him reach a conclusion as to what the probable tendency will be during the period of construction, and thus make estimates which in his judgment will cover insurance against this uncertainty.

A determination of what the proper overhead charges shall be is peculiarly a matter for trained judgment. No allowance should be made for any item on account of which actual expense will not be incurred, and on the other hand, no item of necessary expense should be excluded. Where there is uncertainty, it must be taken care of because this again is something which has been paid for in the completed plant. Items such as taxes, personal injuries, insurance and the like, can in general be estimated very accurately by those who have the advantage of large experience in connection with works of the same character.

#### FRANCHISES AND GOING VALUE

Franchises should be considered, if franchises are necessary to the operation of the utility. Not much progress has been made toward working out a basis for definitely approximating their value. It cannot be said, however, that they are not worth at least what it would cost to obtain other like franchises, nor can it be said that such other like franchises could be obtained without the expenditure of money, and the time and effort that represent money.

Going value is the element which represents the difference between the actual value of property and what the value of the same property would be if it were not a going concern with an established business, earning

money. No argument is necessary to support the proposition that a plant with this attribute of an established business is worth more than the mere bare bones of the same plant, and if this element of value clearly exists, it is clear that it must be taken into account. It is an error to think of going value as something separate and apart from the physical property. It is in fact something that cannot be separated from it, but is one of its attributes.

How this element of value should be measured is another question. The Wisconsin theory, the theory based upon early losses, and the cost of reproducing this attribute of the plant, are theories which have been strongly advocated. It should be clearly borne in mind that each of these theories is intended to serve the same purpose, *viz.*, to aid in correctly appraising this element of value. Some of these methods are fundamentally based on cost, some of them upon the cost of reproduction; some may give better results in some instances, others in others. None of them can be taken as an absolute measure. Each of them at its best is simply an aid to the exercise of reasonable judgment. If the proposition is correct that a plant with this attribute is worth more than a plant without it, and this contention has the sanction of common experience everywhere, some means will be devised for giving to this element of value the weight to which it is entitled.

#### DEPRECIATION

Without reference to the question whether in establishing a schedule of rates the cost of reproducing the property, undiminished by depreciation, should be taken as the factor, it is clear that in ascertaining the actual value of property such depreciation as actually exists must be taken into account. The reasons which require the consideration of appreciation likewise require the consideration of depreciation. The reproduction method applied to any property automatically takes into account appreciation and depreciation to a large extent. If it did not, the result should coincide with original cost.

Where, as in all of these cases, the effort is to ascertain the value of a single entity as a going concern, the mere fact that all parts of it are not new—the mere fact that through the maintenance and reserve accounts provision must be made for continuous renewals—is not enough to warrant the inference that there has been any lessening in the value of the property in question. On the other hand, it is a matter of common knowledge that no new railway is worth as much as the same line after it has been seasoned by time and use. It is not an exaggeration to say that any public utility, well and efficiently maintained and operated, is perhaps without exception not only worth as much, but worth more than an absolutely new like plant.

Another thing that should be given strong emphasis is the fundamental error in the assumption that the amount which may be at any time in the depreciation reserve measures the actual depreciation of the property. There is absolutely no warrant for such an assumption. If a prosperous property has piled up a reserve equal to 100 per cent, this certainly does not mean that the entire value of the property has been destroyed; and on the other hand, the fact that a property has no reserve is not a demonstration that it has not depreciated. Unless this be true, depreciation would be a mere matter of accounting, and it would be easy to prevent it by carrying no reserves upon the books. It is a question of fact, only ascertainable through an actual inspection of the property by some one whose training and experience has qualified him to draw sound conclusions.

It is difficult to imagine any public utility, reason-

ably well engineered, located in a community sufficiently developed to need such a utility, as worth less than it would cost to reproduce it. If the existing utility were destroyed, a substitute would have to be provided. It could not be said that this substitute would be worth less than its cost, and its cost would be equivalent to the cost of the reproduction of the existing utility. But there are other factors which the estimator must take into account. Important among these are the financial history of the plant, the probable development of the community in which the plant is located, whether the plant is thoroughly well engineered with reference to both the present and the future, as well as many other facts which will vary with the conditions that surround specific utilities.

#### WHAT USE SHOULD BE MADE OF VALUE

It is a mistake to assume that, value having been fixed, and fair return having been fixed by the determination of a rate simply high enough to avoid the charge of confiscation, what should be the net proceeds from a reasonable rate schedule can be ascertained by multiplying these two factors together. This accords neither with the law nor with sound business sense and policy. Instead of determining what would be a reasonable schedule of rates, this process simply fixes the line that limits the jurisdiction of the regulating body below which it cannot go. It, in a broad sense, represents the cost of the service. There is another factor that is of just as much importance in determining what is a reasonable rate—that is, the value of the service of the consumer. Between the cost as a minimum and the value as a maximum lies the field for regulation.

The matter has never been more aptly put than by Justice Swayze,\* from whose opinion the following excerpt is made:

"The next question is whether the rate fixed was just and reasonable. On the one hand, a just and reasonable rate can never exceed, perhaps can rarely equal, the value of the service to the consumer. On the other hand, it can never be made by compulsion of public authority so low as to amount to confiscation. A just and reasonable rate must ordinarily fall somewhere between these two extremes, so as to allow both sides to profit by the conduct of the business and the improvements of methods and increase of efficiency. Justice to the consumer, ordinarily, would require a rate somewhat less than the full value of the service to him; and justice to the company would, ordinarily, require a rate above the point at which it would become confiscatory."

In the determination of this question between these two extremes, the regulatory body should consider what any business man would consider if a like question were presented to him. Some of the factors which would normally and naturally be taken into account are the value of the property, the cost of reproducing it new, the cost of rendering the service, the value of the service to the consumer, the financial history of the property and whether its profits have been large or small. Much of the difficulty that has arisen in connection with these matters has been due to the misapprehension that value when ascertained should exclude from consideration many of these other material factors.

The valuation of any public utility, whether it be made by the utility or by a regulatory body, should be treated as a broad question to be determined justly and fairly, not to be controlled by mere theories and technicalities, except in so far as their use will tend to an equitable and just conclusion.

\*Public Service Gas Company vs. Board of Public Utility Commissioners *et al.*, Supreme Court of New Jersey, decided July, 1913.

# Rate of Return on Railway Capital\*

Factors to Be Considered in Speculating as to Future Rate of Return Needed to Attract Capital—Causes Contributing to Lack of Railway Stability—How to Reduce Future Rate by Automatic Regulation of Revenues and Expenses

By J. D. MORTIMER

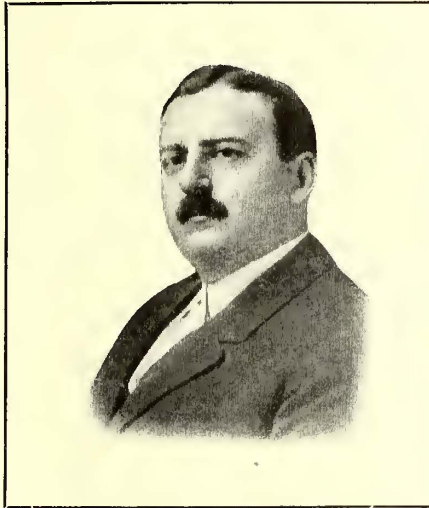
President North American Company

INVESTIGATIONS in the cost of electric railway service show that after operating expenses, return on capital is one of the principal elements affecting cost. The aggregate return on capital is the annual income available to pay interest on bonds and other evidences of indebtedness and dividends on share capital. The rate of return results from the association of the aggregate annual return and the amount of capital. With a given aggregate return, the rate of return will vary inversely with the amount of capital. The determination of the actual rate of return requires a definition of the method of measuring capital, thus naturally leading to the subject of valuation, which is discussed by other speakers.

Taking things that are as they are, our greatest interest lies in speculation as to the future rate of return necessary to continue to attract capital into the electric railway business. Money for the extension of electric railways comes from those having money to invest. It may come from the sale of bonds or from subscriptions to stock, or both. The sale of such securities brings the electric railway into competition with all other classes of investment in the market for capital. Capital will flow into those investments where the certainty of a given rate of return is greatest. It will shun hazardous investments unless the promised rewards are great in the event of success.

Speculation on the future rate of return necessary to procure electric railway capital results then in an inquiry with respect to the magnitude of actual returns, their stability as evidenced by the past, the tendencies of the future and the hazards of the business. These are all matters of importance in measuring the needed rate of return for new capital. The problem is made more difficult by the fact that the electric railway business has been shown to be one of decreasing returns. The return on the initial capital is in most cases less to-day than it was five or ten years ago, or when it was originally invested. This condition has resulted from a number of causes, the principal among which are the increase in operating expenses and the decreases in gross earnings. The rate of return on new capital must then be so large as not only to provide an adequate return on the new capital but also to offset the decrease in return on older capital arising from the causes mentioned. These facts have tended to limit the investment of new capital in the electric railway business, and it is difficult, if not impossible, to determine the rate of return which investors will demand in the future.

Hence, in discussing the future rate of return for



J. D. MORTIMER

the traction industry, one finds himself forced to consider it from the standpoint of relative hazard and stability when compared with other businesses competing for the free capital of investors. F. W. Doolittle, in his book on "Studies in the Cost of Urban Transportation Service," gives a table showing the returns in a group of thirty-six industrial concerns. The rate of return on capital varies from 3.89 per cent to 112.9 per cent, with an average of 19.3 per cent. There are only nine concerns out of the group for which the annual rate of return is less than 8 per cent. The table shows twenty-three out of the group, or 64 per cent of the total, for which the return was 9 per cent or more. These figures indicate the nature of some of

the competition in investments which the electric railway industry must meet.

Of the hazards in the business, or causes contributing to the lack of stability in rate of return, the principal ones may be briefly classified as follows:

1. Variation in gross earnings arising from:

*a*—Variation in earnings, resulting from variation in business conditions.

*b*—Competition, arising from other forms of transportation.

2. Small rate of growth of revenues.

3. Increase in operating expenses, caused by:

*a*—General rise in level of wages and cost of materials.

*b*—Higher service standards.

*c*—Increase in taxes.

4. Non-productive investments, such as:

*a*—Paving within track zone.

*b*—Placing wires underground.

*c*—Grade crossing separations.

*d*—Abandonment of existing lines before the useful life of property has expired.

5. Contingent costs, arising out of improvement in return circuits.

6. Uncertainties of valuation, arising from the lack of agreement in respect to fundamental principles of measuring utility capital, and the uncertainties as to the final disposition of electric railway utilities in the social scheme.

These causes of lack of stability and return are frequently accentuated by attacks or agitation on the part of municipal officials. Sometimes these attacks are developed in order to raise an issue, while often they arise from some fancied defect in service which the agitation is designed to correct. They are never made with the full knowledge of the financial aspects of the business. These attacks in almost every case cause more permanent harm than they do temporary good. They cause

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.

the railway business to be regarded by investors as an extremely hazardous venture, and one that is subject to hostile attack. The investor measures the hazard by the frequency and the extent of the fluctuations in the actual rate of return, the danger of confiscation of all or a portion of the investment, and the nature, frequency and extent of hostile attacks by public officials.

#### REDUCING THE NEEDED RATE OF RETURN

The rate of return necessary to attract capital into the business under the conditions that exist for most electric railways, may be reduced by contractual guarantees made by the municipalities. These guarantees may eliminate the hazard or reduce it to a very small quantity. Where a municipality provides in a franchise for rates of fare which increase automatically with decreasing gross revenue or increasing expenses

and conversely, so as to provide a constant rate of return, and at the same time protects the company against loss upon the termination of the franchise, the return necessary to attract capital may approach the legal rate of interest.

In general a more universal recognition on the part of the public, that electric railways are far from the bonanzas that their promoters believed them to be, is essential to the procuring of substantial justice in the treatment by the public and in the regulation of railways by regulating commissions. Moreover, a frank acknowledgment on the part of electric railway owners and operators, of the hazards of the business and of the conditions necessary to insure its future expansion, is necessary before the industry can expect either to see a revival in the business or to receive that fair treatment which justice and equity demand.

## Uncertainty of Utility Valuation\*

Hesitation of Investors Toward Public Utility Securities Is Caused by Uncertainty About Valuation Results—Valuations Will Decline in Favor, but as Long as Used Should Be Conducted Fairly and Liberally—Investors Have Faith in Future

By T. S. WILLIAMS

President Brooklyn Rapid Transit Company

ONE factor in ascertaining the measure of return from public utilities is the margin of receipts over expenditures, and the other is the value of the property upon which such return shall be computed. Obviously the operation is a failure from an investment point of view if the net returns, after setting aside adequate reserve funds, are not sufficient to pay a fair rate of interest upon—what? Cost? Yes, if the original and added properties remain substantially unimpaired, and the securities representing cost continue to be held by the original owners. In the case of reorganized properties, however, where by reason of past failures securities representing costs have been scaled down, then the financial test of success is the ability to earn fair interest upon the diminished—not original—cost. And, on the other hand, in the case of properties not reorganized but successful, where, as the prices of the securities representing actual costs have risen and new investors have come into ownership at the enhanced prices representing appreciation in earning capacity and in physical property, the operation is a failure if the return is not sufficient to serve as a reasonable return not upon original cost but upon present value. Please bear in mind that I am speaking now of securities and their prices representing real values—whether original cost or present cost of reproduction—not fictitious values.

Now, the investment point of view should be largely the economic and the public point of view. As long as public utilities are furnished by private capital neither equity nor the self-interest of communities justifies any less favorable attitude. Otherwise such investments



T. S. WILLIAMS

will diminish or cease, and the conveniences will be curtailed or withheld, unless furnished by the uncertain resort to general taxation. No injuries from excessive rates have ever been shown which outweigh the injuries from crippled transportation. And crippled transportation is no longer a threatened evil. It is already existent and the results are apparent. It is a stupendous fact, as pointed out recently by the *Railway Age Gazette*, that, in spite of the increase in population and the country's marvelous expansion in practically every line of industry, the mileage of new railroad constructed in the United States in 1915 was less than in any year within the last sixty-six, with the exception of three years during the civil war, and

that in Dec. 31, 1915, 38,661 miles of railroad were in the hands of receivers, and more than \$1,500,000,000 of railroad bonds issued by such railroads were in default or in jeopardy of default.

#### PURPOSES OF VALUATION

Valuation of public utilities has three principal purposes—as a basis for issuance of stocks and bonds, as a basis of rate-making or as a basis for acquisition by purchase or condemnation. Logically, the general standards of valuation for any of the three purposes should be the same, although equitable considerations influencing the amount allowed may be stronger in determination for one purpose than for another and, in addition, the elements entering into the aggregate of values will, of course, differ. For instance, in purchase and condemnation the earning capacity and the franchise are property rights which, in the absence of contractual reservations to the contrary, the courts will protect as an element of value, but in authorizations of capital

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issues the franchise is now generally excluded by law beyond a limited amount, and in valuations for rate-making both earning capacity and franchise are usually disregarded. And, again, in rate-making, values may exist which are not reflected in any capital issues, representing property paid for out of other funds than the proceeds of such issues, or representing appreciated property.

But it is an uncontrovertible assumption that, as a matter of square-dealing, when stocks and bonds have been issued pursuant to public authority upon actual values, nothing less than the par of such capital issues should be regarded as the amount upon which a proper return should be allowed in rate-making, even though this rule be not applied to valuation for acquisition. And it is, furthermore, a reasonable assumption of justice, even if not so uncontrovertible, that where, as often in the past, bonds and stocks have been issued pursuant to legal requirements, with or without official investigation, in excess of actual values, they should be duly respected in the fixing of rates, even though the authorized rate of return on the securities representing such excessive values may properly be less than in the case of capital issues at actual values. Official recognition of these assumptions of fundamental justice would eliminate much fear among holders, or prospective holders, of such investments.

#### INVESTORS FEEL UNCERTAIN ABOUT VALUATION RESULTS

The hesitating attitude of investors toward public utility securities evidenced in recent years has been due not merely to the imposition of restrictive and sometimes retaliatory legislation affecting return in the shape of interest or dividend, but to doubt as to the integrity of the investment itself, owing to the uncertainty of valuation as a basis for any of the three purposes mentioned, and to fear that the power of valuation for rate purposes may be used to depreciate the value of property for governmental acquisition. Official valuations of such properties are, like some modern diseases, a comparatively recent development. They have naturally followed the transfer by legislatures to commissions of broad powers of regulation, supervision and rate-making. The commissions, as a rule, are not composed of men of special knowledge, and, skeptical of suggestions from practical and experienced persons and inclined to be demagogic, they have surrounded themselves with inexperienced helpers and advisers schooled in the atmosphere of theory, often hostile to property rights, and always keen for retention of salaries by display of activities which only make unnecessary labor and trouble for their superiors. Out of this situation have naturally come confusion of thought, wide divergences of official action, the infliction of injustice, the sacrifice of savings and the consequent unsettlement of security prices.

#### VALUATIONS WILL DECLINE IN POPULARITY

Valuation of great enterprises like railroads, lighting properties and telephone companies, involves so many factors, requires such expert service, costs so much money, upsets so much confidence and yields so small a measure of benefit to the public, that it should be employed in rate-making only under exceptional cases of apparent injustice. The universal official resort to it will accomplish more public harm than good. If the power of valuation is exercised unjustly to reduce rates, it will drive capital out of such investments and the chief sufferers will be those to whom facilities or enlargement of facilities are thereby denied. If exercised justly it will in many cases necessitate an in-

crease in rates, to the possible disadvantage of the public. Even any uniform application of what would theoretically be considered a just rule of valuation will in its effect upon competing public carriers often put one or the other out of business, and the possibilities of other chaotic complications are unlimited. A few more years of experience in valuations are likely to diminish their present popularity.

#### VALUATIONS MUST BE BASED ON FAIR-DEALING AND LIBERALITY

If valuations are to be for a time fashionable, however, it is vitally essential that the principles underlying and governing them should be such as will insure substantial justice to investors and subserve a sound public policy. To-day there is no general concurrence of opinion upon either the theory or the method of valuation. It is not merely a mathematical question or an economic question. Too much is at stake in the direct and indirect results to limit investigation and conclusion to any such narrow bounds. No fixed statistical rule can apply justly to all cases. The widespread discussions which have followed the act of Congress directing a valuation of interstate railroad properties show how divergent intelligent opinion is upon this subject. Even the economists are beginning to see that the problem is not an easy one and cannot be solved by the application of mere theory. And among the operators of and the investors in public utilities there are also differences of opinion. But we can all agree on this at least, that behind all official investigation of values must be the desire for fair-dealing—fair-dealing to the investor, to the operator and to the public—and on this, also, that a liberal attitude in the determination of values is likely to be a very vital influence toward the people's comfort and prosperity.

#### VALUES SHOULD NOT BE HELD CLOSE TO NON-CONFISCATORY LIMIT

I wish to emphasize in this connection what is sometimes overlooked, that this matter of valuation, whether for rate-making, for capital issues or for acquisition, involves not merely such values as will be upheld by the courts as within the bounds of law. The courts are called upon to pass upon more limited questions than the utility commissions and the legislative bodies. To the courts, upon review of administrative valuations or rates based thereon, are presented as a rule the questions of contractual rights or confiscation of property. May the Lord have mercy on our people if administrative or legislative bodies confine their conclusions to merely what will pass this legal test! From those public servants we expect not merely what is legal, but what is reasonable encouragement to a necessary industry and to the broadest welfare of the public. If the rate of return on public utilities is limited to 5 or 6 per cent upon even a fair valuation, then investments in such enterprises will have to be guaranteed by government or money for them will not be forthcoming, in view of all the attendant risks of such business. On the other hand, a generous return, commensurate with that from private industries, will be productive of general good in stimulating the supply and the character of public utility service.

#### APPEAL OF UTILITY SECURITIES TO INVESTORS

Probably the greater part of the savings of the public is invested to-day, directly or indirectly, in the securities of public utility corporations. This would, perhaps, not be true if the government's attitude toward such corporations had always been such as it has been during recent years. From force of habit, or from

hope of a changed attitude, this tendency to investment is still great though diminished. Yet this anomalous situation prevails—that a man may put his money into any private business of manufacture, merchandise, mines or finance, and rest assured that there is no limitation upon possible profits except those which are imposed by the natural laws of trade, economic and industrial conditions, or poor management. But if he puts his money into public utility stock he does it to-day without any assurance whatever, except that inspired by the hope of good faith, that no matter how much the corporation earns he can be allowed to receive only such a rate of return as the courts may declare is not confiscatory, on a valuation of property which the courts may approve. And if he takes the more conservative course and puts his money into a public utility bond bearing a fixed rate of interest, he has no substantial assurance that the government will let him receive the interest or get his money back at maturity of the bond. Why does he do it? My supposition is that he does it because, in the first place, with due allowance for all the failures of public utility enterprises, their shares have in the past offered a fair speculative opportunity and their bonds a reasonably safe investment;

in the second place, unlike most private (even though corporate) concerns, the public utility corporations furnish complete reports of their operations; and in the third place, and most important, the average investor has not yet lost faith in the attitude of the government toward public utilities, and believes that it will treat them and him justly and fairly.

This faith, then, is our chief reliance—the great safeguard of the savings of millions of our people, the hope of our industry, and the promise of that extension and development of transportation facilities of which our country is sorely in need. Is it a misplaced faith? I think not. But to justify it the people must be informed, investors must be aroused and public servants must do their duty with intelligence, fairness and fearlessness. And we as operators, as responsible directors of such wide-reaching undertakings, as guardians of these savings, have the primary duty of winning public confidence by strict adherence to high standards of business ethics, and by such capable management as is possible with the facilities which conditions permit us to supply. With such public confidence behind us we need not fear the political crippling or destruction of our properties.

## Return on Massachusetts Investment

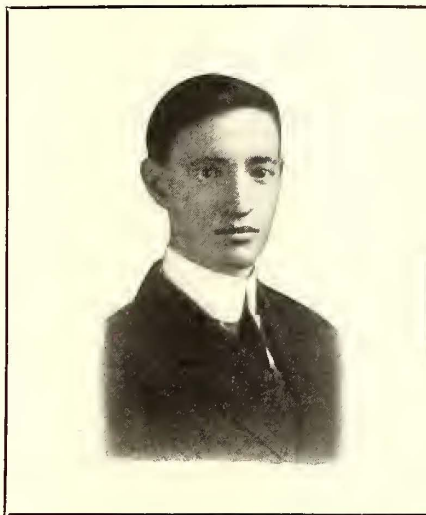
The Writer Shows How Under the Massachusetts System of Regulation Investment has Increased but Rate of Return has Decreased—Rate Must Not Be so Low as to Be Confiscatory but Must Be High Enough to Attract Capital

By D. J. McGRATH

Research Division Electrical Engineering Department, Massachusetts Institute of Technology

SOME time ago a member of one of the best-known corporations promoting and managing public utility enterprises placed the following proposition before the research division of the electrical engineering department of the Massachusetts Institute of Technology. He said: "There seems to be something the matter with the street railway industry in many parts of this country. A number of companies are apparently unable to pay their way under present conditions, while others seem to be quite prosperous. Nearly all, both the bankrupt and the prosperous, have the standard 5-cent rate of fare for carrying passengers, yet in only a few cases does the total revenue received seem to be reasonably proportionate to the necessary and proper expenses. The general public has many criticisms to offer concerning our rates and our service, but it has little or no conception of the relative magnitude of the expenses which make up the total service cost. As you can approach this problem free from the preconceived ideas and possible bias which we who are so closely connected with it may have, will you not study the question in a scientific and analytical manner, and present your findings and conclusions to the public and the railways alike?"

This research has been undertaken, much statistical



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material has been accumulated and a fund of general information has been obtained. Many companies in the eastern and middle western parts of the country have been visited and inspected. Their officials have been interviewed. The reports of many public service commissions and local regulatory bodies have been studied, and members of the staff of these commissions and other bodies have been consulted. At present, we are slowly digesting and filling out all this material, and hope in the not too distant future to be able to make public some useful data and fairly definite conclusions on the street railway fare question.

Very early in our work we began to appreciate the fact that one of the most important factors in our problem was perhaps the most difficult one upon which to secure any really definite information. I refer to that factor which you will recognize under the various titles of the cost of, the investment in or "fair" value of the property required for providing transportation service. Correlated with this factor is the less elusive but still perplexing problem of the "fair" or "reasonable" return on that cost, investment or value.

We could not indiscriminately accept the gross capitalization of any and every street railway as a fair criterion of the real cost of the property required to give the service. Whatever may be the reasons, good, bad or indifferent, justifying past issues of stock

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.



bonuses, stock dividends, promoters' profits and the like in individual cases, it would evidently be most improper to standardize them in a study of this kind. Neither were we equipped or sufficiently endowed with funds to go out and make engineering valuations of the electric railways.

MASSACHUSETTS LINES CHOSEN FOR INVESTIGATION  
BECAUSE OF STRICT REGULATION

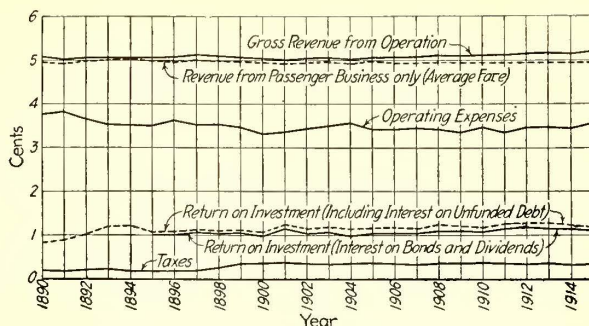
In this dilemma we naturally turned our attention to the street railways in the State of Massachusetts, where for many years the accounting and the financing of companies have been under strict public regulation, and where, because of certain fundamental laws, we can to-day safely accept capitalization, investment and property cost as meaning very nearly one and the same correct amount in the street railway field. The laws of Massachusetts have been very strict as regards the issuance of securities for anything other than *bona fide* extensions, additions or betterments, and have been ably and justly administered by the Railroad Commission and its successor, the Public Service Commission. Of course, there is always the possibility that in spite of legal obstacles and commission supervision, some minor irregularities may in some cases have crept in, but if they have, they are certainly small and relatively unimportant in the general problem.

Under these circumstances, then, it is illuminating to review the history of some of the Massachusetts lines, and to see what capital has earned as its reward for spinning a closely interwoven web of steel rails across the State and for furnishing transportation to nearly every city, town and hamlet. The annual reports of the commission, containing statements of the receipts, expenses, assets, liabilities and traffic statistics of each railway, are well adapted to such a study. We have traced back the history of the finances, operations and growth of several systems and also of the industry as a whole in Massachusetts, through a period of twenty-five years, to 1890.

GENERAL DECLINE IN DIVIDENDS PLAINLY MARKED

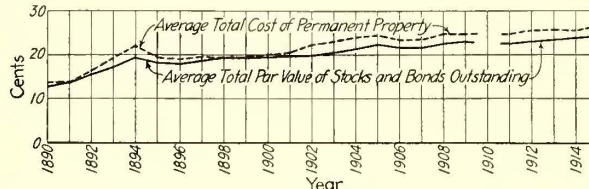
At that time the street railways were in the process of electrifying their lines. The total track mileage, the equipment, the traffic and the total investment were insignificant when compared with the magnificent size of this industry to-day. In the year 1890, despite the heavy costs of electrification, the average dividend on all outstanding street railway stocks in Massachusetts was 7.10 per cent, computed on the mean average par value of stocks at the beginning and end of the fiscal year. Since then there have been variations, up and down, but the general decline in this form of return on actual investment is plainly marked. As shown by the accompanying graph in Fig. 3, the lowest level was reached in 1905, when the average dividend was only 4.57 per cent.

It was about that time that the street railway operators in Massachusetts were confronted with the necessity of making heavy expenditures for renewals and reconstruction of depreciated property. Such expenditures cannot be legitimately charged to new capital, but must come out of earnings. This matter of providing funds for renewals is one of the big problems of the Massachusetts companies to-day. If it be asserted by anyone that the dividend rates of the early '90's were unwarranted, and that the companies should have reserved this money for future depreciation, it must be remembered that the gross amounts of money then involved were relatively small when compared with more recent years. Moreover, it was only this apparent prospect of profitable investment that led the early in-



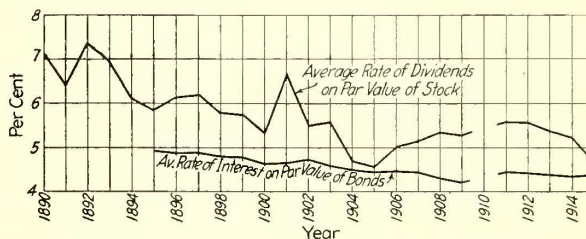
RATE OF RETURN—FIG. 1—AVERAGE RECEIPTS AND EXPENSES PER REVENUE PASSENGER

In this and the following diagrams, the years indicated end on Sept. 30.



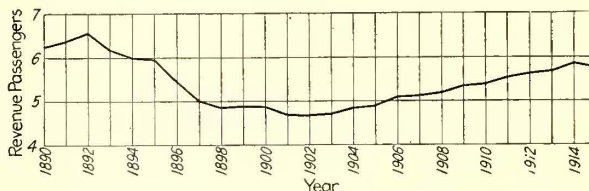
RATE OF RETURN—FIG. 2.—AVERAGE TOTAL INVESTMENT PER REVENUE PASSENGER

Total amount taken is the average between the beginning and end of the fiscal year, divided by the number of revenue passengers carried in that year.

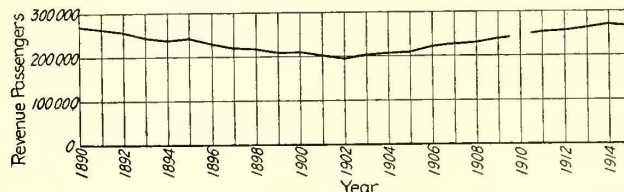


RATE OF RETURN—FIG. 3—AVERAGE RATE OF RETURN ON INVESTMENT

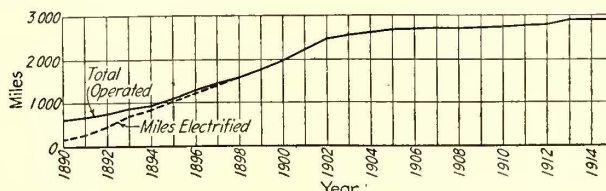
If the total cash premiums that were paid in on stock are considered, the actual return in the form of dividends is even less than shown in the upper curve. In 1914 it would be about 4.8 per cent, and in 1915 about 4.3. If the premiums and discounts on bonds are considered, the actual return as interest on bonds is somewhat greater than shown in the second curve. In 1914 it would be about 4½ per cent, and in 1915, about the same.



RATE OF RETURN—FIG. 4—AVERAGE NUMBER OF REVENUE PASSENGERS PER CAR-MILE



RATE OF RETURN—FIG. 5—AVERAGE NUMBER OF REVENUE PASSENGERS PER MILE OF TRACK OPERATED PER ANNUM



RATE OF RETURN—FIG. 6—TOTAL MILES OF SINGLE MAIN TRACK

vestors to risk their money in a more or less experimental form of transportation.

Since 1901 the average dividend in Massachusetts has never been so high as 6 per cent. It would seem that the extremely low payments from 1903 to 1908 far more than balanced any possibly excessive dividends in the early '90's. Since the very moderate average of 5.6 per cent in 1912, there has been another period of decline until in the last fiscal year, ended June 30, 1915, the average dropped to 4.67 per cent. The reduction of dividend rates on the largest two systems in the State, the Boston Elevated Railway and the Bay State Street Railway, account for this last large decline.

As a matter of fact, these averages are really even lower than they appear to be here, if they are computed on the actual total cash invested, for in many cases investors believing in the ultimate stability and prosperity of the street railways have paid considerable premiums for their stocks, especially on the larger roads. These premiums have been put directly into the street railway property. On the basis of the premiums listed in the 1915 report of the Public Service Commission, the average return on investment in stocks was only about 4.3 per cent.

As a partial offset to these low rates of return, consideration must be given to the tax system in Massachusetts whereby residents of that State owning stocks of street railways incorporated in that State are not taxed on such stocks. The street railway corporation itself is charged a corporate franchise tax which accomplishes the same purpose. Another asset of some value to the stockholders in prosperous companies is their ability to sell their "right" at a slight margin of profit, when new shares are offered to them under commission authority at prices slightly below the prevailing market value. The sale of new stock, however, cannot be made at less than par value.

#### RECORD OF BOND INTEREST

What of the bonds of Massachusetts companies? Unfortunately, the early reports of the Massachusetts Railroad Commission do not show the interest paid on bonds as distinct from the interest and discount on various forms of floating debt. By 1895, the reports had been made sufficiently detailed to make these distinctions clear. In that year the average interest on the mean outstanding funded debt was about 4.97 per cent. In 1915 it was 4.39 per cent. This decline in the average rate of bond interest is different from the dividend decline in that it is due to the inherent stability of the bonds, and the reasonable assurance of continuous interest payments, having priority over the dividends on stocks. The decline in rate of dividends is due only to the lack of sufficient income to pay higher rates, after other expenses are taken care of.

While investors in the stocks of Massachusetts street railway corporations do not have to pay taxes on them, the bonds are not so exempted, and if ownership in such bonds is honestly declared, the owner has to pay over to the tax assessors from \$1 to \$2 or more out of every \$4 or \$5 that he receives as interest on his \$100 bond. Savings banks do not pay direct taxes on such bonds when they own them, but they pay a State tax of one-half of 1 per cent on total deposits.

#### INCREASING INTEREST AND DECREASING RATE OF RETURN

Up to this point we have been discussing only average conditions applying to the street railway industry as a unit in Massachusetts. Of course, these averages are made up of many different individual cases, with extremes in both directions. There are some prosperous and some very impoverished companies in this

State. We have made studies of the reports of a number of individual companies, carrying our investigations back as far as 1890. A method of analysis which we have termed the "life curve" method has been developed. By these life curves we endeavored to show graphically the history of certain factors, such as revenue, various expenses, investment, return on investment, traffic, etc. Many of these items have been computed and plotted on the basis of the revenue-passenger unit. At first it seemed as though a general condition of increasing investment and decreasing rate of return existed for all street railways, but of course there soon were found to be some exceptions.

In a number of individual cases, however, especially among the larger and more important companies, the average cash investment per revenue passenger carried per annum has increased materially since 1890 without any proportionate increase in the fraction of each passenger's nickel available for return on investment. In some cases the investment has doubled and even tripled, from about 10 or 15 cents to 20 and 30 cents per revenue passenger carried, while the receipts per revenue passenger, i. e., the 5-cent fare, and the net earnings available for return on investment per revenue passenger have remained practically constant. On the great majority of Massachusetts railways to-day from 1 to 1.5 cents out of each passenger's 5 or 6-cent fare goes to paying interest, dividends and rentals of leased lines. These figures based upon the revenue-passenger unit are not clever ways of juggling statistics to prove anything that it is desired to prove. They are merely arbitrary transformations of the gross total figures, which anyone can easily verify by reference to the annual reports of the Massachusetts commission, and they are so changed into smaller units because they are easier to comprehend and are more significant in this form to the average man.

The causes of the increasing investment in particular companies, and of the average condition in Massachusetts, are too numerous and too complex to be thoroughly discussed in this paper. Some of this increase came early and suddenly in the cost of electrifying. Some is due to the building of extensions in unprofitable territory and to increasing the length of haul for the 5-cent fare, where the density of traffic was not and has not yet become sufficient to make these extensions profitable, but where operation once started must somehow be continued for the well-being of the population.

The accompanying charts, in which the figures are based on the totals and averages for all Massachusetts street railways considered as a unit, show very clearly the growth of investment and the decline in the rate of return. Other factors, such as the rapid growth of track mileage up to 1902 and its subsequent cessation, are also indicated. Conditions as they exist to-day in Massachusetts show that some companies are earning a good return, while others are paying no return whatsoever on cash actually and honestly invested in capital stock. One or two are even in receivers' hands, as they cannot pay the bare interest on outstanding bonds, which cannot be more than one-half the total securities. As to the average condition of the whole industry in the fiscal year ended June 30, 1915, the total par value of stock and bonds received an average return of only 4.55 per cent, while stocks alone received an average dividend of 4.67 per cent, and bonds alone an average interest rate of 4.39 per cent.

#### WHAT A FAIR RATE OF RETURN MEANS

What constitutes a fair rate of return? We find the widest range of opinion on this subject, from the radical who would deny any return whatsoever on capital in-

vestment, to the just as impractical conservative who would argue that having established his monopoly he should be allowed to earn unlimited profits from his special privilege. Ignoring these extremists, we all agree that a fair rate of return as a minimum must not be confiscatory or less than current interest rates in enterprises of somewhat similar characteristics. On the other hand, as a maximum, it is quite plain that it must be limited to an amount not exceeding that which will be sufficient freely to attract new capital when it is needed for additions and improvements. It is in this respect a purely competitive matter. Of course, those who have capital invested in railway securities would like, if possible, to receive higher and higher returns. That is only a natural desire, but if monopoly demands excessive returns on its investment, the public will find capital at more reasonable rates.

In recent rate cases in Massachusetts the Public Service Commission has seemed to hold that 6 per cent on the capital stock may be considered at least reasonable and fair under Massachusetts conditions, but it does not undertake to guarantee that poorly managed roads or those unwisely and imprudently located shall earn this much. Neither does it undertake to limit well-managed, prosperous companies to this rate as a maximum. In 1915, eight out of fifty-three companies paid dividends aggregating more than 6 per cent on the par value of the common stock, all of which was sold for cash at par or more than par when originally issued. Four of these were leased companies on which guaranteed dividends were paid as rentals by the lessee companies. The other and less cheerful side of the story is that six paid 6 per cent and thirty-nine out of the fifty-three companies paid dividends of less than 6 per cent. Of these, twenty paid no dividends whatsoever.

The laws of Massachusetts do not permit a street railway to issue shares of stock at less than par. Yet unless there is almost positive assurance of continuous and uninterrupted dividends, anything less than 6 per cent is sure to push the market value of stock below par, even under conditions otherwise so favorable as in Massachusetts. Under another law, a street railway may not increase its funded debt above the limit of its capital stock outstanding. These two statutory limitations have resulted in the highly commendable condition that the outstanding securities of Massachusetts street railways actually represent the investment in and cost of the property, and that the securities are well balanced as between stocks and bonds. At the same time, it is easy to see the difficulty in which a company finds itself when, under unprofitable rates of fare or some extraordinary expense burden, it fails to pay reasonable dividends and its stock falls below par. It is then practically impossible to get new capital for additions and improvements. Who will invest \$100 per share in new stock while the older shares are worth less than that in the open market? That is the situation in which the Boston Elevated Railway finds itself at the present time.

#### WHAT SHOULD BE DONE TO ATTRACT NEW CAPITAL?

Shall we say that because some of the street railways are now unprofitable it was unwise to build them in the first place and therefore let them go to the wall, their present owners standing the loss? Shall the large consolidated companies which are now in financial difficulties abandon service on the thinly settled rural and suburban lines which are a constant source of loss and which could not be made to pay at any rate of fare? Or shall fares and fare systems be revised in Massachusetts? Shall we increase the unit fare from 5 to 6 cents or more, where lines are now unable to earn a fair return? Sometimes such horizontal increases in fares fail of their purpose because of the loss of short-riding

traffic at higher rates. Or shall we shorten existing 5-cent fare zones, or even revert to a uniform mileage rate of fare? Shall we charge one rate in territory where the traffic is dense and the cost of service per passenger is low, and a different and higher rate in thinly-settled territory where the cost of service per passenger is high? Or is it reasonable and fair to charge a somewhat excessive fare to the people in prosperous sections in order that service may be maintained in poorer sections which are not self-supporting?

Take the case of the Bay State Street Railway, which is now before the Massachusetts Public Service Commission with a petition for increased fares on practically all of its many lines, covering the whole eastern end of Massachusetts. Quite naturally there is strenuous opposition on the part of the public. Nearly every community affected has authorized representatives to appear before the commission and present arguments against the increase in their particular districts. The people of the thinly-settled districts argue that the fares are already as high as they can stand, that the traffic is still altogether too light and that any increases in fare will make it still lighter and be generally ruinous to service. On the other hand, the people of the thickly-settled mill cities, and similar districts of dense traffic, assert that in their territory the company is making at least a fair return on its property, and that they should not be obliged to support unprofitable lines which were consolidated with theirs in the earlier history of the company. The Bay State Street Railway, as a unit, is apparently in need of some increase in revenue if it is properly to maintain its property and pay a 6 per cent return on its common stock. The stockholders of the railway are, naturally enough, indisposed to make a gift of their investment to the railway patrons and are anxious to receive at least a 6 per cent return.

#### WHAT THE RESEARCH DIVISION IS TRYING TO DO

It would be presumptuous of us to offer, in advance of the commission's decision, any solution of this particular case. Indeed we are not yet ready to present any definite conclusions or solutions of the street railway fare problem. We are not endeavoring to prove that street railways should charge and receive higher fares. There are many lines which are successful at present rates. But it is clear that some companies are distinctly unsuccessful at present rates, and by unsuccessful it is meant that they are unable to pay even a fair interest rate on cash actually and honestly invested in the business. It is also clear that on many successful, as well as unsuccessful railways, the 5-cent fare is a legacy of the horse car days and short-line period, that it bears little or no relation to the actual fair cost of service, and that it is unreasonably low for the service and length of ride which some passengers receive and unreasonably high for others.

It is toward the possibility of offering some logical and helpful suggestions on these matters that we are now working, and for this purpose that we are gathering statistics and general information. This paper has been limited to a single topic and that topic limited to conditions in the single State of Massachusetts. Our investigations, however, have covered, and will continue to cover, a much wider field. The American Electric Railway Association numbers among its members representatives of all branches of the street railway industry, public commissions and public utility experts. If any member has in his possession any data or any suggestions which might possibly serve to throw additional light on this problem, we most earnestly solicit his correspondence.

# Competition with Other Investments

Capital Cannot Be Obtained to Develop the Electric Railways Unless a Reasonable Return Is Not Only Promised but by the Experience of the Industry Is Made Dependable—The Interest of the Public Is Greater Than That of the Investor

By ORLANDO B. WILLCOX

Vice-President William P. Bonbright & Company, Incorporated, New York

**E**LECTRIC railways, from the standpoint of the public, are merely public utilities—properties built and operated by the capital of private investors, dedicated to serve the people in the vital business of local transportation, charged with the duty of giving adequate service to the community in the territory served and of making such extensions as the demands of the public require and such improvements as progress in the applied arts permits and under obligation also to give such service at reasonable rates.

But from the standpoint of the investors who supply the capital required electric railways are business enterprises, offering opportunity for the employment of capital in a permanent business, with expectation of reasonably steady income and reasonable profit; they have become great financial institutions, requiring large capital. They can be operated successfully only by the keen appreciation of their managers of the fact that the foundation of the business is the capital invested and that the business must be conducted, while with due regard to its obligations as a public utility, always as a financial institution into which no capital will flow except upon an expectation of profit.

Profit cannot be expected, and of course no new money can be obtained for the properties, unless the financial records demonstrate the safety of the capital already risked in the enterprise and earnings permitting the payment of a reasonable return upon it, also the security of the additional capital required, and the promise of earnings on both the old capital and the new capital sufficient to justify a reasonable certainty of the payment of a fair return on both.

The endeavors of the managers of the property in respect to its securities are therefore twofold; first, to protect the integrity of the investment already made and endeavor to earn and pay reasonable returns to the present investors; second, to show such security for further investment and such certainty and amount of future returns as will attract the additional capital required for extensions and improvements, through the sale of additional securities.

Legislation, regulation and management may affect the value of outstanding securities and may facilitate or obstruct the sale of additional securities. Stocks and bonds already outstanding are evidences of property, and property itself is protected by the constitutional prohibition against taking without due process of law.

The legislation creating commissions for the regulation of public utilities has charged the commissions with the duty of permitting only just and reasonable rates for service rendered, and generally the orders of the public utility commissions have involved either reduction of charges or improvements and extensions of service. A reduction in charges results, of course, in less income per unit of service and affects the earnings distributable to securities, while improvements and extensions of service also usually involve expenditures of

capital to secure which new securities must be sold. The standard fare for street railways being 5 cents, often fixed by ordinance or contract, the regulation of electric railways has more often affected service than earnings.

Upward of \$5,000,000,000 are invested in electric railways in the United States, and the magnitude of this financial interest of the people of the country is the measure of the obligation of public service commissions to see that the charges for the service are not only just and reasonable to the passengers but also for the investor.

The electric railways of the country serve every city and every town, every large industrial district, every seaport, extensive suburbs and countrysides, resorts and amusement centers; the interurban lines connect cities with cities and provide the only transportation for great areas; they are the cheapest means of transportation; vast millions of our population depend on them daily between home and business and in the many activities of commercial life. An occasional failure of service because of fire or storm or flood brings instant inconvenience or loss or suffering to many thousands. Electric railways are a great national industry—a great national convenience—a great national necessity—a great national asset. That government function which interests itself in the economic welfare of the people can have few obligations greater than the preservation and protection of electric railway service for the present needs of the country and the promotion and encouragement of its improvement and expansion, in quality and extent, to keep pace with its increasing use and meet the future demands of a country growing rapidly in population and tending as rapidly to undue concentration.

The trolleys, urban and interurban, permit concentration of workers in business and industrial centers, simultaneously with diffusion of residence in suburban and country districts, and are both the instruments and the cause of this tendency, of such great import to our social and industrial health and activities.

These active and interacting tendencies toward concentration and diffusion of population have put demands on electric railways not contemplated by the original investors or dreamed of by the most farsighted economist or financier. Lines originally running a few miles, operating on light rails, carrying passengers in small cars drawn by horses the length of the line for 5 cents, have expanded through the adoption of electricity and responded both to the facilities available and to the increased demand, so that now big, handsome, well-lighted and heated cars with adequate equipment serve as easily and as quickly square miles of territory as their forerunners served city blocks. We may well point with pride to the expansion of street car service as one of the great accomplishments of this age.

No economist would hesitate to declare that the encouragement of this great industry to the full performance of the task it has set itself, and the promotion

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.

of its expansion and improvement adequately to meet the more exacting and dependent demands of its millions of industrial patrons is one of the big tasks of this day and to-morrow, calling for the most intelligent co-operation of science, efficiency and finance, and of individual effort with governmental support.

#### THE PROBLEM TO BE SOLVED

The problem is not that of so financing and operating a finished work as to conserve the interests of the investors while serving a static and satisfied demand. It is rather the constant and repeated rebuilding and expansion of a vast, economic, arterial system by the application of the latest achievements of science to the ever heavier and wider distribution of the energies of the very life and body of the community served—a system which grows, producing a redoubled new demand for every new facility afforded and which needs not only coal and steel and brains, but vast wealth to adjust its functions to its requirements, and the moneys constantly required must come ultimately from the pockets of the people.

Capital, the aggregate of funds free for investment, is sought by our own Government, offering the credit of this nation as security; by other great governments, which are offering now as high as 7 per cent; by states and cities, by railroads and banks, by the steel and other metal industries, by manufactories, and multifarious opportunities are offered with varying security and rate of return, and varying attractions real and sentimental. The capital required for electric railways must be sought in competition with all the securities appealing to investors for funds, and there is little hope that it will be available unless the usual requirements of investors are met. These requirements are that capital already invested in electric railways be amply protected and made safe and regularly pay a reasonable return, and that new capital be amply secured and made safe and a reasonable return on it not only promised, but by the experience of the industry made dependable.

What constitutes a reasonable return is succinctly stated in the admirable "Report of the Railroad Securities Commission" to President Taft, Nov. 1, 1911:

"We hear much about a reasonable return on capital. A reasonable return is one which under honest accounting and responsible management will attract the amount of investors' money needed for the development of our railroad facilities. More than this is an unnecessary public burden. Less than this means a check to railroad construction and to the development of traffic. Where the investment is secure, a reasonable return is a rate which approximates the rate of interest which prevails in other lines of industry. Where the future is uncertain the investor demands, and is justified in demanding, a chance of added profit to compensate for his risk. We cannot secure the immense amount of capital needed unless we make profits and risks commensurate. If rates are to be reduced whenever dividends exceed current rates of interest, investors will seek other fields where the hazard is less or the opportunity greater. In no event can we expect railroads to be developed merely to pay their owners such a return as they could have obtained by the purchase of investment securities which do not involve the hazards of construction or the risks of operation."

Not only the protection of the present huge investment but the future of the industry depend on the ability of the electric railways to offer securities of such safety and promise as will attract the needed new money, in competition with all other securities offered in the money markets of the country, and those charged with the management and regulation of the industry

may well inquire what course must be taken to secure this result. This responsibility rests quite as much on those regulating electric railways as on those who manage them.

The conditions inherent in the electric railway business give peculiar power to the people, acting through their representatives, the legislators, utility commissions and city councils. Not only is the business a natural monopoly, competition bringing increased cost and decreased efficiency and service to the public, but both the location of the investment and the area of the market for the service rendered are definitely and immovably fixed. In this latter respect the industry differs from almost all others. The site of a factory can be moved, if unbearable conditions of whatever origin are imposed, without a necessarily total loss of the going business of merchandising, which in turn is conducted over areas without fixed limits, reaching markets where demand exists; and if one market is shut off, whether by tariffs or transportation costs or fashion's changes, another can usually be found or created by progressive management; and the goods dealt in may be changed, and in fact in all industries are constantly changing, to meet varying market conditions.

Not so a street railway. The plant is so rooted to the soil that it cannot be moved without total loss; its market is the territory served and no other can be reached; its output is transportation in that territory and cannot be varied. So is the industry peculiarly defenseless against oppression, whether through declared attempts at confiscation or throttling under the guise of regulation.

The dedication to the public service and the immobility of investment, plant and market, making attack easy and defense difficult, throw upon the public the concurrent obligation that the investment shall be protected in its entirety, and neither shall the rates be made too low nor service requirements too onerous to permit a reasonable return on capital invested and the new capital required for extensions and improvements.

Beyond the responsibility to the investor, the public served has a greater interest—a selfish interest—much more concrete and material, if no less real and compelling, than the duty to be honest. The public has a greater interest in the electric railway than all the investors, because in every community the electric railway is a necessity and every day a greater necessity to the due course, order and progress of the community life.

It goes without proof that the loss to the public, in all but the most exceptional cases, would be much greater, were the electric railway totally destroyed, than the loss to the investor. In such a case, beyond the immense inconvenience, the lack of the speedy, safe and cheap transportation of passengers would instantly destroy values in real estate, buildings, leaseholds, going businesses, stocks of goods and means of employment, immeasurably greater than the value of the investment in the railway itself.

It may not be so instantly apparent, but reflection will bring conviction, that impairment of the ability of the railway properly to serve the public, while injurious to the owners, must react more severely on the public and the community. The investor feels it instantly in loss of income. The public does not see or hear the loss of efficiency, the loss of time, the decrease in population, the loss in value of real estate, the stoppage of progress and the stunted growth; but is it not necessarily true, that if rapid transit brings growth, progress and enhanced opportunity and values, the lack of it will obstruct or prevent them?

The public served, then, and the investors have an

active interest in the prosperity of local transportation lines. The growing community, offering opportunity for successful and profitable business in all the activities of modern industry; factories, shops and new construction for the labors of the people; labor, market and profits for the employer; absence of undue congestion of population; homes in the suburbs for men of small incomes and remoter and less crowded residences for the well-to-do—these usual conditions of the modern American city have followed the development of electric transportation and are impossible without it. Find a dull, backward and inactive town, and you will find an unprofitable street car system, unable to give modern service through the inability to secure and recompense the needed new capital. The community served and its transportation facilities are part of one whole, and the success, growth and prosperity of one is dependent upon like prosperity of the other. The security and safe and adequate return to the investor in electric railway securities react to give better transportation facilities to the community, and if oppressive regulation reduces the earnings so as to imperil the principal or the returns of the capital invested, the public will suffer for the lack of the facilities efficient transportation would give. There is no conflicting or divergent interest; the investor and the public prosper or suffer together. Each has a common interest in promoting the prosperity of the other.

#### THE NEED OF A NEW PUBLICITY

Now the interest of the investor is concentrated in the management, which knows these things, while the interest of the public is diffused, and to each man is secondary to his own private affairs. So, upon the management of the electric railways rests the responsibility of making these aspects of their business clear to the public and those of the public servants who are responsible for the regulation of their common interest. It is no easy task, and while it is recognized and much discussed by every live management, too much emphasis cannot be laid upon the necessity of a new publicity—an insistence that the public learn and know the common interests of the traction lines and the community.

The service demanded by the public requires every right and so-called privilege given to the transportation company, and these are used primarily in the service of the public and are essential to public service, while they are merely elective and incidental to the investor. Capital is the freest and most fluid of commodities. It may go where it pleases, and it does go where security and return are best assured, while local rapid transit is an insistent necessity in every community. None of the incidents to transportation is necessary to capital. The corporate machinery for the concentration of investment funds, the stockholder's immunity from personal liability and his right to vote and to act through directors and officers, the franchise, the right-of-way, the use of the streets and the power of eminent domain are the essential instruments of transportation, without which it cannot be had. They are not the only recourse of capital, which can seek employment in a thousand other attractive and profitable enterprises. They are the "special privileges" the demagogue so delights to shout of. They are, in fact, the essential facilities afforded by the public to provide itself with its necessity. Let them be taken back by the public—and while an enormous amount of capital will be destroyed and the investor will suffer tremendous loss, the public will suffer more.

Capital is proverbially timid. It refuses to venture again where it has been ill treated, deprived of a fair

return or suffered loss. Once diverted by losses from the enterprises to which it is accustomed to flow, and persuaded that repeated losses will follow its investment in a field become dangerous though previously profitable, capital would require long years of good records to induce it to return. It is far more important to the American public that its local rapid transit facilities grow and expand and bring in new population and multiply the wealth of the urban and interurban districts, than that American dollars be given a chance to earn a precarious return by investment in this particular business.

Deprived of expanding rapid transit, the American city will ingrow and strangle itself in unclean congestion. Deprived of safe and profitable investment in rapid transit securities, the American dollar will earn a surer and a larger return in unregulated industries.

These truths the public must be shown, and by the managers of electric railways. The public is selfish and uninformed, it may fatuously believe that it is benefiting itself by requiring extensions and improvements of service without also providing for a fair return. If the public is instructed in its own interest, it cannot long be blind to the profit of two dollars in convenience and efficiency and value to itself for every dollar fairly earned for electric railway stocks and bonds—nor to its loss, if loss follows investments in public service.

Securities of electric railways will not be salable if constantly increasing mileage, involving new investment, is demanded for the same 5-cent fare; if an even greater share of the income must be expended to meet requirements for costly improvements in service without increased return; if higher costs of material and labor must be met out of shrinking earnings; if modern and expensive pavements, not used or injured by the cars, must be paid for out of earnings, while interest and dividends are left unpaid.

Unless the public is prepared to assume the financial burdens and political evils of state or municipal ownership of these modern necessities, all unreasonable demands on the capital invested or required in electric utilities, and on their static or decreasing income, must be removed. The public must be made to recognize its own vital interest in the industry and do its part by restraining unfair demands under the guise of regulation and by protecting investment and providing rates which will insure a fair return; and when these reasonable requirements of capital are met, electric railway securities will successfully compete with any in the world's markets.

The burdens on the managers in these essential utilities are great, and to them is added their obligation to the investors and the public to disclose frankly the real problems of local transportation in the precarious financial conditions of their properties. The recent reports tend to show a decrease in gross income per dollar of investment, an increase in operating expenses due to increased cost of materials and labor, the normal extensions and improvements in service and the demands of regulating bodies, a large increase in taxes, large increases in non-remunerative investments such as street paving, a constantly diminishing return on the capital invested, a shrinkage in the surplus applicable to depreciation and available for contingencies and periods of dull business. A further danger confronts the business in the tendency still further to limit the income through appraisements and valuations not recognizing the true value of the properties or the vital interest of communities served in their prosperity, and by fixing a "rate of return" not adequate to meet the demands of modern service or permit the earnings

sufficient to justify investors in providing money needed for extensions and betterments and improved service, and for maturing obligations at the lower rates the inherent soundness and permanence and legitimate earnings of the service should assure.

Attacks, whether ignorant or malevolent, must be met by frank and courageous disclosure of all the finan-

cial difficulties and dangers besetting the business, as well as convincing presentation of the results to the public of strangulation of electric traction, and the common-sense and self-interest of the people must respond to these honest endeavors by assuring a fair policy of honest treatment and a just and reasonable reward.

## Increasing Capacity of Urban Systems\*

Author Discusses New Construction Procedure to Be Followed When Capacity of Old Surface Lines Reaches Saturation Point—In Case of Subway Construction Community Should Finance Improvement and Share Fixed Charges Until Ultimate Capacity Is Reached

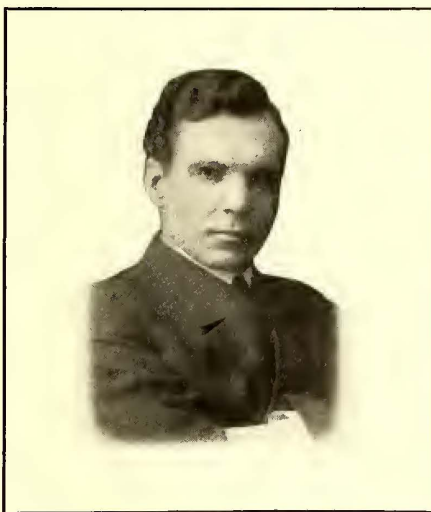
By M. C. BRUSH

Vice-President Boston Elevated Railway

ACCORDING to a careful analysis of the increase in population in various cities as compared to the increase in street railway patronage, the latter increase is at a slightly higher rate per year than the square of the increase in population of the territory served. (Passenger Transportation Report of special committee, City of Manchester Tramway Department, Feb. 2, 1914.) As a result of the marked increase in patronage in such cities as New York, Philadelphia and Boston, a condition has been reached on various highways where it was deemed impossible or at least uneconomical further to increase the number of street cars per hour. There is some difference of opinion as to the exact point of saturation for surface car service. To analyze in detail this condition requires an assumption as to minimum headway between surface cars. Various estimates show that an interval of nine seconds between moving units on the street is consistent with safety. Assuming this fact and adding to it the estimated period of rest of seven seconds for a car, to permit of passengers boarding and leaving, would result in cars passing a certain point at the rate of one every sixteen seconds. Under these conditions a maximum speed of 12 m.p.h. and an average speed of 8 m.p.h. can be maintained where the usual number of stops are made. This figure is probably correct for practical operation.

In the report of the Merchants' Association of New York by its committee on transportation and engineering, 1903, it is stated that "with a time interval of sixteen seconds the number of cars that may be moved past a given point per hour is 225." The committee did not believe that on congested streets like Broadway, New York, a service of more than 220 cars per hour passing a point in any one direction could be reasonably expected under the most favorable circumstances likely to occur, but felt that this number per hour was a reasonable estimate of what should be done. The committee further stated that it was confirmed in this belief by its own observations of what was being done at this time in Boston, and by the many observations on Broadway at Chambers and at Houston Streets.

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.



M. C. BRUSH

Experience in Boston partially confirms the opinion of the committee, for previous to the opening of the Washington Street tunnel it was believed that a point of saturation had been reached when there were operated between two points on Washington Street a maximum of 213 cars per hour in each direction. Previous to the opening of the Boylston Street subway in Boston as high a number as 260 cars per hour were operated in one direction over a very short section of a certain line on a special occasion, but it was possible to handle this number of cars only by operating part of the service in the Tremont Street subway and around the Park Street station loop.

The Public Service Commission for the First District of New York on April 17, 1908, ordered "a minimum number of twenty-five cars in one direction in each fifteen-minute period on certain sections of Broadway." This would be at the rate of one car every thirty-six seconds, and it is believed by some that this is the lowest headway consistent with reasonably rapid movement of cars when all conditions are considered, such as vehicular interference, line intersections, joint usage of certain stretches of track, etc. However, this thirty-six second headway is exceeded on some lines in New York on certain short stretches of track where they operate from two to three times as many cars as are required for a thirty-six second headway.

### SATURATED CAPACITY AND NEW LINES

There should, of course, be kept clearly in mind, in the study of maximum capacity of surface lines, the difference between the maximum number of cars that it is possible to operate and the speed consistent with good service. In view of the preceding citations, however, it is fair to assume that when street car service for short stretches of track has reached a number slightly in excess of 200 cars per hour the capacity on this stretch of track might be said to have reached a saturation point, after which additional arteries must be utilized or other transportation facilities provided. Of course this figure is also governed by the width and alignment of streets, as well as by the size of the units and general traffic conditions.

When tracks on a certain street have reached the saturation point, whatever that may be, and additional transportation facilities must be provided, every conceivable effort should be made to use parallel streets for additional surface tracks or even build an elevated structure. It is absolute economic waste recklessly to spend enormous sums of money for subway construction merely because a particular highway has operating upon it all the surface cars consistent with either good transportation or economy, and subway construction should only be decided upon after other and less expensive means of furnishing additional transportation have been sufficiently studied to prove their inexpediency. The enormous amount of traffic absolutely necessary to support expensive subway construction makes it incumbent upon those responsible for such expenditures to satisfy themselves thoroughly that the traffic offered and the conditions prevailing compel subway construction rather than the use of other arteries on the highway or even private right-of-way construction on the surface.

#### HOW INVESTMENT AND FIXED CHARGES ARE AFFECTED

From the commencement of operation of surface-car service over a specific stretch of track, up to the time when such track is completely saturated with cars, the interest charges for the investment on this particular stretch of roadbed per passenger decreases as passengers and riding increase. Hence, up to the point of saturation or up to the point when the total capacity of the road is used, the greater the number of passengers the less the expense for fixed charges per passenger.

On several properties in the United States there have been constructed high-speed underground thoroughfares either as a result of surface tracks having reached a point of saturation or because of the demand of the public for more expeditious transportation. Immediately after such construction the fixed charges per passenger have jumped entirely out of proportion to what they were at the moment of surface track saturation. Ordinarily, owing to the nature of construction of the subway, where it is necessary to build the same cross-section for a one-car train on fifteen-minute headway as is required for a two-car train on a minute and a half headway, the fixed charges per passenger carried are entirely out of proportion to the ultimate capacity of the subway.

A marked example of the enormous investment necessary for construction of a subway is that of the Washington Street tunnel in Boston, built in 1908. The surface car tracks over the highway under which the Washington Street tunnel was constructed for a distance of approximately 1 mile represent an investment of approximately \$253,000, while the tunnel cost approximately \$9,500,000. As far as we are able to learn, this is the most expensive mile of roadbed and track in the world, not excepting the Jungfrau tunnel in Switzerland.

In other words, the transportation companies building or leasing subways have been compelled to meet the enormous fixed charges and pay the same rent or interest, whether the demands of traffic require the operation of a few cars per hour or the use of the maximum capacity of the subway.

#### PUBLIC SHOULD HELP BEAR FIXED CHARGES

In certain instances there has been no substantial increase in rate of patronage where rapid transit service has become necessary. That is, the rate of increase of passengers carried per annum is not materially changed upon the inauguration of rapid transit service. In general it is granted that the cost of opera-

tion per passenger capacity with trains in a subway is materially less than for electric car service on the highway, but unless the load factor is such as to give an opportunity for using a reasonable capacity of the subway throughout a large percentage of the twenty-four hours, the fixed charges per passenger considerably more than offset the reduction in operating expense per car passenger capacity.

The original basis of establishment of rate of fare was entirely without regard to enormous subway investments with a right-of-way furnished by the community. If as a result of entirely changed conditions, such as the outgrowing of the highway capacity or the pressure of the community, it becomes necessary to construct expensive underground thoroughfares, then either the rate of fare must be changed to meet these changed conditions or the community as a whole must bear, at least in a measure, according to the indirect benefits accruing, a certain portion of the fixed charges until such time, if ever, as the ultimate capacity of the tunnel is reached and the load factor more nearly approaches 100 per cent.

The effect upon capital of companies which are endeavoring to furnish adequate transportation facilities and which have to pay interest or rentals on enormous investments entirely out of proportion to revenue received, can be readily seen, and the consistency of the arguments as well as their equity compel recognition to the extent that where investments of this character become necessary, the community as a whole must be compelled to participate in their support. This has been well evidenced by the case of New York, where in the construction of the latest subways the city contributes in part toward the investment and fixed charges until such time as the net earnings resulting from the operation of the subway permit payment, after proper charges of every character, including operation, depreciation, etc.

The construction of subways, which are nothing more or less than public highways, differs from other similar public improvements such as surface highways, sewers, water systems, park systems, etc., in that instead of being constructed from time to time in the degree to which the capacity is to be used, it is necessary because of the physical nature of tunnels to build them substantially as large and at as great an expense in the first instance as is required to provide for not only the immediate requirements but for the requirements of several years in the future. It is entirely fair and proper that the community should have improved rapid transit facilities and thoroughfares just as rapidly as they are willing equitably to digest them. It is thoroughly unfair, however, that a street railway should be called upon to pay the entire interest on such an investment when the demands of the traffic and the amount of business available requires at the moment only a small proportion of the total available capacity.

In view of the marked increase in land values and general benefit to the community as a whole resulting from subway construction, it would seem equitably sound that those property owners who so materially benefit should contribute in some proportion toward the fixed charges for such improvement. If the unit of fare were increased, the tenants of the buildings in the territory involved would pay, as a result of the subway, not only increased fare but also increased rent, while the property owner would receive all of the benefits without participating in the expense.

#### GENERAL PROGRAM TO BE FOLLOWED

When the conditions on a certain highway have reached such a point that additional transportation



facilities are necessary, there should first be an effort made to utilize parallel highways with surface tracks at a reasonable and proper investment consistent with the traffic offered. If this for proper reasons is dismissed, effort should then be made to construct surface tracks on private land or elevated tracks on either private land or the highway. If for good and proper reasons these other means are dismissed, there is but one choice left and that is the construction of subways.

In other words, every conceivable effort should be made to provide additional transportation facilities at as low an investment as is consistent with the demands and the traffic offered, and the construction of subways should be entered into only after the most careful, thorough and conservative study and consideration of other means of furnishing transportation and with a full knowledge of the seriousness of burdening the community with tremendous investment and correspondingly

large fixed charges. If it is finally concluded, with a perfectly clear perception of what the financial results will be, that subway construction is necessary, it would seem fair that in the first place the municipality, metropolitan district or state should finance the improvements, as undoubtedly money can be raised at a lower rate of interest than where such financing is done by private owners. Moreover, the community as a whole should participate with the company and the riding public in the payment of interest charges. More specifically, upon the completion of subways or tunnels built by the community they should be leased to the transportation company serving that community on a sliding scale charging rental according to the relation between the capacity used and the total capacity. By such an absolutely fair and equitable arrangement the movement for subway construction would automatically regulate itself in a manner fair and equitable to all interests.

## The Elements of Utility Valuation\*

The Author Lays Stress on the Importance of Intangibles and the Use of the Entire Income for Service—Reproduction Cost New When Used as a Basis for Rate-Making Should Not Include Deduction for Depreciation—Other Interesting Points

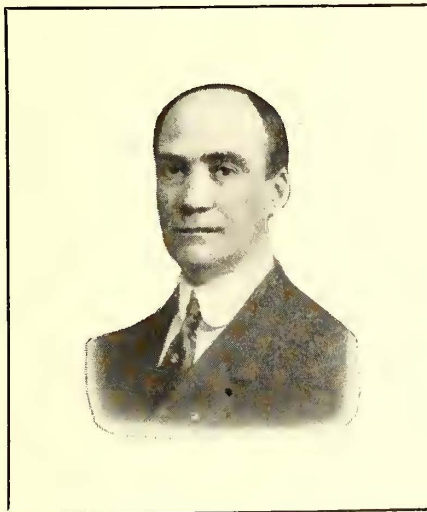
By GEORGE WESTON

Engineer Board of Supervising Engineers, Chicago Traction

THE address upon "Valuation" presented to the association by Mr. Guernsey is a very carefully prepared and valuable contribution to valuation literature. It deals with this very interesting and important subject from the standpoint of a lawyer. Any representative of the public should approach the subject of valuation in the same spirit. Fair play should be the fundamental principle actuating those participating in the work, and I infer that the author includes the public's interest as well as that of the utility corporation when using the terms "justly" and "fairly." The author speaks as though he had wrestled with the problem in an attempt to determine all the factors applicable and in an endeavor to get the other fellow to agree with his analysis in determining the fair and reasonable valuation of a public utility property.

He admits that no formula may be applied to a public utility which will establish its value. I fully agree with the principle that the facts must be accepted to obtain just regulation. Publicity should be the general policy of public utilities. The quickest and surest way for them and the public to come to an amicable understanding is for both to meet the issues frankly and willingly and "lay all cards upon the table face up."

From the viewpoint of a worker on the side of the public, I agree also with the author when he says that the interests of the public and the utilities are similar or not antagonistic. The purpose or object of any utility is to serve the public by supplying its demands with the kind of service or commodities such utility is equipped to furnish. The utility is primarily interested in the investment necessary to enable it to fur-



GEORGE WESTON

nish the service and in the protection of that investment, and that it be permitted to earn a fair return upon such investment. The public is interested in securing adequate service commensurate with the price it pays for the service. Investment, return and service epitomize the problem.

The public also is or should be interested in securing such reasonable regulation and rates as would insure proper protection to the investing public and at the same time provide adequate service and a fair return upon the investment. The subject of regulation cannot be approached from any angle without coming to the conclusion that fair play is necessary to establish such principles of procedure as may

be applicable to all properties. No formula or fixed general rule can be adopted applicable to all properties.

One cannot read the decisions of the Supreme Court regarding the valuation of public utility property without concluding it is a much involved and complicated subject. Those who are entrusted with the work of determining value assume a very important responsibility because they are dealing with other people's property with no exact rule to follow although there are definite rules applicable to the determination of the cost new of physical property. There are other factors enumerated by the court and admitted by all students of the problem, the consideration of which principally calls for the application of good judgment. This, of course, must be based upon experience and a knowledge of the organization, financing, construction and operation of properties similar to the one under consideration. Moreover an appraiser, representing the public, should be so fair and just in his deliberations that, in case of doubt, he should render his decision in favor

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.

of the party who would be most seriously damaged by an error in judgment.

#### ORIGINAL COST

With respect to original cost, I do not concur fully with the author's expressed views that where a long period of time has elapsed, original cost can have but very little, if any, appreciable weight in determining the question of value. In many instances of construction temporary work has to be done, sometimes, involving large expenditures of money to care for other utilities or to underpin buildings or to perform innumerable other necessary work. Such costs are legitimately a part of the necessary investment but very likely would be entirely omitted from a present value reproduction cost based solely upon an inspection and inventory in the field. Any original cost figures showing detail would very likely include these extraordinary expenditures. It is in this sense, I believe, that the courts have wisely ruled that all these different factors should be considered.

#### NET REVENUE

Net revenue has a material effect upon value, particularly sale value. It is quite impossible to conceive of a person purchasing a property that by a fair analysis of its gross earning and expenditure did not show a fair return upon the contemplated investment. With respect to interdependence between earnings and rates, however, the established principle of a fair return upon a fair value should preclude the reduction of value for rate making by reason of the fact that the net earnings were low or nil.

While we are on the subject of net revenue return it might be well to discuss to some extent the economic side of the problem. We have investment and a return upon the side of the utilities and service upon the side of the public. The utility is expected to furnish the investment necessary to enable it to give reasonable service, and it expects, and everyone must admit, that it is entitled to a fair return upon such investment. The public regulation of rates is for the purpose of so adjusting the rates that provision can be made for reasonable and necessary operating expenses, including repairs, renewals, taxes, any franchise obligations and, in addition, a fair return upon the investment. With most utilities subject to regulation, it should only be necessary to prove what such an operating rate should be.

With urban street railways the question of rate is fixed by ordinance and, in most cases, includes free transfers. Such ordinances generally cover service and other obligations, and contain forfeiture clauses. In this connection it is needless for me to recite that increased wages, increased cost of supplies, improved equipment, higher service standards, extensions and other improvements in the service, all necessary and desirable, have tended to increase the operating ratio. In fact, it has been necessary for many companies to apply extreme efficiency measures in every department to offset increased service demands and pay interest obligations, but despite these, annual deficits are the rule in many cases.

Many students of the utility problem believe the gross receipts should be applied only to the cost of furnishing service. This cost should include the up-keep of the property, the provision of such reserve funds as may be desirable, the welfare of the employees, and a fair return upon the investment, rather than divert some of it to impair service and a fair return in the form of contributions from the receipts to the cost of street paving, street cleaning and other municipal expense or by

paying compensation to the municipality. Let us either have municipal ownership or not have it. The people want service, the best they can get for the rate paid. They should not be required to contribute toward municipal expense or toward a purchase price in the interest of municipal ownership, at least not until they have received adequate service.

I think that economists have gone to the extreme in many of these matters. Utility companies must be permitted to earn a fair return upon their investment or it will be impossible to influence capital to invest in extensions and improvements necessary to enable the companies properly to take care of service demands. The distribution of the nickel should be confined to furnishing service, the up-keep of the property, a fair return upon the investment and the welfare of the employees. If any portion of the nickel is diverted or utilized for other purposes, the three graces, investment, service and return, must suffer, and the public will pay the bill.

#### FRANCHISES AND GOING VALUE

Franchises should be considered, their obligations and concessions, if any, being taken into account. Many different theories have been advanced with respect to the consideration that they should receive in determining value. Some claim that when franchises are valued without direct or implied compensation other than the performance of service, the utilities should not be permitted to capitalize them because they would be creating a value for which they made no real money investment. Others estimate that franchise value is equal to the respective net profits of the utility operating under it. Again, it is claimed that franchise value is a part of going value, and Mr. Guernsey says that it is worth at least what it would cost to obtain other like franchises.

It is quite evident in case of sale from a willing seller to a willing buyer that the character and length of the unexpired term of the franchise would be factors in determining the purchase price. It would seem that, in the cost to reproduce new, it would be quite as proper to include in value the estimated net earnings, or a portion of them, for a reasonable period covering preliminary and construction work, as to include any other carrying charge. Or it would also seem proper, in the case of condemnation, to allow a period equal to the time it would require to litigate and obtain possession through the courts.

Care must be taken, however, not to include such items more than once through an inclusion of franchise value in going value, or in percentages applied to cover contingencies or omissions, etc.

Going value is probably one of the most elusive elements with which we have to deal in the valuation estimate, but it is one of the factors that must be considered. It is generally confused with or considered a part of other factors in the problem. I do not consider it an important or controlling item.

#### DEPRECIATION

In determining present value of any utility, cost to reproduce new must first be found and then an estimate made of the remaining wearing life in each piece of depreciable property in per cent, or the converse must be done, in order to determine the present value. This procedure is necessary in order to be able to determine properly further charges to renewals and to serve as a guide in establishing adequate renewal reserve. The reproduction value figure thus furnishes both amounts: reproduction value undiminished by depreciation and less depreciation. Therefore it is not a fundamental factor in valuation work, which basis is the proper

one to adopt in determining value for rate making or for capitalization. Cost new to reproduce, plus all reasonable factors covering probable past investments, should approximate the capitalization, it being understood that the total value figure includes bond discount, cost new undiminished by depreciation, etc., and should be the "real equivalent" of the utilities investment.

The protection of the legitimate investment is a fundamental economic principle, and the investor is entitled to the privilege of maintenance of its integrity, and he should also be permitted to earn a fair return upon every dollar of it until it is returned to him. Thus it would seem that cost new undiminished by depreciation should be the figure used to determine value for rate making. Certain analysts of the problem say that depreciation is a reduction of capital value and that any correctly managed property carries a renewal or depreciation fund, consequently the investor has returned to him the value of this depreciated capital, and its equivalent amount should be deducted from capital in rate making. I do not agree with that theory. Depreciation is a lessening of property value but not a reduction in capital value. That is a feature of what is sometimes called "going concern." For instance, a track may be depreciated three-fourths of its wearing value, but it is able to carry as many car wheels, car-miles or wheel-tons as when new. It has not reached its failure point in its depreciation, but the laws of safety and economy provide that the track shall be renewed before it fails.

During all stages of its depreciation while in service the track contributes as much toward producing the gross earnings as when new.

Depreciation is an operating expense and should be taken care of out of earnings, and replacements should not be capitalized except for betterments, but the original investment, including the value of all extensions and betterments undiminished by depreciation, should be considered as value to be supported by a fair return and should be the value considered in rate-making.

#### DATE OF VALUATION

The date of the valuation, as well as the date that will govern unit prices, are matters to be determined in each case after the purpose of the valuation and the surroundings governing attendant facts are considered. Ordinarily valuations are considered as of the present, as if the work of creating a real property was to start coincident with the valuation. However, in some instances, time may have elapsed since some event occurred that caused the valuation, making it advisable to date back the valuation, and when frequent and substantial fluctuations in unit prices occur in the period preceding the date of valuation, average prices are sometimes adopted, particularly for copper and like important and high-priced fluctuating items covering a reasonable period of time. Set rules governing these matters cannot be followed other than the general golden rule—that prices should be fair and just.

## What Constitutes Utility Value?\*

Many Illustrations Are Given by the Author to Show the Practical Problems Involved in Determining the Value of a Utility-Agreement on Fundamental Definitions Is Advocated—Special Attention Is Given to the Subject of Depreciation

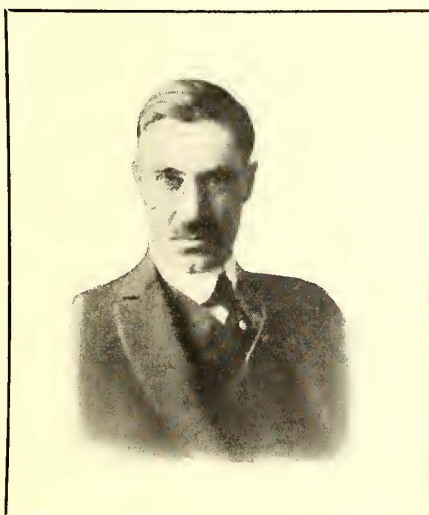
By PHILIP J. KEALY

Member Board of Control Kansas City (Mo.) Railways

MR. GUERNSEY'S paper is a splendid exposition of a most important topic and is what might be expected from one who has had the experience of Mr. Guernsey in valuation work.

One method of determining value upon which the author dwells at length is the cost of reproduction. This theory, if consistently applied without the trained, seasoned judgment to which he refers several times, will sometimes lead to erroneous if not ludicrous results. This is, indeed, the situation regardless of what premise or theory is adopted in determining the fair value of a property furnishing public service.

Many modifications of this cost-of-reproduction theory are necessary in determining unit prices. It is sometimes thought that present-day prices should prevail. Again, the fair value is sometimes determined by using average prices. There may be used, as was done in the Chicago telephone appraisal, average trend prices or, as in several large appraisals lately completed, the unit prices may be ascertained by obtaining a weighted



P. J. KEALY

average covering the prices and amounts of material during the time while the major portion of the work was being installed. Similarly, in making an inventory, many perplexing questions arise which require a departure from the cost-of-reproduction theory, if a logical conclusion is to be drawn.

Recently, during one of the conferences between the steam roads and the valuation committee of the Interstate Commerce Commission, the question arose as to whether in valuing grading, the same topographic conditions should be assumed to prevail at the time of making the appraisal as at the time of the original construction of the road. A case in point was where a gravel pit, since exhausted, was on the right-of-way of the Union Pacific Railway, whereas now a haul of several hundred miles would be necessary to obtain gravel. Therefore, even the cost-of-production theory has many variations, and numerous modifications must be made to arrive at an answer that is at all tenable.

On the "investment" theory, i.e., the cash and securities actually invested in the plant, the method of

\*Abstract of an address delivered at the mid-year meeting of the American Electric Railway Association on Feb. 4.

determining the cost of the property is assumed by some to be a method of determining the value of the present physical property, and by others the actual investment that has been made during the life of the property.

Again, many objections have been made to the "accrued-deficit" theory, and many well versed in valuation work assume that it will never hold in law because its conclusion is that the more prosperous the company has been, the less is its value as a going concern.

As to the element of going value, particularly that part of going value that is intended to cover the cost of attaching business, it has been frequently argued that this should not be considered an element of value for rate-making purposes for the reason that this cost has generally been paid for out of earnings.

This objection is not proper, no more so than had half of the legitimate capital charges been paid for out of earnings. The real question is whether, after these two items had been charged to the expense of operation instead of being capitalized (as properly they should have been), the net income has represented a fair return on the money invested. This immediately leads to the determination of the basis of fair return on the accrued deficit, or, as it is sometimes termed, the "antigo basis," a method frequently used by the Wisconsin commission in determining the amount to be allowed for going value.

As modifications must be made, not only in the methods of determining the inventory proper and the unit prices applicable, so likewise in determining the depreciation which has accrued in the physical property, several methods must be used if a proper result is to be obtained. Mr. Guernsey has criticised the plan of ascertaining the amount of depreciation by age, life or mortality tables, claiming that an actual inspection is a more proper way. That may be true in many instances, but his suggested method is in many others entirely impracticable.

A recent appraisal with which I was connected entailed the determining of the present value of 30,000 wood poles. There was no practicable method by which the present condition of these poles could be determined by actual inspection. The life of a pole depends largely, if not entirely, on butt rot, and without digging up the poles this condition could never have been ascertained. However, by investigating the accounting records of the company and determining the average number of pole renewals over a period of some ten years, and considering the known additions, it was a comparatively simple matter to determine what the average life of a pole was. This was done by means of age or life tables entirely, and it could not have been done by inspection. On the other hand, inspection is probably the only way in which the conditions of a rail or of a pavement can be ascertained.

Recently a street railway valuation was made which was subsequently adopted in a franchise grant, ratified by a vote of the people and approved by a state commission, wherein all of these methods were employed and wherein all of them led practically to the same result. I refer to the appraisal and report made on the value of the Kansas City street railway system by Bion J. Arnold in 1912. This, in its way, is probably the most comprehensive valuation report which has yet been made on an American utility. The report has been frequently discussed in the technical press.

Mr. Guernsey has well brought out the different viewpoints as to what constitutes value. It is simply appalling to attempt to read the mass of material which has been written on this subject within the last two

years, the impetus probably being the tremendous amounts involved in the valuation of steam roads now being made and the importance of that work. Mr. Guernsey's paper is unique in one respect, however, for it is the first paper on valuation or any kindred topic that I have read in some little time which has not introduced a "pet phrase" to describe something which we have all been accustomed to discuss under some other name.

Those who attended the conference held last November in Philadelphia under the auspices of the Public Utilities Bureau, or who have had the opportunity to read the proceedings of that bureau, must have been struck with the confusion in practically every article in the use of terms. The same term was used to express different ideas or different terms used to express the same idea. This hopeless confusion is rapidly getting into the court records. This is but natural for, as C. A. Prouty of the Interstate Commerce Commission has well pointed out, the subject is really an economical one, this determination of value. Yet we have the usual spectacle of accountants, engineers, consultants, financiers and lawyers arguing before juries, attempting to arrive at the solution of what we all agree to be an economic problem. Each uses his own pet phrases to convince the other fellow and the result is that the court becomes hopelessly confused, as a perusal of the judicial decisions to date will well prove. Thus we find a court in Idaho setting out at great length the reason for a decision which is absolutely contrary to the decision of a New York court set forth with even more lengthy reasons.

No valuation paper or discussion thereof is complete without a reference to the Supreme Court decision in the Knoxville case. To this date there have been articles written, whose aggregate length would be several hundred times the length of that court decision, attempting to prove or disprove what that court meant when it used the words, "depreciation which has come from age and use." We find one state commission using this decision as a precedent for an adverse decision, whereas the plaintiff in the proceeding was using the same case in his brief as a reason why the decision should be in his favor. Now, why does all of this confusion exist and how can it be corrected? It never can be cleared up until the various engineers, societies and consultants and, if you will, the American Bar Association, meet together in a national conference and agree on a definition of the terms usually employed in this work, leaving the theories to those who will employ them.

At the recent meeting of the valuation committee of this association held in New York on Jan. 25, it was suggested that the executive committee should take this matter up with the valuation department of the Interstate Commerce Commission and that a conference should be held and participated in by all organizations at interest to agree, if possible, upon a code of definition of terms generally used in valuation work. When this has been done I am satisfied that practically three-fourth of the differences now existing among engineers, lawyers, accountants and the courts, on the subject of valuation, will be eliminated. Until such definitions are arrived at there will be no possibility of clearing up the confusion which now exists. I sincerely hope that, as a result of this discussion, the executive committee of the American Electric Railway Association will take the initiative in this matter. Even if it fails in accomplishing all that is desired, a step in the right direction that will be approved by all who have any direct or indirect connection with valuation work will have been taken.

# Proceedings of the Mid-Year Meeting

Chicago Meeting Highly Successful—Banquet a Brilliant Affair—Plan for Effecting Closer Relations with Manufacturers' Association Adopted—Several Important Executive Committee Meetings Held in Connection with Convention—Appointment of National Defense Committee Authorized

THE mid-year meeting of the American Electric Railway Association was held in the Florentine Room of the Congress Hotel on Feb. 3, and the morning session was opened at 10.45 a. m. with President Henry in the chair. An opening address was to be presented by Mayor Thompson, but he was unable to attend, and President Henry asked James H. McGraw, chairman committee on resolutions, to present resolutions on the death of Calvin G. Goodrich of Minneapolis. Mr. McGraw read the following resolutions, and they were unanimously adopted by the association.

"Calvin G. Goodrich, president of the Twin City Rapid Transit Company, died on Dec. 21, 1915. In his death the American Electric Railway Association loses one of its great men, a pioneer of the industry under whose leadership a magnificent electric railway system has been built up in and about Minneapolis and St. Paul. His influence has been felt not alone in the business which he developed but in the affairs of this association and in those public relations with his own community which he so well served. Mr. Goodrich brought to his task those qualities of broadmindedness and an innate sense of justice combined with a charming personality, a generous heart and a sympathetic nature which endeared him to all with whom he came in contact. Beloved by every member of his staff, he had their fullest co-operation in the furtherance of his policies and ideals. He had, as well, a host of friends both in and out of the industry who will cherish their friendship with him as one of the most precious of their remembrances. In spite of the many demands upon him as the active head of a large railway system, Mr. Goodrich was always willing to give as much of his time and energy as was necessary to further the interests of this association, whose welfare was close to his heart.

"He was a member of the executive committee of this association during the critical time of its reorganization and then, as well as later as second vice-president, first vice-president and president, his wise counsel, loyal support and active leadership were of the greatest assistance in solving the difficult problems which confronted the association at that time. It is in appreciation of this man of the electric railway industry and of his work that this association hereby resolves that this record of his contribution to his business to the association and the public welfare be spread upon the minutes of this association and that a copy be sent to his family.

JAMES H. MCGRAW, chairman,  
JOHN J. STANLEY,  
GEORGE H. HARRIES."

President Henry then said that presentation of the report of the committee on recommendations and the address of the president would be postponed until later and asked Mr. Guernsey to present his paper on valuation, which appears in abstract on another page. In the presentation of this paper Mr. Guernsey did not follow the text closely but explained and discussed points made in the paper and mentioned examples to describe the various elements which would be considered by a purchaser of any piece of property. He pointed out that regulatory commissions are not courts but legislative bodies and that they can properly apply to this

question the same broad principles which would be applied by business men in studying a business question. Such men would take into account all of the factors of value that he had mentioned. The report of Mr. Guernsey's paper that is published elsewhere is an abstract of the paper as prepared in advance of the meeting and distributed to the press.

At the conclusion of Mr. Guernsey's address George Weston, engineer Board of Supervising Engineers Chicago Traction, presented a discussion upon it.

At the conclusion of Mr. Weston's paper Mr. Kealy presented his paper. The association then adjourned for lunch.

At 2:15 o'clock the association was again called to order. President Henry introduced Harry B. Miller, city prosecutor of Chicago, representing Mayor Thompson. Mr. Miller presented an address of welcome on behalf of the municipality. He spoke in highest terms of the fairness of the management of the Chicago elevated and surface lines. As an instance, he said that the city health commissioner had recently informed him that the surface railways were preparing to spend \$200,000 for improved ventilation on their cars alone. That spirit was appreciated by the people of Chicago. He felt sure that whatever work the association did would redound to the benefit of the public.

The discussion on the rate of return was then opened with Mr. Mortimer's paper, read in his absence by F. W. Doolittle, formerly director of the bureau of fare research of the American Association. This was followed by a paper by D. J. McGrath of the Massachusetts Institute of Technology, who, in the absence of Professor Jackson, described the work of the department of fare research of that institution. These papers appear in abstract elsewhere in this issue.

L. S. Storrs, vice-president of the Connecticut Company, then read "Competition with Other Investments," by Orlando B. Willcox, also abstracted elsewhere.

Arthur W. Brady next introduced his amendment of the proposed amendment to Sec. 3, Art. 3, of the constitution and Act. 14 of the by-laws, whereby manufacturers would have equal privileges with the electric railway members. Mr. Brady's amendment broadened the term manufacturers to include engineers, publishers, etc., and also amended the dues so that companies with gross receipts from railway business under \$50,000 would pay \$25; companies between \$50,000 and \$1,000,000 in receipts, \$125; companies of \$1,000,000 to \$6,000,000 in receipts, \$325; companies of \$6,000,000 to \$10,000,000 in receipts, \$525; companies with more than \$10,000,000 in receipts, \$750.

Mr. Brady said that the problems of the industry were of different character than in past years. Questions like valuation and rate of return left no line of cleavage between the manufacturer and the railway. Although the two associations had worked together as closely as two independent bodies could, it was better to have them work as one. The plan meant no interference with the Manufacturers' Association, but simply that all manufacturers who so desired could become members of the American Association upon the basis of equality with the railway members.

W. F. Ham, vice-president of the Washington Railway & Electric Company, approved the plan, but from what a number of the manufacturers had said to him he judged it would be wise not to hasten matters unduly.

Gen. George H. Harries said there was some misapprehension in the proposal of the association. It was an invitation to manufacturers to become members individually and had no reference to the Manufacturers' Association as an organization. The proposal had been favored from its earliest stages by Messrs. Lovejoy, Tripp and other representatives of large manufacturers. It was a question for the American Association to decide whether the great forces of the manufacturing end should be allied with the railways in the larger problems that now engaged their attention. In the past the association had failed to utilize fully the brains of the manufacturers.

Miles B. Lambert of the Westinghouse Electric & Manufacturing Company favored further consideration of the subject, and asked whether the present privileges of the Manufacturers' Association would be affected by the proposed plan.

President Henry, in reply, said the amendment had been more misunderstood and more misstated than the quarrel in the Garden of Eden. The real question was whether or not all the great industries, represented in the Manufacturers' Association, now 371 in number, should be invited to go share and share alike with the railways. For years the work of the Manufacturers' Association had been confined to the convention exhibit and entertainment. The amendment simply proposed to make law what the association had done as a matter of expediency for the last three years in placing representatives of three great manufacturing industries on the public relations committee.

If the manufacturers thought it wise to maintain the present Manufacturers' Association, there was nothing

to prevent it, but to try to keep the present proposal from going through was like trying to prevent the sun from moving. There was a time when the manufacturers themselves had asked to come in, but their application had been rejected. The manufacturers had even been refused admission to the meetings.

Mr. Ham, who resumed the floor, said that the manufacturers did not object so much to the nature of the plan, but to the way in which it had been presented to them. In reply, Mr. Brady reiterated that there was no intention of subordinating the Manufacturers' Association.

James H. Drew of the Drew Electric & Manufacturing Company, Indianapolis, Ind., said that he would prefer personally to have the original dues proposed, for under the Brady amendment he would have to pay \$100 a year because he was above \$50,000 but below \$500,000. He would be glad to accept the honor of American Association membership without relinquishing membership in the Manufacturers' Association, but it would be a burden to belong to both.

B. A. Hageman, New York, said the invitation of the American Association was a compliment to the manufacturers, but it was not clear in his mind what the status of the Railway Manufacturers' Association would be. That association had done great and admirable work for many years. If the Manufacturers' Association was to be allowed to keep up this work he would be fully satisfied to co-operate, but he would not care to see its independent position sacrificed.

In reply General Harries repeated that the amendment simply covered an invitation to individuals from the American Association and had nothing to do with the Manufacturers' Association. On motion the amendment with the changes proposed by Mr. Brady was adopted unanimously. On motion also the remaining papers on rate of return were not read, but were ordered printed. The meeting was then adjourned.

## Executive Committee Meetings

### AMERICAN ASSOCIATION

The meeting of the executive committee of the American Electric Railway Association was held at the Congress Hotel, Chicago, on Feb. 3. Those present were: Charles L. Henry, president; L. S. Storrs, first vice-president; John J. Stanley, third vice-president; T. P. Kilfoyle, president Accountants Association; John Lindall, president Engineering Association; R. E. McDougall, first vice-president and acting president Claims Association; Arthur W. Brady and George H. Harries, past presidents; J. R. Lovejoy, member of special committee on recommendations in president's address; H. C. Donecker, former secretary, and E. B. Burrill, secretary and treasurer.

The subjects discussed at the morning session included the proposed consolidation of the Manufacturers' Association, company membership and means of getting new members. The secretary reported the organization of two new sections and that work was progressing on the organization of other new sections. The design of a company section emblem to be sold for \$1 or less was approved. On motion of General Harries the committee approved the appointment of a special committee to co-operate with the War Department in regard to matters of national defense and the part which electric railways might play therein. General Harries will recommend the personnel of the committee. A committee on resolutions, consisting of James H. McGraw, George H. Harries and John J. Stanley, was appointed.

The final report of the director of the bureau of fare research was received and a committee consisting of James D. Mortimer, H. C. Donecker and E. B. Burrill was appointed to determine the price at which the book compiled by the bureau of fare research should be sold.

The executive committee approved the application of five new member companies as well as 395 applications for individual membership. The president was authorized to appoint a committee to select the place of meeting for the 1916 convention. This committee will consist of five members and will be announced later.

The various affiliated associations presented progress reports of their various committees, and similar reports were submitted of the work of the committees of the American Association.

### ACCOUNTANTS' ASSOCIATION

A meeting of the executive committee of the American Electric Railway Accountants' Association was held at the Congress Hotel, Chicago, on Feb. 3. Those in attendance were T. P. Kilfoye, Cleveland, president; L. T. Hixson, Indianapolis, Ind.; G. G. Whitney, Washington, D. C.; M. R. Boylan, Newark, N. J.; H. B. Cavanaugh, Cleveland; F. R. Sillick, New York, and F. E. Webster, Haverhill, Mass. The resignation of H. A. Culloden, Los Angeles, Cal., as second vice-president, was received, and J. A. May, auditor Connecticut Company, New Haven, was appointed in his place.

The president then submitted the following list of committees of the association for the coming year:

Standard classification: H. L. Wilson, Boston, Mass., chairman; W. F. Ham, Washington, D. C.; W. H. Forse, Jr., Anderson, Ind.; R. N. Wallis, Fitchburg, Mass.; P. S. Young, Newark, N. J.

Education: George G. Whitney, Washington, D. C., chairman; F. J. Pryor, Philadelphia, Pa.; F. B. Lasher, New York; N. E. Stubbs, Baltimore, Md.; G. H. Caskey, Hampton, Va.

Representatives to convention of railroad commissioners: W. F. Ham, Washington, D. C.; C. S. Mitchell, Pittsburgh, Pa.; I. Fullerton, Detroit, Mich.

Accounting definitions: E. D. Gault, Reading, Pa., chairman; James Adkin, St. Louis, Mo.; George A. Harris, Gloversville, N. Y.; S. C. Stivers, New York; J. Gerry Dobbins, New York.

Passenger, express and freight accounting: Walter Shroyer, Anderson, Ind., chairman; E. L. Kasemeier, Springfield, Ohio; H. H. Reed, Boston, Mass.; R. J. Clark, Kansas City, Mo.; T. B. MacRae, Chicago, Ill.

Claims-accounting, as representing the Accountants' Association: H. J. Davies, Cleveland, Ohio, chairman; George B. Cade, Asbury Park, N. J.; H. S. Swift, Pittsburgh, Pa.

Engineering-accounting, as representing the Accountants' Association: F. H. Sillick, New York, chairman; C. E. Murray, Toledo, Ohio; Charles H. Lahr, Akron, Ohio; J. C. Collins, Rochester, N. Y.; H. A. Gidney, Boston, Mass.

Life of railway physical property, as representing the Accountants' Association: R. N. Wallis, Fitchburg, Mass., chairman; A. R. Patterson, Boston, Mass.; J. N. Smith, Toronto, Ont.

Transportation-accounting, as representing the Accountants' Association: A. E. Dedrick, Youngstown, Ohio, chairman; George W. Kalweit, Milwaukee, Wis.; W. O. Ingle, Rochester, N. Y.

These appointments were approved by the executive committee. The committee also took up the question of subjects.

#### CLAIMS ASSOCIATION

A meeting of the executive committee of the Claims Association was held at the Congress Hotel on the afternoon of Feb. 3. The chief purpose of the meeting was the selection of an acting president to serve in the place made vacant by the resignation of George Carson of Seattle, who was elected at the San Francisco convention but who has since severed his connection with the Puget Sound Traction, Light & Power Company. The executive committee, which has power to elect an acting president, did so by the choice of R. E. MacDougall, claim agent New York State Railways, Rochester Lines, the first vice-president of the association.

The executive committee also appointed H. D. Briggs, assistant claim agent Public Service Railway, Newark, N. J., to take the place on the executive committee made vacant by the resignation of P. C. Nickel, formerly claim agent New York Railways. The other most important action of the executive committee was the receipt of the report of the subjects committee, of which H. G. Winsor, of Tacoma, is chairman. Other subjects had been suggested by individual members and were considered by the committee.

## The Banquet

The banquet in the evening was held in the Gold Room of the Congress Hotel, which was attractively decorated for the purpose. The main floor and the galleries were occupied with tables, so large was the demand for tickets. At 9.30 p. m., after the repast of the evening, Charles L. Henry, president of the American Association, arose and made the opening speech on the present and future of the Association. This appears upon another page in this issue. He then introduced Thomas Finigan, president of the Manufacturers Association, who presented a brief address in part as follows:

"It has been said of Mr. Henry that he is the father, or originator, of the use of the word interurban as applied to electric railways, and I am sure that he is proud of the distinction. But I also know that you will agree with me that he is to be complimented for having acted as a father by presiding at what has proved to be one of our most successful midwinter meetings. The joint committee on arrangements is also to be commended for its untiring efforts, particularly for making it possible for us to be honored by such distinguished guests from whom we are to hear later. It has been said that 'of all inventions the alphabet and printing press alone excepted, those which abridge distance have done the most for civilization,' and this is truer to-day than ever.

"The industry you control and represent, that of supplying transportation facilities, is so great that few men outside of the railway business comprehend the magnitude of its problems and its service. Even those who are engaged in the work are amazed at the creditable way in which you solve many intricate problems. You are advancing the character of the service being rendered, and doing your work well, although the way is seldom clear of difficulties. The youngest among us

can readily see how more and more perplexing your problems are becoming.

"The business of supplying transportation is not a stable, settled industry. True, as in other lines of endeavor, success in this business depends largely upon clear thinking, followed by hard work, but do you know of any other industry in which success so largely rests upon co-operation? Happily, there has been and is co-operation in the industry of which we, the manufacturers, are a part. Co-operation has done much to clear away the cobwebs that otherwise might have interfered with a full, clear vision of the best methods for jointly solving the intricate problems of the American electric railway transportation industry.

"Now, the field widens! With the progress of the years it has become evident to all of us that each can render greater service to the other. The relation now is more binding than that of buyer and seller. We are partners, working for the success of an industry that has achieved much, but yet has more to do.

"The railway man is welcome to every aid that the hearts and hands of the manufacturers can render. We gladly share your belief that co-operative methods are best in spreading the gospel of fair play and fair returns for public utilities. Closer relationship will mean much to the manufacturer. It will mean more than increased sales. It will mean that that manufacturer who earnestly helps the railway fight its battles will, as a result, be a better man to fight his own battles.

"Mr. President and Gentlemen, I am sure I speak for every manufacturer of the electric railway industry when I say that we are anxious to make our co-operation a real co-operation; that we earnestly desire to assist the railways to the fullest extent of our power, and that we stand ready to assume our full share of the battle for the full rights of the industry."

The third speaker was Judge Jacob M. Dickinson, former Secretary of War, who introduced the guest of the evening, Senator Underwood, in a short address. Judge Dickinson touched upon the crisis now before the nation and the need for united purpose, regardless of party. He also spoke of the familiarity of Senator Underwood with the important problems of the country. The address of Senator Underwood, which followed, appears in abstract elsewhere in this issue. Although this speech referred in part to steam railroad conditions, many of the points made were equally applicable to electric railway conditions, and the Senator's remarks elicited great applause. The banquet closed at 11.15 p. m., all of the diners singing "America."

## The Public Service Repair Shops \*

The Author Describes the General Characteristics and Special Equipment of Various Classes of Repair Shops

BY R. H. HARRISON

Mechanical Department Public Service Railway of New Jersey

**T**HERE are three different types of shop in the mechanical department of the Public Service Railway, which, it may be said, is the result of the combination of some seventy distinct transportation companies, each of which originally had its own shop equipment. These shops may be classed as (1) general repair, (2) overhauling and inspection, and (3) inspection. At the general repair shops all car-body overhauling is done, and all heavy accident repairs are made. All cars, automobiles and wagons belonging to the railway company are painted at these shops, which are equipped with the necessary wood-working machinery to do all the mill work for the system. Wheels and gears are bored and mounted on axles, armatures and fields are wound and repaired, and all extraordinary work is taken care of. On the Public Service Railway one of the two general repair shops does no inspection work and very little ordinary overhauling, but on the other hand, it does a large amount of manufacturing work and extraordinary overhauling which is not done at any other location. During the last four years, on the average, forty cars per year have been built, and trucks, motors and compressors are stripped and rebuilt. Also, old passenger cars are converted into service cars, and there is done all miscellaneous work for which the other shops are not equipped or which can be done better and more economically at the larger shops.

Shops of the second type are used for overhauling and inspection, and all cars operating from the particular carhouse at which the shop is located are inspected once each week and any necessary light repairs are made. When it is found on the weekly inspection that a car is in need of a thorough overhauling, this work is also done in the shops. Within the last few years a number of new shops of this class have been built by the Public Service Railway, and for these a standard equipment has been adopted. This consists of a wheel grinder, wheel changer, electric car hoists, jib cranes with pneumatic hoists, pit jacks, forge and anvil, power hammer, lathe, shaper, commutator slotter, pinion puller, bolt cutter, carborundum grinding wheel and the necessary benches and small tools. There is also a compressed air system and a system of overhead traveling hoists over the lathe, slotter and pinion puller, this providing means for handling armatures and other heavy parts on which work is to be done. Storerooms are also provided for storing oil and supplies.

\*Abstract of a paper presented before the Public Service Company section of the American Electric Railway Association, Jan. 20, 1916.

The third type of shop, used for inspection only, has little or no equipment as a rule. At these places cars are inspected weekly, but only very light repairs are made, such as replacing trolley wheels, controller fingers, etc. All heavy work on the cars served by such shops is done at the overhauling shops.

Among the special equipment installed in the overhauling and inspection shops the car hoist is worthy of comment. On the Public Service Railway the electric car hoist that is used has the advantages of being out of the way when not in use and acting as a permanent support for the car body when the trucks are removed. At the same time, it is simple to operate and requires little attention. It consists of two steel beams, one on each side of the car, which are raised by four steel screws electrically operated through a combination of bevel gears and worm wheels. Two pieces of old T-rail, one at each end of the car, rest on these beams and raise the car body. As near as I have been able to ascertain, the first hoist of this particular type was designed and built by the mechanical department of the Public Service Railway in 1905. Since then, a number of other companies have adopted this machine with slight modifications.

Another machine which has proved very useful is the car-wheel changer. With this the time necessary to change a pair of wheels has been greatly reduced, as it is only necessary to run a car over the machine, remove the axle caps and pedestal tie rods, block up the motors and trucks, and lower the wheels into the pit. Here they are replaced with a new pair of wheels, which are then raised into position. The standard car-wheel changer that is installed in a number of the Public Service Railway shops was designed and built by the mechanical department. In this machine two short pieces of rail supported by four screws are raised and lowered through a system of gears by an electric motor. This is located in the pit, and the pieces of rail fit into places where pieces of equal length have been removed from the track in the shop floor, so that a car may be run over the machine as though the track were continuous. Track is provided also in the pit, so that wheels may be stored there.

The car-wheel grinder is another great labor-saving machine that has been installed in a number of Public Service Railway shops. The company has a great number of flat wheels during the year because of improper braking and other causes, and these flat spots must be removed. Many railway companies take their wheels out of the car to grind them when they become flat, others try to true them up in service by the use of a special abrasive brakeshoe, others apparently let them run until they get square and then scrap them. The Public Service Railway has found that the most economical method is to run the car over a grinder and make the wheels round again. With this machine the car motor is jacked up, raising the wheels off the track. A short piece of track under the wheels to be ground is then removed and the car motor is used to turn the wheels while a carborundum wheel is brought up from below to do the grinding. This wheel grinder was also designed by the Public Service Railway Company's mechanical department, although it is built outside and sold under a trade name.

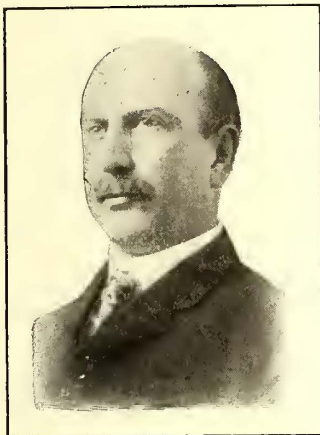
The hospital and health board of Kansas City, Mo., has called in nine badges being used by various persons as free street car transportation, the special ordinance providing that only fifty such badges shall be so used. About sixty are said to be out for such purpose. The persons holding the badges have commissions from the police department.



## Award of the Anthony N. Brady Safety Medal

Union Traction Company Receives Medal with Honorable Mention for the Elevated Railroads of Chicago—Design of New Medal Is Shown

At the annual meeting of the American Museum of Safety, held in New York on Feb. 3, the Anthony N. Brady gold medal was awarded to the Union Traction Company of Indiana. On recommendation of the company the silver replica of the medal went to H. A. Nicholl, general manager, as the individual who had contributed most to the success of the company along safety lines, and the bronze replica to John E. Hancock,



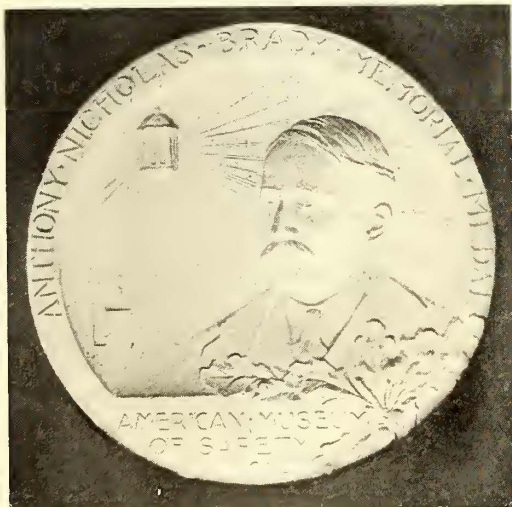
H. A. NICHOLL



JOHN E. HANCOCK

a motorman, who had also signally contributed to this success. The medals were presented by Arthur Williams, general inspector New York Edison Company, president of the American Museum of Safety.

The conditions of award of this medal were prescribed by a committee of the American Electric Railway Association, consisting of Arthur W. Brady, An-



ANTHONY N. BRADY MEMORIAL MEDAL

derson, Ind., chairman; Wilbur C. Fisk, New York; C. S. Sergeant, Boston, and W. H. Tolman, New York. The committee on the award comprised Bion J. Arnold, Chicago; Will J. French, San Francisco; James H. McGraw, New York; George F. Swain, Cambridge, Mass.; Frank R. Ford, New York, and W. H. Tolman, New York.

The appearance of the face of the medal is indicated in the accompanying illustration. A preliminary design

for this medal was reproduced in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 30, 1915, page 239, but this design was not satisfactory to the Brady family and consequently there were no medals struck last year.

In connection with the award of the medals honorable mention was accorded to the Elevated Railroads of Chicago, Britton I. Budd, president, a close second in the contest. Special mention was also made of the safety work of the Peninsular Railway and San José Railroad, Paul Shoup, president, and of the Columbus (Ga.) Railroad, Charles F. Wallace, president.

## Commissions Give Valuation Views

Oppose Finding of Ultimate Value—Argue for Original Cost and Declare Reproduction Cost to Be Discredited—Call Claims for Intangibles Absurd

DISAGREEMENT with the steam railroads in regard to federal valuation was the common ground on which the various state commissions met at the valuation conference in Washington on Jan. 26-28, called by the Interstate Commerce Commission. The discussion was based on the brief recently filed by the National Association of Railway Commissioners, those of four state commissions, California, Oregon, Kansas and Minnesota, and the answering brief of the carriers.

As summarized by Max Thelen of California, at the close of the conference, the main contentions of the states are: (1) That the valuation act does not require an ultimate finding of value, but merely classified statements of the evidences of value; (2) that original cost to date must be found, estimates being made where exact figures are not available; (3) that reproduction cost new must be found on a national basis (the states disagreeing with each other as to the national basis, but agreeing that the carriers' basis is irrational); (4) that accrued depreciation must show in reproduction cost less depreciation; (5) that the reproduction cost of land cannot exceed the normal market value, and (6) that intangibles should be discussed further when the carriers have stated how they shall be valued.

At the opening of the conference Mr. Thelen stated that the framers of the valuation act had not sought to have the report of the Interstate Commerce Commission show more than the elements or evidences of value; that value depended upon the purpose for which it was to be used; that value for rate-making purposes depended on much that no inventory could show, such as the value of the service, past earnings and many other elements, and that with no rate before it and no standard, which the Supreme Court must set, to measure the relative weights of even the known evidences of value, no value could be found. In regard to intangibles Mr. Thelen held that the claims of the railroads to date under this head were absurd, and they did not agree among themselves as to the definitions of these elements and had not suggested how they were to be determined.

A. E. Holm of Kansas deplored the efforts he thought the railroads had made to evade and conceal original cost. He held that whatever could not be found exactly by the records should be estimated. He contended that reproduction cost had been definitely rejected by the Supreme Court in the Minnesota rate case; that capitalization could not be the basis of value, and that original cost was the only thing left and all that should be considered. Like some of his confreres he thought reproduction cost was a useless figure, which would not have been called for if the valuation act had been passed after the handing down of the Minnesota decision.

To prove that the state commissions are right in their

contention that accrued depreciation must be taken into account in reproduction cost less depreciation, E. C. Niles of New Hampshire quoted from numerous decisions of the state commissions themselves. Even so there appeared to be much division of opinion. In fact, as W. C. Brantley, counsel for the carriers, later pointed out, seemingly the main deduction to be derived was that the question of depreciation in the minds of courts and commissions is in a chaotic state.

For the railroads G. S. Patterson insisted that they were in agreement with the states on many of the issues raised. He held that the carriers desired the recording of expenditures for additions and betterments made from earnings, surplus or depreciation reserves, and that they had never opposed the ascertaining of original cost, relying within reason upon estimates. The carriers, he said, also recognize the importance of attaching the proper weights to the elements of value, and think this can await the completion of the inventories. S. Robinson commented on the fact that the state commissions had in the last year changed their views regarding overhead expenses in reproduction cost. He insisted that the Minnesota rate decision did not condemn reproduction cost, but only that particular presentation of it.

### George Westinghouse Tablet

Veteran Employees of the Westinghouse Company  
Present Memorial of Their Founder

THE Veteran Employees' Association of the Westinghouse Electric & Manufacturing Company, at its third annual banquet, held on Saturday evening, Jan. 29, in the Fort Pitt Hotel, Pittsburgh, presented to the company a handsome bronze memorial tablet of the late George Westinghouse. This organization is composed of those who have been in the employ of the company for twenty years or more, and about 450 veterans were present.

The memorial tablet is approximately 4 ft. x 3 ft., made of solid cast bronze, and weighs about 300 lb. It shows a bas-relief likeness of Mr. Westinghouse, seated in an armchair, and bears the inscription, "George Westinghouse, Master Workman, Inventor, Founder, Organizer, 1846-1914." It will be placed in the reception room of the East Pittsburgh works of the Electric Company.

Addresses were made by a number of veterans, former associates of Mr. Westinghouse. Guy E. Tripp, chairman of the board of directors, in accepting the tablet on behalf of the company, said in part:

"History is little more than a biography of great men, and admiration and emulation of them is the real foundation of advancing civilization. History has been enriched by the life of George Westinghouse, and if we, his associates, have not received some benefits in our lives, if we have not been encouraged by his example of the courageousness, if we have not been incited to new efforts by his perseverance, then we should regret having neglected our opportunities. It was an opportunity to have observed his unfettered methods of work—unfettered because he could labor at the details without being swallowed up by them, and he could deal comprehensively with the whole without vagueness. He instinctively knew the essential point and swept all other matters aside as of minor importance."

In addition to its regular steam service, the Florida East Coast Railway, Jacksonville, Fla., is operating a gasoline-electric car in regular service from Jacksonville to Pablo Beach, through Atlantic Beach and Mayport.

## Removing Restrictions on Foreign Trade

At New Orleans National Foreign Trade Convention  
Delegates Discussed Need of Government Co-  
operation in Developing Foreign Trade

THE removal of legal restrictions now hampering foreign trade development was a recurring theme at the third national foreign trade convention, held in New Orleans on Jan. 27-29 under the auspices of the National Foreign Trade Council. It was shown that the three chief agencies needed for the extension of our foreign trade—American investment and banks in foreign lands, co-operation between manufacturers and a merchant marine—are each prevented from playing their full part by adverse federal laws.

In the meeting which discussed foreign banking, the handicap imposed by the federal reserve act, which prevents member banks from subscribing to the stock of other banks even though formed for operation in foreign lands, was discussed, and the delegates present indicated plainly that they favored an amendment which would remove the restriction. The legislation adversely affecting co-operation between manufacturers who desire to extend their export business was the theme of an able paper by M. A. Oudin, manager foreign department General Electric Company. He showed that the anti-trust laws do not discriminate between foreign and domestic business in prohibiting co-operation. Finally, Capt. Robert Dollar told graphically how the seamen's law has driven American shipping from the Pacific and how the high operating costs entailed by it prevent the development of a merchant marine. The sentiment of the delegates was that the restrictions affecting all three necessary features for foreign trade development should be removed.

Aside from these three outstanding features of the convention, the function which a large foreign trade plays in stabilizing domestic industry was repeatedly pointed out. Mr. Oudin, for example, said: "Co-operative foreign efforts would help keep our factories running at 100 per cent capacity." This stabilizing feature of foreign trade was very keenly appreciated.

Frank A. Vanderlip, president of the National City Bank, New York, gave another angle to the importance of foreign trade. He pointed out that this country is piling up tremendous gold reserves, while at the same time European gold reserves are being depleted. After the war the foreign countries will direct their attacks on the reserves here. The best way to safeguard them is by building a huge foreign credit here, and that can be accomplished only by a large volume of foreign trade. Mr. Vanderlip, as well as other speakers, pointed out that the present is the psychological moment for foreign trade expansion, not only because of the adverse conditions affecting European nations, but because of the need of preparation here for what depression may come after the conclusion of the world conflict.

In discussing foreign trade James A. Farrell, president United States Steel Corporation, said that it is as much in the interest of the workman as his employer that provision be made for a steady sale abroad of the products of the mechanical industry of the United States. In fact, the foreign business in many corporations, since the war began, has been their greatest asset, and the only justification for the operation of their plants on full time. As to investments abroad, Mr. Farrell stated that foreign investment is a commercial preparedness measure, a source of protection for the whole industrial fabric of the country, should the world recede to political-commercial policies of trade restriction. It is an element of strength in the influence of

this country as a nation, should a wiser instinct realize that the true guarantee of the world's peace is the provision of equal opportunity for all.

Prof. H. C. Emery made a plea for a "bargaining" tariff and pointed out that anti-dumping legislation would be of no avail, for even if European manufacturers should sell over here at their foreign cost plus a reasonable profit, this country would not, in many articles, be able to compete. Moreover, he defended dumping as a perfectly legitimate trade practice, pointing out that it has been commonly employed in this country.

On the conditions here after the close of the war there were diverse views. Alba B. Johnson, president Baldwin Locomotive Works, expects a very severe depression. On the other hand, Mr. Farrell expressed the opinion that the wave of prosperity in the United States is too powerful to be easily rolled back or resisted. He does not look for a crash in this country at the conclusion of the war, for while Europe will undoubtedly make an effort to re-establish her foreign trade she will find herself handicapped in so many unexpected ways that it will take years to overcome the difficulties.

## Advertising Electric Railway Service in Buffalo

The International Railway Is Carrying Out a Comprehensive Daily Newspaper Advertising Campaign with Good Success

A COMPREHENSIVE campaign of daily newspaper advertising is being carried out by the International Railway, Buffalo, N. Y., to educate the public as to various phases of its activity. Much display space is being devoted to the facilities offered by the company's freight and express service between Buffalo, Tonawanda, North Tonawanda, Lockport, Niagara Falls and Rochester, and the results accomplished have surpassed the expectations of the executive officials.

Double-column display advertisements 2 in. deep are being carried once a week in the daily newspapers of Buffalo, Niagara Falls and Lockport, and in addition to this the company is using four-line and five-line reading notices scattered throughout the paper every day. The greatest amount of space is being used to educate shippers as to the value of the express service between western New York cities and towns on the lines of the International Railway and the Buffalo, Lockport & Rochester Railway. The text of three typical advertisements on this service is reproduced herewith.

It is the company's belief that it can handle a large amount of the package express business which has been received by local express companies, and since the advertising campaign has been started a number of Buffalo wholesale houses have given the railway a large percentage of their package business. "I never knew you handled a package express business" is a familiar expression among wholesalers whose attention has been called to this phase of the railway's activities by these advertisements. Owing to the increased business in this field, the company is operating a package express service three times daily between Buffalo and Rochester, and intermediate points via Lockport. W. J. Whiteside, traffic agent of the International Railway, is handling the package express service. In all the advertisements the company is featuring "service" and "promptness." This appeal to business houses has resulted in a highly satisfactory return on the advertising investment.

Not only is the express and freight service featured but the company keeps the public informed from time to time by means of display advertising in the daily

### Successful Men Misrepresented

It is usual to represent successful men as having grasped at the stars, while the truth is that they saw but the things at hand and had the wisdom to make use of them.

The successful Buffalo merchant has an eye to the facilities for trade in Buffalo territory. He knows one of them to be the package express service of the International Railway Company and makes use of it. You can do the same. Inquire of W. J. Whiteside, traffic agent, Main and Court Streets.

International Railway Company

### Preparedness—The Watchword

A business man to be successful must be both prepared and alert to grasp trade opportunities.

An opportunity for trade development is given to Buffalo business men and merchants by the package express of the International Railway Company.

It serves a score of communities and cities between Buffalo and Rochester.

Quick Delivery Low Rates

Inquire of W. J. Whiteside, traffic agent, Main and Court Streets.

International Railway Company

### Profit to Business Is Like Health to the Body

Exercise keeps the body healthy. Enterprise brings profit in business. Enterprise makes use of every available trade channel.

One of the best trade channels is the service given three times daily by our package express to Rochester and intermediate points, via Lockport.

Inquire of W. J. Whiteside, traffic agent, Main and Court Streets.

International Railway Company

TYPICAL ADVERTISEMENTS ON PACKAGE EXPRESS SERVICE  
APPEARING IN BUFFALO NEWSPAPERS

newspapers of changes in route, causes of delay, temporary rerouting and the reasons for it and, in fact, anything in connection with the service over the city or interurban lines. The company also urges the more general use of private and chartered cars by organizations. By advertising this phase of its service much congestion is relieved from the regular service and organizations have the privacy of their own cars at little more than the regular fare. The use of the funeral cars has been more general since this service has been advertised in the daily newspapers.

E. G. Connette, president of the company, is a firm believer in printer's ink and display advertising. He holds that since the company is supported by the public the public is entitled to know all phases of the service offered by the company. Daily newspaper advertising, Mr. Connette believes, is a good investment.

An interesting feature of the Great Falls hydroelectric power plant of the Montana Power Company, which supplies electric current for the Chicago, Milwaukee & St. Paul electrification, is that the Missouri River is free of ice for the year round at this locality. This condition is due to the Giant Spring, which flows into the Missouri River at a point about a mile above the company's Rainbow Dam. The spring, probably the largest fresh water spring in the world, has a capacity that is estimated at 36,000 cu. ft. per minute, the temperature remaining constant at 51 deg. Fahr. This steady supply of relatively warm water raises the temperature of the whole river for some distance below the spring sufficiently to prevent the formation of the so-called anchor or frazil ice, a consideration of material benefit to the hydroelectric project.

# EQUIPMENT AND ITS MAINTENANCE

Short Descriptions of Labor, Mechanical and Electrical Practices  
in Every Department of Electric Railroading

*Contributions from the Men in the Field Are Solicited and Will Be Paid for at Special Rates.*

## The Adjustment of Drum Controller Fingers

BY W. J. OVERMAN

Railway Equipment Department General Electric Company,  
Schenectady, N. Y.

One familiar with the maintenance of the drum controllers of car equipments will appreciate the fact that the most frequent source of trouble lies in the contact fingers. This trouble is greatly augmented by the lack of uniformity in adjustments.

Drum controller fingers are designed to drop approximately  $\frac{3}{32}$  in. on leaving the controller segments—that is, the point of contact on the finger tip should be  $\frac{3}{32}$  in. nearer the center of the cylinder when off the segment than when on the segment (see Fig. 1). This adjustment is obtained by means of the adjusting screw which bears on the finger block, and the drop should

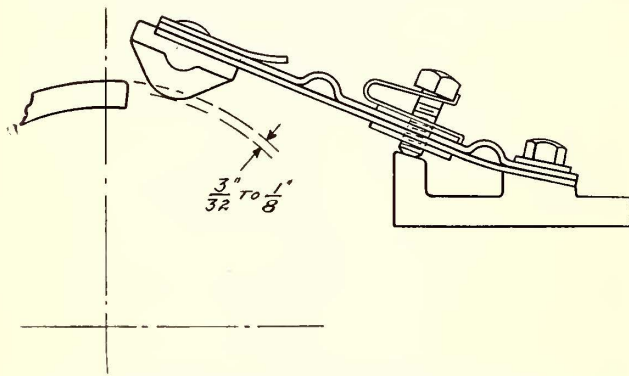


FIG. 1—PROPERLY ADJUSTED DROP FOR CONTROLLER FINGER WITH NEW SEGMENT

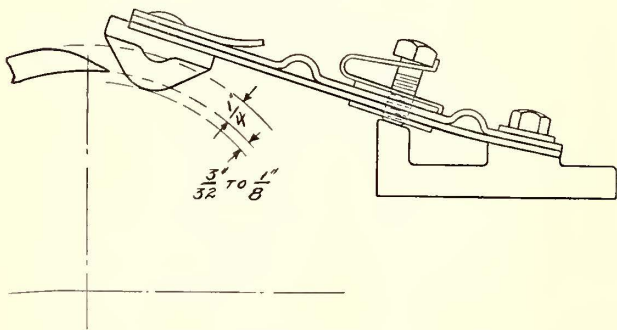


FIG. 2—EXCESSIVE DROP OF CONTROLLER FINGER, DUE TO WORN SEGMENT TIP

never be allowed to exceed  $\frac{1}{8}$  in. If it exceeds this amount the operation of the controller becomes more difficult and the phosphor bronze spring is subjected to a stubbing and buckling action which greatly shortens its life.

Fig. 2 illustrates what is believed to be the direct cause of a large percentage of finger troubles. Here the segment tip is shown badly worn and the finger is adjusted to drop  $\frac{3}{32}$  in. on leaving it. Referring to the illustration it will be seen that the finger, when going on the segment, is raised  $\frac{3}{32}$  in. plus the thickness of the segment, thus making the total movement of

the tip almost  $\frac{3}{8}$  in. This bending of the finger spring is very excessive and in a short time will result in the breaking of the phosphor bronze spring or the copper shunts. Segment tips should be renewed when so badly worn that the proper adjustment cannot be obtained on the fingers.

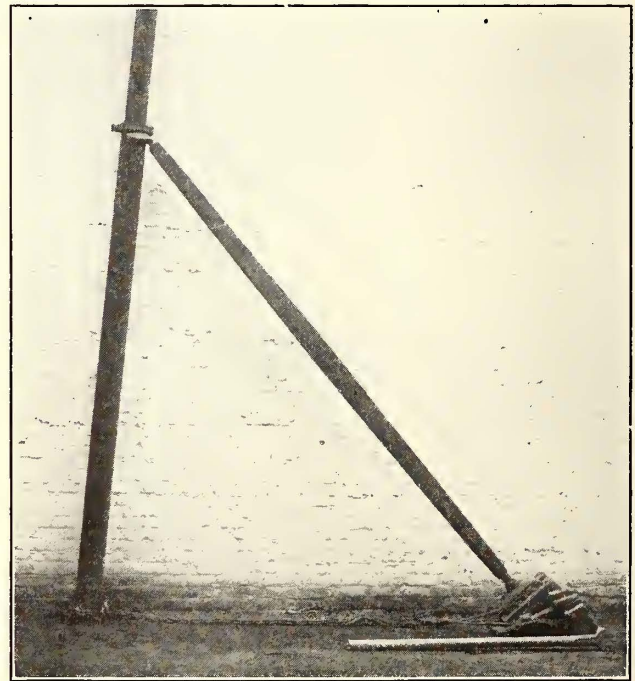
Fingers should be adjusted by twisting to make contact all the way across the controller segments. Failure to do this may result in the overheating of the segments and fingers, causing the spring to soften and lose tension.

## Tool for Plumbing Leaning Iron Poles

BY S. L. FOSTER

Chief Electrician United Railroads of San Francisco

For straightening up iron poles that have been pulled out of plumb, whose concrete setting has been undermined by curbstone installing operations, washouts, etc., or which were set originally with too much rake or too little rake, the device shown is used by the United Rail-



POLE STRAIGHTENING JACK IN PLACE

roads of San Francisco without disturbing the concrete settings of the poles.

Its action is clearly shown in the illustration. The house-mover's jack set at an angle of 45 deg. is kept from sliding along the pavement or sidewalk by being attached to the base of the pole by a chain. The crescent-shaped wrought-iron end of the 4-in. x 6-in. tapering oak strut is prevented from slipping upward on the pole by an iron band bolted around the pole.

It occasionally though rarely happens that an iron pole is broken off before it is quite straightened. In such a case a short piece of rail is inserted as a splice for the pole, the voids between rail and tubular interior

of the pole filled with concrete and the pole left looking the same and as strong as before it was broken.

The efficiency of this simple device was most clearly demonstrated when it was utilized to straighten about 500 heavy tubular poles that were to be provided with highly ornamental castings on the main streets of San Francisco. Those designing the ornamentations insisted for best effect that the poles should be absolutely vertical. This was readily accomplished by this jacking-over method.

The device has been found effective under many other conditions and is much superior in simplicity and cheapness of manipulation, exactness of control and rapidity of action to the old block and tackle method of straightening up leaning iron poles.

Where iron poles are actually bent one or more ways or distorted, as occurred in San Francisco's great 1906 fire, otherwise than by a simple leaning over from the ground line, another United Railroads device, described and illustrated in the *ELECTRIC RAILWAY JOURNAL* of Feb. 6, 1909, page 227, is used with equal effectiveness, speed and cheapness to gradually remove all the various bends one after the other.

## Portable Crusher Eliminates Stone Hauling

BY D. P. FALCONER

Engineer Maintenance of Way New York State Railways,  
Rochester, N. Y.

In these days of rigid economy in the electric railway field it is necessary for the engineer in charge of track construction and maintenance to utilize as much as possible of the materials which are removed from worn-out track. During the past four years the New York State Railways have endeavored to carry out this general idea, and the accompanying illustration shows a piece of equipment which has been purchased for the utilization of what formerly was scrapped.

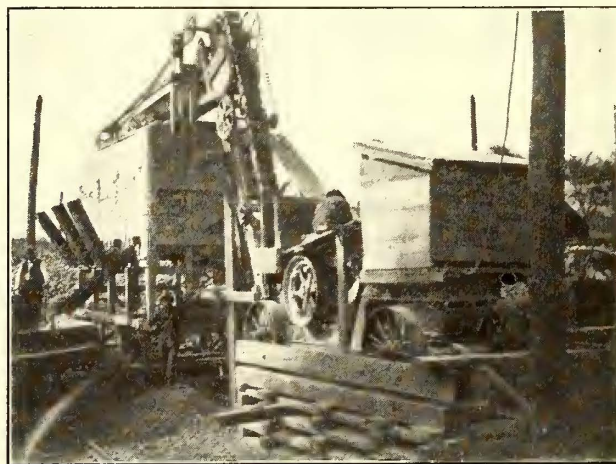
Medina block paving stone is commonly used throughout Rochester as a pavement in car tracks. This paving stone originally was 7-in. stone and was suitable for laying with 9-in. rail. During recent years, however, 7-in. T-rail has been laid, and in order to effect an economy the 7-in. Medina stone has been recut into 5-in. stone on the street during the progress of the reconstruction work, thus saving the stone and eliminating the hauling of this old material from the job. When this was not possible the paving stone was hauled to the receiving yards and stored in a pile. This pile has been sorted, and those stones which are too small to be recut have been thrown into a pile along with the concrete which has been excavated from tracks during reconstruction. As a result of this there has been a large accumulation of stone suitable for crushing.

About two years ago a stone crusher was rented and installed for a few months and the pile of stone which had accumulated at that time was crushed and used as ballast and for the making of concrete. This experiment proved so successful that it was found advisable to design some special equipment to meet the requirements. This equipment consists of a 30-ton bin with screen and elevator and a stone crusher. The bin is divided into four compartments: one for the screenings, one for 1/2-in. to 3/4-in. stone, one for 3/4-in. to 2-in. stone and one for the tailings. This bin has a side discharge so that it can be placed next to the track and the crushed stone loaded directly into the work cars. It is also provided with the usual type of elevator and screen. The crusher, however, was designed especially for the work in question and was built by the Wheeling Mold & Foundry Company. It consists of a standard crusher mounted on wheels and connected by means of

a belt drive to a motor mounted on the same truck with the crusher. The truck is designed with a gooseneck and provided with broad-tired wheels so that the crusher may be hauled over pavement and transported to various points. The gooseneck is provided with a locking device, and a duplicate set of wheels with standard car wheel flange has been designed so that they can be substituted for the road wheels and the crusher hauled directly on the track.

The method of mounting the motor on the same truck with the crusher makes a very compact machine which can be transported from place to place, the idea being that concrete excavated from the streets need not be hauled to the yards for crushing, but can be piled alongside the trench; when the new track is laid on the subgrade the crusher can be placed on this track, omitting the bin and elevator, and old paving stone and concrete crushed and dropped directly between the ties. The crusher can be moved forward from time to time, taking care of the old concrete which has been distributed along the track and providing at the same time adequate crushed stone which can be used for ballast.

With this equipment it will be possible to eliminate hauling a large portion of the material excavated from tracks which are being reconstructed, and at the same



PORTABLE STONE CRUSHER FOR ELIMINATING STONE HAULING IN TRACK RECONSTRUCTION

time provision will be made for recovering this material at a price of approximately 25 cents per ton, the cost of the crushing. Where conditions are such that it will be impossible to operate the crusher on the track in the street, the concrete excavated can be hauled to the yards where the crusher can be used as illustrated.

The motor on this crusher is of 35 hp. operating at 550 volts, so that the power can be taken directly from the trolley wire at all times. The crusher is provided with 9-in. x 16-in. opening and manganese steel jaws.

This equipment has been in operation for only a few months but even in this short period it is evident that it will much more than pay for itself in a very short time. It will be noted, too, that this complete outfit has the flexibility of the average contractors' plant and in addition provides for the special requirements of electric railway work.

According to the British Consul at Nagasaki, Japan, extensions of the electric tramway at Nagasaki are contemplated. The system of electric railways radiating from Osaki is now more or less complete and construction work in the near future is likely to be confined to connecting lines. Operating results of several of these railways have not been very satisfactory. The passenger traffic has suffered from trade depression.

# Electrical Repairs on Controllers and Motors in Los Angeles

BY J. L. CLARK

Superintendent Electric Repairs, Los Angeles (Cal.) Railway Corporation

The electrical repair department of the Los Angeles Railway Corporation has been making advantageous use of a number of repair schemes and devices, described and illustrated herein, which have originated through the co-operation and skill of our foreman and other shop employees in this department.

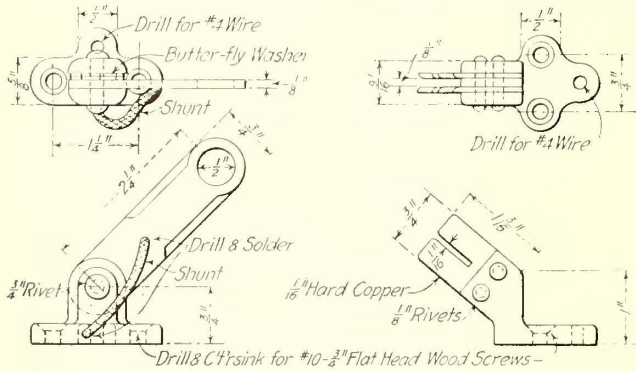
The first Type K controllers received with our car equipments were the K-2 style with L-1 and L-2 connections for the old shunted-field scheme of control. All these and several other K-2 controllers were acquired with some second-hand equipments from another street railway, making a total of about 180 that have been rebuilt to our standard K-11 style.

To remedy the not infrequent trouble of loose and burnt wire connections at the rear of the binding posts on the connecting board of Type K controllers, and also the loosened connections at that point with the cable wires, we abolished the connecting board with

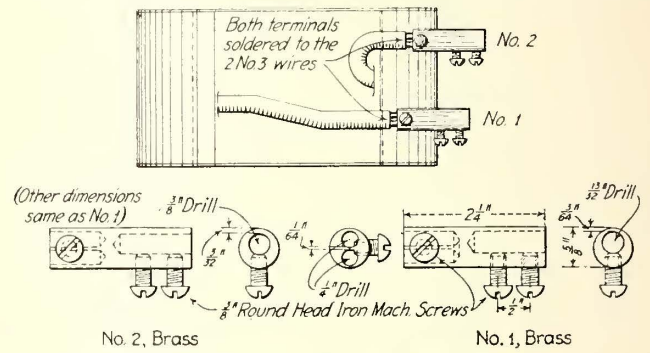
its binding posts. In place of this we extended the controller wiring leads for a length of 2 ft. below the base of the controller and then spliced the leads with a wrapped soldered joint to the cable wires underneath the car platform. This method has completely eradicated the former troubles, as their cause has been removed.

In order to eliminate the burning of cut-out switches which was a rather frequent controller occurrence several years ago, owing to insufficient contact at the hinges of switches, we provided a flexible copper braid shunt across the hinged joint of each switch blade. This use of arrangement, illustrated herewith in detail, has entirely eliminated the cause of this class of controller failures.

Several years ago this company first experienced swollen blow-out coils in the K-11 type controller, our standard type for passenger cars. The expansion of the copper ribbon-wound blow-out coil frequently resulted in bridging the short air gap between the coil and the operating cylinder, with consequent liability of short-circuiting. Formerly, to remedy this condition, we removed the blow-out coils and pressed them back to shape, and in some cases rewound the coils. This



COPPER SHUNT FOR PREVENTING BURNING OF CUT-OUT SWITCHES



DETAILS OF REWOUND BLOWOUT COIL

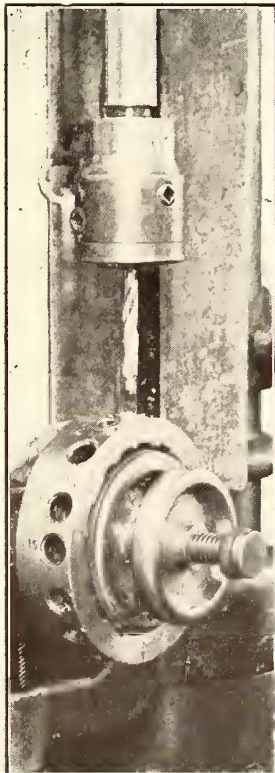


Fig. 1

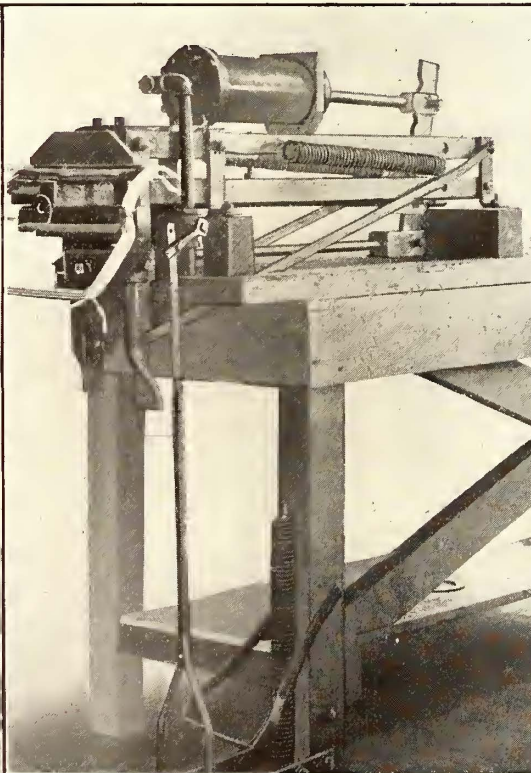


Fig. 2

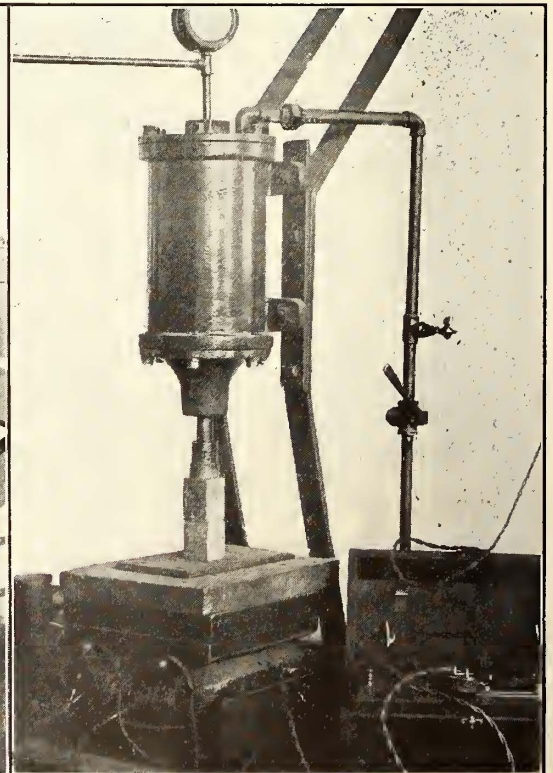
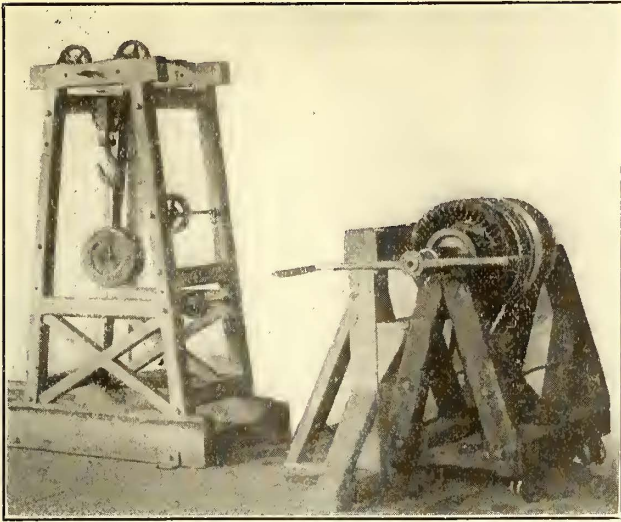


Fig. 3

FIG. 1—JIG FOR DRILLING K-11 CONTROLLER CONTACT SEGMENT; FIG. 2—PNEUMATICALLY OPERATED ARMATURE COIL PRESS; FIG. 3—FIELD COIL TESTING PRESS

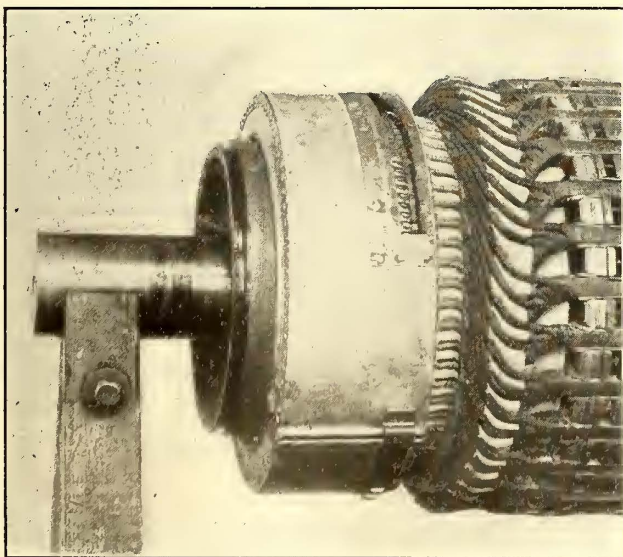


CONSTANT TENSION ARMATURE BANDING DEVICE

practice, however, was without permanent results. Therefore, we decided to rewind the coils with two parallel No. 3 B. & S. solid copper fireproofed magnet wires. Out of many controller blow-out coils so rebuilt, not one has proved a repeater. This style of blow-out coil has also been specified and furnished with all new K-11 controllers purchased during the past several years. An accompanying diagram shows our method of arranging the blow-out coil terminals and connectors.

Controller cylinder contact segments are rolled and finished complete in our shop for all car controllers. To facilitate this work we use a steel jig of the design shown in an accompanying illustration. This jig is arranged to drill and countersink accurately at one operation all styles of K-11 cylinder contact segments.

An accompanying illustration shows one of the four pneumatically-operated presses used by the Los Angeles Railway Corporation in the construction of armature coils. The press is controlled by a pedal connected to an air valve. It has two compressions, one for coil thickness and another for coil width. It is also provided with compression plates of different gages whereby we can press all styles of armature coils, such as the Westinghouse 38-B, 49, 101-L and 306-L motors; also the compressor motors of Westinghouse D. I. B. G. and National A-5 and AA-1 styles. The first two of



METAL BASKET FOR CATCHING CUT ENDS OF ARMATURE LEADS

these air presses were made several years ago by the electrical repair department. They are so quick and positive in action and have proved so efficient that two additional presses of the same model have recently been completed.

The tension device, also illustrated herewith, has been used by us for many years. Its main feature is that any predetermined tension will remain absolutely constant from the first to the last turn in applying bands. This banding device is used for any style of armature from 1-kw. to 1000-kw. size.

Another illustration shows a metal basket, hinged to fit around the necks of armatures of various styles, which is used to catch all the copper wire ends of armature coil leads when they are cut off flush with the commutator slots after the armature is entirely connected. We find that this basket offers an easy and quick way to save copper.

All field coils are treated in varnish before receiving asbestos tape wrapping as follows: The coils are heated for twenty hours in an electric oven at 190 deg. Fahr. They are next immersed in Armalac insulating varnish until air bubbles cease to rise, and are then suspended above the varnish to drain. Afterward this entire treatment is repeated once. The service results with our field coils have proved this method of impregnating in cold liquid insulating varnish is entirely satisfactory for our car motor conditions.

When giving the shop test for short-circuits in wire-wound field coils, we always subject them to approximately 60 lb. per square inch test pressure, using a Century field testing machine. We have found this method of testing coils is very reliable and quick in application. The air press and testing machine are shown herewith. We also use the field tester for periodical tests of motors.

## Track Material Ordered by Detroit United During 1915

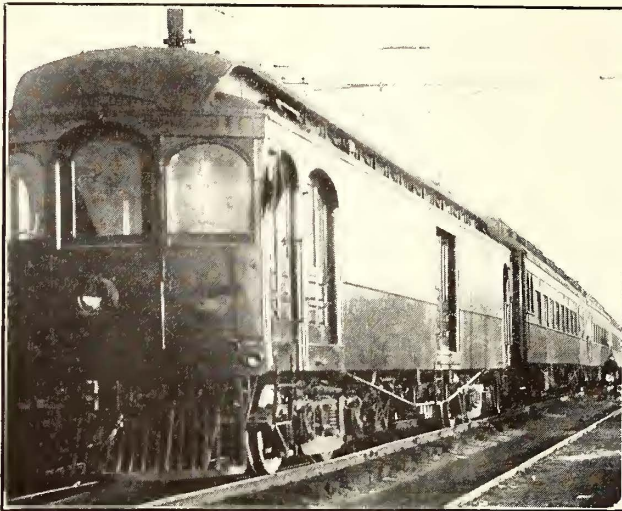
A recent issue of the Detroit (Mich.) United Railway's company publication, *Electric Railway Service*, contains a general statement of the large supplies of material needed by that company for its last year's track work. Steel rails ordered in 1915 for new construction, reconstruction and maintenance on the Detroit United lines amounted to nearly 7700 tons. Cement was a big item in the list of construction materials.

Last year 173,000 bags of cement were ordered, weighing approximately 7600 tons. Sand and gravel were required in tremendous quantities for track work, 11,000 cu. yd. of sand and nearly 30,000 cu. yd. of gravel being ordered. Cedar and oak ties were also big items. Last year approximately 140,000 ties of all classes were ordered. For paving work nearly 2,000,000 paving bricks and more than 750,000 granite nose-blocks were ordered. The brick weighed approximately 9800 tons and the block weighed more than 12,000 tons. The orders for track spikes amounted to about 2500 kegs, or a total of about 750,000 spikes.

It is reported by an English contemporary that on eighteen occasions during the year 1914-1915 the fenders which are carried by the West Ham (England) street railway cars were brought into use. In every case their efficiency was proved and serious accidents were avoided. Seven persons were picked up uninjured, nine slightly injured and one badly injured. In the remaining case a bicyclist was picked up without serious injury.

## Profitable Work for Annapolis Short Line Electric Locomotive

The Maryland Electric Railways recently came in for a share of the business of transporting a large body of midshipmen between the Naval Academy and New York. The Baltimore & Ohio Railroad made a contract involving the movement of ten steel passenger cars, and this necessitated the use of one of the two electric



ELECTRIC LOCOMOTIVE COUPLED TO B. & O. TRAIN ON ANNAPOLIS SHORT LINE

lines into Annapolis. The "Short Line" track is too light for the heavy B. & O. steam locomotives, but the train was handled satisfactorily by means of a 52-ton electric locomotive of the box-car type. This is equipped with Westinghouse No. 562-AX motors and HLF unit-switch control and is used by the "Short Line" in a very extensive freight business.

## Reducing Hazards Due to Falls

In a paper presented recently before the American Museum of Safety H. W. Mowery called attention to the large number of casualties due to slipping, tripping or falling, and cited as an example the fact that in New York City, during 1914, 170 deaths occurred from falls on stairs and sidewalks, and only sixty-five deaths from fires, fifty-three from surface cars, twelve from subway cars and twelve from elevated cars.

Anti-slip material, chief among which is "Feralun," is the most important in connection with the treads of stairs, and if accidents are to be prevented the nosing edge along the entire length of the tread must provide a positive, durable slip-proof surface. An overhang for the nosing is also essential. Grooves parallel to the nosing have a tendency to catch the heel of a shoe, and make it difficult to distinguish where one step ends and another begins. The design of the stair is also important, and approved dimensions range from 7 1/4 in. to 8 in. for risers and 10 1/4 in. to 9 1/4 in. for treads.

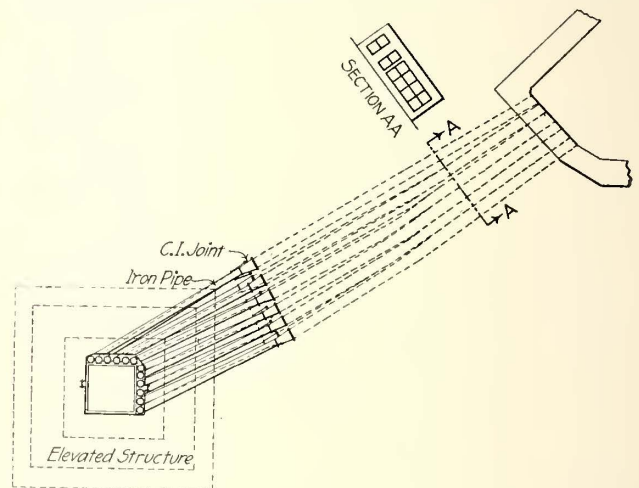
In the Broad Street Station of the Pennsylvania Railroad at Philadelphia the installation of an abrasive-metal tread having an anti-slip nosing and no grooves parallel to the nosing reduced the casualties on the stairs from twenty-one in a period of six weeks to zero during a period of three months. In another case a rapid transit company had practically no casualties in train accidents during a year, but in other than train accidents there were 138 persons injured, of whom 127 were passengers. Investigation disclosed the fact that 39 per cent of the total were injured on station stair-

ways. Since the lighting of the stairways in general is good, hand rails are plentiful, and the treads have a standard nosing overhang with standard tread and riser dimensions, the accidents can only be ascribed to the fact that the treads have smooth metal nosing edges and are grooved parallel to that edge.

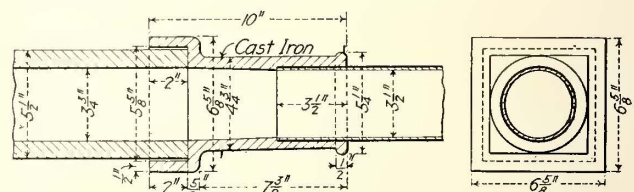
## Cast-Iron Junction for Iron Pipe and Clay Duct

The cast-iron fitting, shown in the accompanying cut, has been devised for conduit use at locations where the distance from the base of the pole or structure is considerable, and would require the use of long lengths of pipe.

The writer has in mind the use of this fitting at a location where more than 100 runs of conduit were installed at a substation, and where the conduits had to be continued so as to make connection with the elevated structure. By using these joints a length of 20 ft. of 3 1/2-in. iron pipe was saved on each run, or a total of



LAYOUT SHOWING REDUCTION IN LENGTH OF IRON PIPE EFFECTED BY USE OF JOINTION



SECTIONAL AND END VIEW OF CAST-IRON CONDUIT JOINT

2000 ft. This saving, at \$4 per run, amounted to approximately \$400. The above saving does not include the maintenance expense obviated by the use of the clay duct which is really imperishable, whereas it is well known that the iron pipe will not last much longer than fifteen years, even though it be galvanized or otherwise treated.

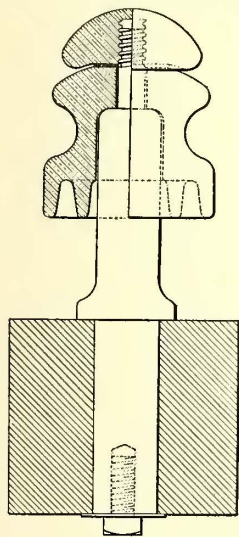
The joints cost \$1 each. It will be noted that the distance from the end of the flange to the end of the fitting is 7 3/8 in., but this may be considerably reduced and the joints obtained at less cost.

The Dublin & Blessington Tramway Company has introduced the first gas-electric car used in Ireland. This is well appointed, lighted by electricity both inside and outside and has seating accommodations for seventy-five passengers. The current is generated a 65-kw. gas-electric set in the motorman's compartment.



## Novel Feeder Insulator for Use on Curves

In feed wire installation the usual practice is to run out from  $\frac{1}{4}$  mile to  $\frac{1}{2}$  mile of wire, string it loosely over the cross-arms beside the insulator pins, then to pull up the wire tightly to take out most of the sag between adjacent poles, and finally to tie the wire securely to the insulators. If the entire length of wire to be pulled up lies on a straight portion of the feeder line, the pulling-up operation is completed while the wire rests on the cross-arms beside the pins. But where a curve is included in the length to be pulled up it is necessary, because of the severe side strain on the insulator pins at the curves, to have the wire placed in the groove at the side of the insulator where it later will be secured before the pulling-up operation is completed.



SECTION OF INSULATOR

Usually a comparatively light tension is first put on the wire; then it is put in the grooves of the insulators, its lateral pressure on the insulators being sufficient to hold it there; then the wire is pulled up to its final tension. During this final process the drag of the wire against the sides of the insulators causes them to rotate, and if they are threaded on their pins the insulators often become unscrewed or screwed down on the pin so tightly that they become broken. It often becomes necessary for some of the line crew to hold some of the insulators against turning while the wire is being pulled up to its final tension.

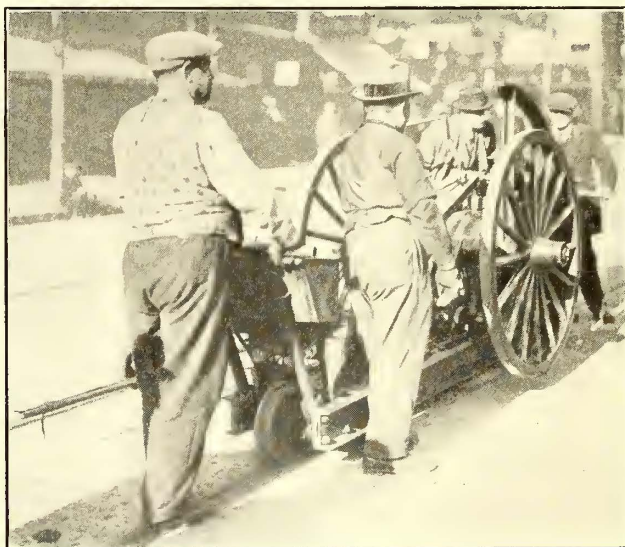
To obviate these difficulties, the insulator illustrated in the accompanying half-tone and drawing has been designed and patented by Frank M. Spicer, general superintendent of lines, Bay State Street Railway, Boston, Mass. The insulator pin is secured in the cross-arm in the usual way, but is reduced in diameter near its upper end to form a shoulder, above which the pin is threaded for a part of its length. This pin is usually of metal. The insulator is in two parts—the insulator proper and a cap piece. The former slips over the insulator pin and rests on the shoulder, thus being able to rotate freely on the pin. The cap has a threaded socket, and a rubber washer is interposed between the insulator and the cap to form a cushion and keep out moisture.

With this insulator the cable is seated in the groove before the pulling-up operation begins. The cap is screwed only part way upon the extension so that it will not interfere with the free rotation of the insulator. While the wire is being pulled up the drag against the side of the insulator will cause it to rotate, but as it has no threaded connection with the pin, it does not move up or down or present much friction to the drag of the wire. After pulling up is completed, the cap is screwed against the washer and the wire is tied.

The insulator is being manufactured by the Albert & J. M. Anderson Manufacturing Company of South Boston, Mass. About 200 are in service on the Massachusetts Northeastern Street Railway, which has been giving the design a two years' test.

## Grinding New and Old Rail at Worcester, Mass.

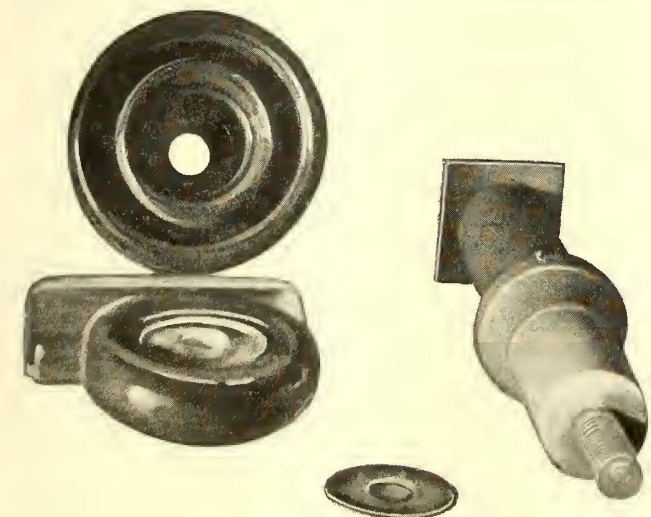
One of the rail-grinding machines of the Railway Trackwork Company, Philadelphia, has recently been in service on the Worcester (Mass.) Consolidated Street Railway, as illustrated. In thirty days about 0.25 mile of double track has been gone over with this machine, the work including the grinding down of joints and cups and the removal of corrugations on straight rail.



TRACK GRINDER AT WORK IN WORCESTER, MASS.

The maximum depth of corrugation is from  $\frac{1}{8}$  in. to  $\frac{3}{16}$  in., and about three hours are required to grind down  $\frac{1}{8}$  in. Incipient low joints are also smoothed down with this equipment, and all the track recently built between Lincoln Square and Chandler Street, on Main Street, has been gone over at the joints, to insure the best results in service. Most of the work is done at night. The accompanying illustration was obtained with great difficulty on account of the density of traffic in the district where the view was taken.

It is reported that a company of Chinese and Russian capitalists has been organized under the name of "Energia," which plans to undertake the construction of a street railway system and power plant for Harbin, China. In a statement to the Municipal Council the company proposes that a joint stock company be organized and that the municipality be permitted to participate on the condition that a proper franchise be granted.



FEEDER INSULATOR DISASSEMBLED

intendent of lines, Bay State Street Railway, Boston, Mass. The insulator pin is secured in the cross-arm in the usual way, but is reduced in diameter near its upper end to form a shoulder, above which the pin is threaded for a part of its length. This pin is usually of metal. The insulator is in two parts—the insulator proper and a cap piece. The former slips over the insulator pin and rests on the shoulder, thus being able to rotate freely on the pin. The cap has a threaded socket, and a rubber

LONDON LETTER

Effect of War Still Serious Problem in Some Places—Recovery Apparent but Slow

(From Our Regular Correspondent)

The first of a series of efficiency meetings arranged for the officials of the operating department of the Underground Railways and London General Omnibus group was held last December. A paper, "Mess Rooms and Their Organization," was read by S. G. Rodway, mess room superintendent of the London General Omnibus Company. The chairman, H. E. Blain, on opening the meeting, said that the series was being arranged to enable officials to discuss, from an efficiency standpoint, the methods adopted in the operation of the railways and buses, with a view to further improvement. Sir Albert Stanley, managing director of the group, paid a tribute to the manner in which the work of the department had been carried on during the exceedingly trying conditions since the outbreak of war, and referred to the desire of the companies and the directors that every member of the staff should feel that his suggestions would be valued and appreciated. Mr. Rodway's paper detailed the mess room organization connected with the London General Omnibus Company, Ltd. In all garages built recently it was the policy to erect large and comfortable rooms available as mess room and institute, where the catering was provided at the lowest possible price and where facilities for billiards, etc., were afforded. The first of these institutes was opened at Hendon Garage on May 1, 1913, since which date sixteen others had been opened. The food, etc., was sold to cover cost and the wages of the mess room working staff, but the account was not debited with any portion of the cost of construction, maintenance, or lighting of the institutes. Attention was directed to the increased cost of foodstuffs, but by the careful selection and introduction of modern devices for saving labor and material, it had not been necessary to raise the mess room tariff, except very slightly in connection with tea.

The Ilford Urban District Council has decided to permit the carriage of parcels and folding carriages accompanying passengers subject to certain conditions.

Particulars have been issued to the proprietors of the London Electric Railway, the City & South London Railway, the Central London Railway, the Metropolitan District Railway, and the London General Omnibus Company, of a proposed agreement for the pooling of the surplus profits of those undertakings. The agreement provides that after the payment of standing charges, preference interest, and due provision for depreciation and reserve, described as revenue liabilities, the surplus earnings of all the companies shall be paid into a common fund, which is to be distributed as follows:

	Half-Year to Dec. 31, 1915	Succeeding Half-Year
City & South London.....	2 per cent	6 per cent
Central London.....	20 per cent	20 per cent
London Electric.....	26 per cent	30 per cent
Metropolitan District.....	12 per cent	12 per cent
London General Omnibus.....	40 per cent	32 per cent

If a company's earnings are insufficient to meet the charges specified, the deficiency is to be made up from the fund before distribution. The London General Omnibus Company has in recent years earned a much larger surplus than any of the other concerns, but as it is entirely owned by the Underground Company, there are no individual shareholders to suffer. The arrangement is likely to produce greater efficiency in the working of the individual undertakings, and will simplify their administration, in that it will obviate the necessity for adjustments with regard to through fares and charges.

The Erith Urban District Council is making the attempt to secure the distinction of being the first local authority in or near London to run a service of motor omnibuses. Application is being made for a provisional order to get the necessary powers, and as the Council already owns a 4¼-mile tramway system there seems to be no reason why it should not be authorized to operate omnibuses. A great part of the traffic on the Erith tramway system consists in the conveyance of men to and from the works of Vickers

and other firms. The Erith omnibuses will run into adjoining districts, including Woolwich.

For the first time in the history of the Sheffield Corporation Tramways system the running of cars was entirely suspended on Christmas. The drivers and conductors have been working at high pressure, largely owing to the demands made upon them by the thousands of munition workers in the city and the decision of the committee to give the employees the holiday was very acceptable to them, especially as many women conductors are engaged on the system. Those who should have worked on Christmas received a day's pay.

C. W. Shepherd has resigned as general manager of the Edinburgh & District Tramways Company. The board accepted the resignation with regret, and asked Mr. Shepherd to continue his services as secretary of the company. J. D. R. Cox of Babcock & Wilcox has been appointed general manager and engineer to the company. Mr. Cox is thirty-five years of age.

There are now in use or on order in Great Britain nearly 700 electric vehicles, whereas a year ago the number was only 150. One of the biggest users of electric vehicles in London is Harrod's Stores, which employs more than sixty delivery vans driven from storage batteries. The Glasgow Corporation Electricity Department is credited with having seven electric vehicles. Electric vehicles are coming much into favor for street cleansing and watering. The experience of Blackpool, for example, is that one electrically driven street-sprinkling machine does the work of six horse-drawn watering carts.

At a recent meeting of the Belfast Corporation, it was intimated that a resolution had been received from a local branch of the Amalgamated Union of Labor protesting against the proposed employment of women as conductors on tramcars. The chairman of the tramways committee said it was a melancholy spectacle that any body of presumably respectable men should adopt such an attitude during the present national crises. This protest was strangely at variance with the course pursued by the working men of England.

In response to the Bradford tramway committee's appeal to public spirited citizens above military age who were willing to assist in the running of the tramways, 150 applications have been received. Those who pass the necessary medical examination are to be trained as auxiliary drivers on lines which have proved very successful at Birmingham. In consequence of the decision of the tramways committee to engage women as conductors, 100 applications have been sent in for appointment, and an experiment with twenty women conductors is to be made. In this connection, it is interesting to note that already 689 men have left the Bradford tramway department for service with the army, and 550 of the remaining 818 of military age have been attested under Lord Derby's scheme. The present staff of 1281 employees is necessary if the present service is to be maintained.

The service of electric trains inaugurated on the Wimbledon Park line of the London & South Western Railway in October last is giving satisfaction, and the traffic is showing a marked increase. It had been announced that the Kingston circular and Shepperton line electric services would commence on Dec. 6 last, but as a result of an application to the court by the Postmaster General in connection with alleged interference with the Postmaster's telephone circuits in the neighborhood of one of the sections, it became necessary to postpone these services for a time. It is anticipated, however, that the difficulties will be quickly overcome and electrical working brought into operation very shortly. Good progress is being made with the electrification of the Hounslow line.

Recommendations that the wages of motormen and male conductors and certain other workers in the Glasgow Corporation tramways department be increased by 2s. a week, and that women conductors who have six months' service should receive an advance of 1s. a week were carried after considerable discussion at a meeting of the Town Council. The Council also agreed, except in five cases specified in the minutes, to stop allowances granted to members of the municipal service who are holding commissions in the Army.

A. C. S.

# NEWS OF ELECTRIC RAILWAYS

## MR. HEDLEY BEFORE THE INVESTIGATING COMMITTEE

The Thompson joint legislative committee, appointed to investigate the Public Service Commissions of New York, resumed its sessions on Jan. 31, with Mr. Bainbridge Colby as counsel, as the successor to Merton E. Lewis, Deputy Attorney-General. The principal witness was Frank Hedley, vice-president and general manager of both the Interborough Rapid Transit Company and the New York Railways and an officer of the Rapid Transit Subway Construction Company. Mr. Hedley said his salary is \$50,000 a year, \$6,000 of which comes from the Subway Construction Company, \$12,000 from the New York Railways Company, and \$32,000 from the Interborough Rapid Transit Company, controlling the subway and elevated lines of Manhattan and the Bronx. Up to eight months ago his salary had been \$40,000. Mr. Hedley felt that he was worth more then and that he is worth more now.

Mr. Colby inquired into Mr. Hedley's inventions, a number of which are in use on the lines in New York of which he is an officer. Mr. Hedley explained that in every case he paid personally the experimental charge and counsel and patent fees. In several cases the Interborough Rapid Transit Company voluntarily voted to pay him for devices, but in a number of instances the company used the devices without pay. J. S. Doyle, superintendent of car equipment of the Interborough Rapid Transit Company, was joint inventor in a number of these cases. Some of the inventions had been put on the general market by the Railway Improvement Company in which Mr. Hedley said that he and Mr. Doyle had at one time held an interest, but that this interest had been disposed of in February, 1915, under options which had been given in December, 1914.

Mr. Hedley enumerated among his inventions the following: automatic control and sanding device, governing device for fluid pressure, stepless street car, double-deck street car, coasting record device, current registering mechanism, conductors' collection counter, conductors' valve and emergency switch, two electric car-heating systems, two car-control systems, auxiliary control device, stepless car truck, three lifeguard attachments for street cars, three safety platform devices, two electric coupling devices, three street sweeping machines and two anti-climber devices.

## NEW SUBWAY FRANCHISE INTRODUCED IN PITTSBURGH

A new ordinance which would grant a franchise to the Pittsburgh Subway Company has been introduced in the Council of Pittsburgh, Pa., and will be considered by the committee on public service and surveys in connection with other plans for improving city transit. The principal feature of the plan represented by the ordinance is that it provides for construction by the city of a downtown subway loop, if the city should so desire, which loop the company will use in conjunction with other transit companies. The route of the proposed subway is not given more definitely than that it is to extend from the Point district to East Liberty and Schenley Park.

Councilman John H. Dailey, who introduced the ordinance, made the following statement in reference to the measure:

"Owing to the fact that the question of transportation has been brought to the attention of Council in the form of ordinances for street railway franchises and through an agitation for the construction of a downtown subway loop by the city, I believe that now is the time to consider also the question of rapid transit in its larger form—that is, a subway system from the downtown section to East Liberty. The Pittsburgh Subway Company, which has sought a franchise at the hands of City Council for many years, has prepared the ordinance, which I have introduced. I have ascertained that the subway company can still be induced to construct a rapid transit subway, and I believe

that Council should give serious consideration to this matter. I am not ready to say that I will favor the ordinance exactly in the form I have introduced it, but as I believe the people want a subway it appears to me that this is the way to get the discussion started."

An ordinance providing for the services of a street railways expert as an adviser to the Council, in its consideration of transportation measures, has been offered by Councilman W. Y. English and referred to the finance committee.

## ALLEN & PECK TO MANAGE ANOTHER ROAD

Management of the Auburn & Syracuse Electric Railroad, Syracuse, N. Y., was taken over on Feb. 1, by Allen & Peck, Inc. Announcement to this effect was made on Jan. 26, following a meeting of the board of directors of the railroad. A year ago last fall the company suspended dividends on its preferred stock, which had been at the rate of 1¼ per cent, quarterly. No dividend ever was declared on the common stock.

At the meeting on Jan. 26 W. O. Morgan, New York City, legal adviser of the Roebing interests, was elected a director to fill the vacancy caused by the recent death of E. D. Metcalf of Auburn. After routine business had been transacted a resolution was adopted authorizing the officers of the company to enter into a contract with Allen & Peck for the management of the Auburn line. In addition to Mr. Morgan, the directors of the road are Mr. Beebe, Mr. Nottingham, former Senator H. S. Holden, W. A. Holden, F. K. Hiscock of North Yakima, Wash.; H. G. Metcalf of Auburn, Joshua Bachman, Syracuse, and F. W. Roebing, Jr., Trenton, N. J.

Ernest Gonzenbach, general manager of the Empire United Railways and associate lines, which has included the Auburn road, will devote his entire time and attention to the operation of the Empire United Railways. C. Loomis Allen, president of Allen & Peck, Inc., with former Senator Holden, is receiver of the Empire United Railways, Inc.

## ILLINOIS ELECTRIC RAILWAY TO BUILD 60-MILE LINE

The Southern Illinois & St. Louis Railway Company, Chicago, Ill., will actively begin the construction of its 60 miles of road connecting Harrisburg, Marion, Pittsburg, Johnson City, West Frankfort and Herrin early in March this year. The same interests that control the Southern Illinois Railway & Power Company, Chicago, Ill., which operates an electric plant and a 15-mile interurban railway in Saline County, Ill., have financed and will have charge of this new project. They have acquired the Marion & Eastern Railroad, a steam line between Marion and Pittsburg, Ill., 7 miles, and will electrify it. This steam road and the 60 miles of new electric line are included in the construction program for this year. Eventually it is planned to continue the Benton extension on to St. Louis and the Ohio River. The proposed line will pass through the rich coal fields of Saline, Franklin and Williamson counties, which now produce 25 per cent of the coal mined in Illinois, and it will give an outlet to some deposits of coal not yet reached by railroads. Contracts have been made with the Illinois Central, the Chicago & Eastern Illinois, the Chicago, Burlington & Quincy, the Iron Mountain and the Big Four railroads whereby the new electric line will deliver the coal to them out of these new fields. The Southern Illinois & St. Louis Railway has authorized \$2,500,000 of first mortgage twenty-five year 5 per cent bonds, \$500,000 of 6 per cent cumulative preferred stock and \$3,000,000 of common stock. Of the preferred stock \$250,000 is outstanding. The remaining \$250,000 will be held in the treasury for use in obtaining funds for future improvements.

### PHILIP J. KEALY PROPOSED PRESIDENT KANSAS CITY RAILWAYS

Frank Hagerman, vice-president of the Metropolitan Street Railway, Kansas City, Mo., announced on Feb. 2 that the stockholders would elect Philip J. Kealy, now a member of the board of control in charge of that property, president of the Kansas City Railways, the successor company, and that the election was favored by the bondholders and Judge Hook of the Federal Court at Kansas City. Mr. Kealy will probably act both as president of the company and as a member of the board of control. He will succeed John M. Egan as president of the company, Mr. Egan retiring in accordance with plans outlined some time ago in the *ELECTRIC RAILWAY JOURNAL*.

### 1916 ELECTRICAL PROSPERITY CAMPAIGN

The board of directors of the Society for Electrical Development, Inc., at its annual meeting on Jan. 24, held at New York, decided upon another so-called electrical week, the official name and date to be decided later. Results of the electrical prosperity week campaign were shown as evidence of the success of the 1915 undertaking, and greater possibilities for the 1916 campaign.

J. M. Wakeman, general manager, read his annual report, which was approved by the board. A committee was appointed to prepare plans for the 1916 work of the society. The present officers, executive committee, general manager and secretary-treasurer were reappointed. Mr. Wakeman submitted a budget for the work of the society for the coming year which allows for \$150,000 in expenditures, \$50,000 of which is provided for the 1916 electrical week campaign. The budget was approved.

Upon the motion of Anson F. Burchard, a vote of appreciation was extended to the general manager and staff of the society for their work during electrical prosperity week.

Several of the directors spoke of personal observations of the society's work for the past year, especially in regard to the success of electrical prosperity week. James H. McGraw, president of the McGraw Publishing Company, Inc., publisher of the *ELECTRIC RAILWAY JOURNAL*, said the week was the greatest object lesson that had ever been given to any industry, and that it was an indication of what might be accomplished with the right kind of publicity. He congratulated the society upon its direction of the campaign and in reaching the public instead of directing all of its efforts to work among members.

### BANQUET TO FOSTER HANNAFORD, DEPARTING MANAGER

Foster Hannaford, formerly general superintendent of the Galesburg Railway, Light & Power Company, Galesburg, Ill., and recently appointed superintendent of the St. Paul (Minn.) division of the Twin City Lines, was tendered a farewell banquet by the Galesburg Club, at which the leading citizens toasted him and wished him godspeed and good luck in his new work. Although Mr. Hannaford had been in charge of the Galesburg property only three years, improvements in service as well as in the relations between the company and the community were so marked that he won his way into the good graces of all those with whom he came in contact. Mr. Hannaford is only twenty-six years old, and the general superintendency of the Galesburg property was his first important position. His response to the eulogies directed to him from around the banquet table follows in part:

"It would appear unnecessary for anyone occupying the position I do to-night to say that he was thankful for the courtesies that are now being extended. There are, however, two reasons why one in my position should appreciate this godspeed. The first one, purely personal, is unnecessary to dwell upon. Every man appreciates the approbation of his fellow men. The second reason, however, to me is more significant, and I believe worthy of some notice. It is rather an unusual spectacle for the citizens of a community, the patrons of its public utility, to wish godspeed to the representative of the public utility which is serving them, and it is most gratifying to me personally that this friendly relationship should exist between us. This gather-

ing is representative of the citizenship of Galesburg. I in no way accept it as a personal compliment, but consider it as a tribute and appreciation of the effort I have made during the past three years in furthering an ideal which I desired to support if ever the opportunity afforded itself. That ideal was to establish relations of a most cordial nature between the citizenship and its servant. I am satisfied that the ideal I chose to support was the correct one, and I am deeply grateful to you and all the other citizens of Galesburg."

### SECOND OHIO SAFETY CONFERENCE HELD

The second industrial safety exposition of Ohio, held in the Central Armory, Cleveland, during the week ended Jan. 29 was a decided success in point of interest and importance, although the attendance was not quite as great as had been anticipated. The display of the Columbus Railway, Power & Light Company was the only one made by the electric railways of the State. It consisted of photographs illustrating the many ways in which people have been injured by cars, copies of bulletins and booklets issued by the company and its officials bearing on safety ideas and rules, a large sheet illustrating the dangerous practices of automobile drivers, and a board containing colored cards distributed to children showing how accidents occur to them.

Charles Koshalko, Johnstown, Pa., exhibited a model of an automatic fender and snow sweeper invented by him.

The displays of emery wheel guards and inclosed wheels were very interesting to the master mechanics and shop men in general. The Safety Emery Wheel Company showed a number of wheels equipped with its collars. The William Platz Iron Works and the Norton Company showed several wheels equipped with their guards. The Safety Engineering Company showed its adjustable eye guard. Guards for circular and band saws were exhibited by the Surety Guard Company, Chicago; Humason Brothers, Youngstown, Ohio; J. A. Woodford & Company, Youngstown, and others.

The Cleveland Automatic Signal Company; the Automatic Signal & Appliance Company, Cleveland; Safety Service & Engineering Company, and the Nichols-Lintern Company, Cleveland, showed signals of various kinds.

Inclosed switches and switch cabinets were shown by the Krantz Manufacturing Company, Brooklyn; the Detroit Fuse & Manufacturing Company, Detroit, and the Thompson Electric Company, Cleveland. The Cleveland Electric Illuminating Company and a number of other exhibitors displayed this type of switch as a part of the safety appliances used by them. The Brown Hoisting Machinery Company, Cleveland, and the Yale & Towne Manufacturing Company, New York, displayed hoisting apparatus, with photographs of moving cranes and other products of their plants.

The department of investigation and statistics of the Ohio Industrial Commission gave the visitor an excellent idea of the number and cause of accidents through its data sheets and the cost of compensation for these accidents. The division of industrial hygiene of the State Board of Health furnished similar information on occupational diseases. Photographs showing the effects of these diseases formed a feature of this display.

There were regular programs of addresses and discussions each day. The subjects pertained to safety and the care of employees. Many of the speakers were physicians in charge of the medical departments in factories, safety engineers and directors and others who are giving special attention to these features.

### SERVICE AT 25 CENTS NOT JITNEY

The Public Service Commission for the Second District has decided two of the complaints of the Western New York & Pennsylvania Traction Company against two persons alleged to be operating jitney bus lines in Olean without authority of the local officers or the commission and in violation of the Thompson law. The commission finds the two person complained of are really operating a taxicab business and do not come under the scope of the law.

### DECISION AGAINST COMPANY IN CLEVELAND TAX SUITS

Following the refusal of County Treasurer P. C. O'Brien of Cleveland, Ohio, to accept a check of \$253,009 from the Cleveland Railway for taxes for 1915 on Jan. 19, suit was brought to enjoin him from collecting a larger amount placed on the tax duplicate. This is the third suit of the kind brought against the county treasurer, but soon after the third suit was filed Judge Vickery of the Common Pleas Court dismissed the suits filed to prevent the collection of the amounts the county claims for 1913 and 1914. The court criticised the methods used by the Tax Commission in fixing the amount, but said the result reached was fair. The company has insisted that the commission explain its method of arriving at the valuation placed on the books, but was never able to obtain satisfaction on this point.

The taxes claimed for 1913 and 1914 aggregate about \$600,000. The amount the county claims for 1915 is \$349,536. The company contends that the tax value should be not more than \$16,000,000. The commission's valuation is \$22,000,000.

An appeal will be taken to a higher court by the company.

### LECTURES ON MILITARY ENGINEERING

A course of seven free lectures on military engineering practices will be given under the auspices of a committee representative of the four national engineering societies, by Captains Robins, Coiner and Ardery, Corps of Engineers, U. S. A. This course will be under the direction of Major-General Leonard Wood, and is designed to assist those who desire to enter the engineering battalion which will be formed at Plattsburg next summer. All engineers interested in preparedness will be welcome, but attendance at these lectures does not imply obligation to subsequent camp duty. The lectures will begin on Monday, Feb. 14, at eight o'clock, and will continue every Monday thereafter until the completion of the course. It is hoped that Major-General Wood will be able to address the first meeting.

**Decision in Compensation Case.**—The Court of Appeals of New York has decided that a workman employed by a firm in that State and injured while working for the firm in another State was a proper beneficiary under the New York compensation law.

**Holyoke Arbitration Hearings.**—Hearings in the wages arbitration case of the Holyoke (Mass.) Street Railway were continued during the week ended Feb. 5, the principal witness being Arthur Sturgis, Brookline, Mass., who testified for the employees' union upon the increased cost of living. It was announced on Feb. 1 that an effort will be made to cut down the number of witnesses in the endeavor to shorten the work of the board of arbitration.

**Seventh Avenue Subway Nearing Completion.**—The Public Service Commission of the First District of New York announced on Jan. 29 that there is every indication that the new Seventh Avenue subway will be completed and in operation in twelve months and that the section between Thirtieth Street and Times Square, on which the work is being rushed with all possible speed, is to be opened to the public during the latter part of the present year.

**A. A. of E. Monthly Makes Début.**—The first issue of *Monad*, a monthly magazine devoted to the commercial interests of all technical engineers and their profession, and serving as the official organ of the American Association of Engineers, Chicago, Ill., has been published. It is dated February. The issue contains sixty-eight pages, and it is largely a report of the annual convention of the association held on Dec. 10, 1915. It also contains news of the association's work and prospects and several editorials.

**Wage Increase at Fitchburg, Mass.**—Following a recent conference with employees, the Lowell & Fitchburg Street Railway has increased the wages of motormen and conductors from a minimum of 20 cents an hour to a new minimum of 25 cents, and has raised the maximum from 25 to 30 cents an hour, effective on Feb. 1. A new schedule

has also been established on the Fitchburg & Leominster Street Railway under which platform men will receive 25 cents an hour for the first six months, and 26 cents an hour for the second half year. Second-year men will receive 27 cents, third-year men 28 and 29 cents, and fifth-year men 30 cents an hour. A working agreement has been signed by the employees' union and the company.

**Professor Bemis Removed From Chicago Traction Board.**—Because Prof. E. W. Bemis was not a graduate engineer, nor an engineer of long practical experience, he has been removed by Mayor W. H. Thompson as the city's representative on the Board of Supervising Engineers, Chicago Traction. The Mayor is said to have based his decision upon the fact that Professor Bemis could not qualify as an engineer before the Illinois Public Utilities Commission, at a recent hearing. F. L. R. Francisco, formerly chief engineer of the American Tobacco Company and recently selected as the personal advisor of Commissioner of Public Works Moorhouse in handling the electrolysis problem in Chicago, is mentioned as Mayor Thompson's choice as successor to Professor Bemis.

**Michigan Railway Elects Officers.**—At a meeting of the board of directors of the Michigan Railway, Jackson, Mich., B. C. Cobb, New York, president of the Michigan United Traction Company, was elected president of the Michigan Railway. H. H. Crowell, Grand Rapids, former president of the Michigan Railway, was elected vice-president. John F. Collins was made vice-president and general manager, as announced in the *ELECTRIC RAILWAY JOURNAL* of Jan. 8, 1916. Frank Silliman, Philadelphia, was also elected vice-president; John Glendening, treasurer of the Michigan United Traction Company, was elected treasurer of the new company, and George B. Dobbin, Jackson, was elected secretary of the new company. George W. Meacham resigned as vice-president but was retained as a member of the board of directors of the new company.

**Appointments to Chicago Traction Commission Confirmed.**—Chicago's Traction Commission, which will investigate local transportation problems and recommend improvements, received practically a unanimous vote of confirmation by the City Council at a meeting held on Jan. 31. As previously mentioned in these columns, this commission is made up of William Barclay Parsons and Robert Ridgway, New York City, and Bion J. Arnold, Chicago. The ordinance provides that the commission shall investigate and recommend improvements in connection with the unified operation of the elevated and surface lines, general plans for subways, universal transfers and physical connections between all three forms of service, etc. The ordinance creating the commission carried with it an appropriation for \$220,000, which is estimated as the approximate cost of the work.

**Committee to Consider Long Island Operation.**—The Public Service Commission for the First District of New York on Jan. 27 received a detailed report from Chief Engineer Alfred Craven relative to the operation of the Long Island Railroad tracks through Flushing and Whitestone and adopted the following motion: "That the report of the chief engineer be filed and that a committee to be named by the chairman, be empowered to confer with the transit committee of the Board of Estimate, the Long Island Railroad and the operating companies under Contracts Nos. 3 and 4, looking toward the amendments to said contracts so as to provide for the operation covered by said chief engineer's report, and to report back to the commission." Chairman Oscar S. Straus thereupon appointed Commissioner Henry W. Hodge; Daniel L. Turner, deputy engineer of subway construction; Travis H. Whitney, secretary, and LeRoy T. Harkness, assistant counsel, as such committee.

**Praise for the Street Railway in Portland, Ore.**—The Portland (Ore.) *Spectator* said recently: "Snowstorms are sufficiently infrequent in Portland to merit a word of comment. But because we are unused to snow, the mere flurry, as our Eastern friends called the storm, caused us some inconvenience, and if it had not been for the excellent resources and untiring energy of the Portland Railway, Light & Power Company the business of the city would have suffered. The burden of making roads for the city's business was thrown on the Portland Railway, Light & Power

Company, and President Griffith assumed it and made it possible for Portland to go its accustomed ways on Thursday. President Griffith has thanked his great army of men for the splendid ability and tireless energy—some of them worked twenty-four hours—they displayed in keeping open Portland's arteries of trade. The people of Portland should second those thanks, and should extend them to Mr. Griffith, who was one of the most tireless and energetic workers on the city's behalf."

**Otto H. Kahn on the Railroads.**—Otto H. Kahn, in discussing the needs of the American railroads in an article in the February number of *World's Work*, suggests the following: (1) Creation of a strong, effective and controlling central federal commission in Washington, with regional commissions according to geographic groupings. (2) The commission to be relieved of much detail work and of certain essentially conflicting functions which should be conferred upon a separate body. (3) The jurisdiction of State bodies in railroad matters should cease as far as it relates directly or indirectly to interstate commerce. (4) The function of rate making should be left to the railroads, with full power, however, in the commission on its own motion to reduce or increase rates for cause. (5) Pooling arrangements should be permitted subject to approval by the commission. (6) In determining rates due weight and consideration should be given to all factors that go to enhance the cost of operating railroads, such as legislative enactments, increased taxation, advances in wages, etc.

#### PROGRAMS OF ASSOCIATION MEETINGS

##### Iowa Street & Interurban Railway Association

The Iowa Street & Interurban Railway Association, the Iowa District Gas Association and the Iowa Section of the National Electric Light Association will hold a joint convention at the Julien Hotel, Dubuque, Iowa, on May 10, 11 and 12.

##### Chambers of Commerce of the United States

The revised program has been issued for the fourth annual meeting of the Chamber of Commerce of the United States to be held in Washington on Feb. 8, 9 and 10. The sessions on Feb. 8 and 9 will be held at the New Willard Hotel. The session on Feb. 10 will be at the building of the Pan-American Union. The annual banquet will be held at the New Willard Hotel on the evening of Feb. 10.

##### New York Electric Railway Association

The twenty-first quarterly meeting of the New York Electric Railway Association will be held at the Ten Eyck Hotel, Albany, on the evening of Thursday, Feb. 24, and on Friday, Feb. 25, as previously announced in the *ELECTRIC RAILWAY JOURNAL*. The Thursday evening session will be opened with an informal dinner at 7.30 o'clock, after which several prominent speakers will address the meeting. At the business session on Friday the following papers will be presented:

"Modern Shop Methods," by P. V. See, superintendent of car equipment of the Hudson & Manhattan Railroad, New York City.

"Heating and Ventilation of Urban Cars," by Horace A. Abell, assistant engineer of the Schenectady Railway.

"Methods of Fare Collection," by William J. Harvie, engineer with Allen & Peck Company, Inc., Syracuse, N. Y.

"Mutual Indemnity Insurance as Applied to Workmen's Compensation Act," by E. L. McManus, Jr., general manager of the Brewers' Mutual Indemnity Insurance Company, New York City.

It is especially requested that members write three-minute discussions on the subjects listed above and come prepared to read such discussions.

All requests for hotel accommodations should be made to A. H. Rennie, manager of the Ten Eyck Hotel, Albany, N. Y., or to F. C. Gillespie, manager of the Hampton, Albany, N. Y.

A cordial invitation is extended to all to attend the dinner and to participate in the discussions of the subjects to be presented on the following day.

## Financial and Corporate

### ANNUAL REPORTS

#### Detroit United Railway

The statement of income, profit and loss of the Detroit (Mich.) United Railway and its subsidiary companies for the years ended Dec. 31, 1914 and 1915, follows:

	1915	1914
Gross earnings from operation:		
Passenger .....	\$12,381,828	\$11,464,625
Express .....	800,527	717,128
Mail .....	12,161	11,979
Special car .....	41,033	46,270
Total gross earnings from operation.....	\$13,235,551	\$12,240,003
Operating expenses .....	9,331,803	8,702,660
Net earnings from operation.....	\$3,903,747	\$3,537,343
Other income .....	286,814	273,728
Gross income less operating expenses....	\$4,190,562	\$3,811,071
Interest on funded and floating debts		
and taxes .....	2,229,801	2,166,071
Net income for the year before providing		
for depreciation or contingencies.....	\$1,960,761	\$1,645,000
Deduct:		
Amount credited to depreciation reserve	\$750,000	\$294,000
Amount credited to contingent liability		50,000
reserve .....		750,000
Dividends paid—6 per cent.....	750,000	750,000
Total .....	\$1,500,000	\$1,094,000
Balance transferred to surplus account...	\$460,761	\$551,000

During the fiscal year ended Dec. 31, 1915, the total earnings from operation increased \$995,548 or 8.1 per cent as compared to the preceding year. The largest volume of increase came from passenger revenue, which showed a gain of \$917,203 or 8.0 per cent, while the express revenue increased \$83,399 or 11.6 per cent. The operating expenses also increased \$629,143 or 7.2 per cent, so that the net earnings from operation rose \$366,404 or 10.3 per cent. Other income increased slightly, and interest and taxes gained \$63,730 or 2.9 per cent, with the result that the net income before depreciation, etc., increased \$315,761 or 19.2 per cent. An amount of \$750,000 was transferred to the depreciation reserve in comparison with \$294,000 for the preceding year, with a decrease from \$50,000 to nothing for the contingency reserve, and the balance to surplus decreased \$90,239.

During the year the company carried 275,576,409 revenue passengers, 98,541,214 transfer passengers and 8,076,135 employee passengers, a total of 382,193,758 passengers. This was an increase of 36,013,358 over 1914. The receipts per revenue passenger were 0.0449 in 1915 as against 0.0453 in 1914, and the receipts per passenger were 0.0324 as against 0.0331 in 1914. Cars of the company operated 46,327,634 miles in 1915 as against 44,882,720 miles the previous year. The net earnings per car mile in 1915 were 0.0843 as against 0.0788 in 1914.

The total capital expenditures for the year on all of the company's properties, including its Canadian system, amounted to \$1,295,436. On Jan. 1, 1915, the depreciation reserve stood credited with \$2,707,227. This reserve is credited with \$19,200 charged against operating expenses and \$750,000 out of the income of 1915, leaving a balance Dec. 31, 1915, of \$3,476,427. Within the year the company added about 18 miles to its track mileage, making a total of 838 miles in operation at the close of the fiscal year.

#### Christchurch Tramway

The revenue account of the Christchurch (New Zealand) Tramway for the year ended March 31, 1915, showed that the gross earnings from operation had amounted to £142,941 and operating expenses to £78,072. After deducting interest charges of £26,924, sinking fund of £2,833, reserve funds of £28,057, and after taking into account rates of £2,933 collectible from special areas, the net surplus for the year amounted to £9,986. If the whole deficiency on extensions in the special areas could have been collected, the surplus would have been £1,466 more. This is said to be the best results obtained in the history of the tramway board.

Several factors operated to produce this showing for the year. In the first place, owing to the arbitration court having suspended operation on account of the war, a wage increase of about £2,250 was not obtained, although this increase would have been enjoyed during the last year if the union had accepted the board's offer when the case was before the conciliation commissioner. In the next place £1,144 profit was obtained from the sale of current to the government. While the revenue showed an increase of £5,373, equal to nearly 4 per cent more than the year before, the proportionate increase was hardly so good as that for the previous year, if allowance be made for the profit on the sale of current and for the Easter week traffic. The operating receipts per car mile fell from 15.265d. to 15.099d., or 0.166d., but this drop was more than met by the decrease in operating expenses of 0.216d. per car mile.

The last figures available show that it costs the tramway board 0.99d. to carry a passenger a mile. The board has often been urged to reduce the price charged for service, it being asserted that the greater business at the lower price would give a more satisfactory result. The board states that this would be so if the reduced price allowed a reasonable margin of profit, but the tram fares at 1d. per mile allow practically no profit at all.

**Chosen Light Railways and Tramways**

According to the report of the railway bureau of the government-general of Chosen (Corea) for the year ended March 31, 1914, the open lines at the end of the year were 23.7 miles in length, with a single track mileage of 37 miles. Of this latter total, 7.4 miles were operated by steam, 3.2 miles by hand, and 26.4 miles by electricity. The passengers carried during the year numbered 11,565,325, while the receipts therefrom amounted to yen 343,454. The total traffic receipts totaled yen 359,681 and expenditures yen 179,265, leaving a balance of yen 180,416 as profit. The traffic receipts of the Nikkan Gas-Electric Company, which owns the 26.4 miles of electrically operated track previously mentioned, amounted to yen 327,128 and the total expenses were yen 159,918, so that the balance for profit totaled yen 167,210.

**NEW JERSEY FRANCHISE ASSESSMENTS**

The 1914 assessments levied by the State Board of Assessors of New Jersey upon 320 corporations and five individuals under the municipal franchise act amounted in the aggregate to \$1,465,584. This was an increase of \$95,429 over the 1913 tax. The taxes paid by the various utilities are shown by the following table:

Number	Classification	Gross Receipts	Tax
33	Street railways.....	\$15,933,813	\$799,191
114	Water.....	3,899,007	77,980
117	Gas and electric light.....	21,816,492	436,330
42	Telephone and telegraph.....	7,289,068	145,781
4	District telegraph messenger...	72,065	1,441
15	Sewer and pipe line.....	243,047	4,861
325		\$49,303,492	\$1,465,584

**ELMIRA STOCKHOLDERS APPROVE CHANGES**

At the special meeting of stockholders of the Elmira Water, Light & Railroad Company, a subsidiary of the United Gas & Electric Corporation, held on Jan. 18 at Elmira, the propositions to increase the capital stock by \$200,000, to classify the new stock as second preferred, to increase the board of directors, to amend the by-laws and to authorize the company to issue certain securities and take the steps necessary to acquire the physical properties of the Elmira & Seneca Lake Traction Company, the entire capital stock and bonds of which were already owned, were all approved.

After considering financial requirements of the Elmira Water, Light & Railroad Company for capital improvements already made and those extending over the next five months, it was determined that the obligations of the company and of the Elmira Transmission Company, which, with the approval of the Second District Public Service Commission is to be merged with the former corporation, incurred to Oct. 31, 1915, should not be capitalized entirely by the issue of bonds. It was decided to sell \$125,000 of 7 per cent first preferred stock, \$200,000 of 5 per cent second preferred stock and \$100,000 of first consolidated 5 per cent bonds, application for authority to issue and sell these securities hav-

ing already been made to the commission. Proceeds from the sale of \$60,000 of the bonds will be applied to extensions and betterments subsequent to Oct. 31, while proceeds of \$40,000 of the bonds and the proceeds of the stocks will be applied to liquidation of obligations incurred prior to that date for capital expenditures.

**REPORT OF VIRGINIA COMMISSION**

**Lines in 1914 Showed Revenue Increase but Larger Operating Expense Increase—Net Income, however, Gained 20.49 Per Cent Because of Outside Income**

The total transportation revenue of the twenty-one electric railways under the supervision of the State Corporation Commission of Virginia amounted to \$5,587,218 for the fiscal year ended June 30, 1914. This total was made up of the following items: Passenger revenue, \$5,179,172; special car revenue, \$17,593; mail revenue, \$10,019; express revenue, \$15,913; milk revenue, \$24,871; freight revenue, \$323,586, and miscellaneous revenue, \$16,062. As compared to the preceding fiscal year, the passenger revenue showed an increase of 2.52 per cent, special car revenue 11.09 per cent, freight revenue 3.98 per cent, and total revenue 2.16 per cent. Mail, express, milk and miscellaneous revenue, however, showed a combined loss of 3.36 per cent. Revenue from operations other than transportation totaled \$79,356 for the year, a gain of 19.69 per cent, so that the total operating revenues amounted to \$5,666,574. The earnings per mile totaled \$12,054, an increase of 3.07 per cent.

The total operating expenses for all of the companies amounted to \$3,501,705, an increase of 4.2 per cent over the preceding year. Of this amount \$513,479 was spent in maintenance of way and structures, an increase of 13.11 per cent; \$405,235 in maintenance of equipment, an increase of 18.15 per cent; \$50,518 for traffic, a decrease of 9.66 per cent; \$1,903,162 for conducting transportation, an increase of 1.47 per cent, and \$629,309 for general and miscellaneous, a decrease of 0.45 per cent. The expenses per mile of track amounted to \$7,449, an increase of 6.05 per cent. The income from rail operation for all the companies totaled \$2,164,869, a decrease of 0.79 per cent as compared to the preceding year. The income from other sources equaled \$2,168,206, an increase of 17.3 per cent, so that the gross income amounted to \$4,333,076. The deductions from income totaled \$3,186,214, with the result that the net income was \$1,146,861, an increase of 20.49 per cent for the year.

During the year the companies carried 103,117,967 revenue passengers and 18,754,698 free passengers, while the car-mile and car-hour totals were 22,925,117 and 2,581,851 respectively. Other statistics follow: average fare, revenue passengers, 4.77 cents; average fare, all passengers, 4.04 cents; transportation earnings per car-mile, 22.41 cents; other than transportation earnings per car-mile, 0.33 cent; transportation earnings per car-hour, \$1.9883; other than transportation earnings per car-hour, 2.90 cents; operating expenses per car-mile, 13.72 cents; operating expenses per car-hour, \$1.2166. As compared to the preceding year the average fare for revenue passengers showed an increase of 0.11 cent, and the average fare for all passengers an increase of 0.09 cent. Other operating statistics, however, showed decreases as follows: Transportation earnings per car-mile, 1.88 cents; miscellaneous earnings per car-mile, 0.13 cent; total earnings per car-mile, 2.01 cents; transportation earnings per car-hour, 8.92 cents; miscellaneous earnings per car-hour, 0.62 cent, and total earnings per car-hour, 9.54 cents.

American Railways, Philadelphia, Pa.—The American Railways has announced that the \$2,300,000 three-year 5 per cent secured notes dated Feb. 1, 1916, and yielding at the sale price about 5¼ per cent have been sold. The proceeds of the sale of the notes will be used to pay off the entire floating debt of the company and for other corporate needs. Upon completion of this transaction the company will have in its treasury a sum of not less than \$900,000 in cash and unpledged securities of a value in excess of \$5,000,000.

**Cincinnati, Dayton & Toledo Traction Company, Hamilton, Ohio.**—In the course of a long notice to the bondholders the committee representing the holders of the consolidated mortgage 5 per cent gold bonds of the Cincinnati, Dayton & Toledo Traction Company due in 1922 said in a circular to the holders of that issue: "The interest which fell due on Jan. 1 on certain of these \$2,300,000 of prior bonds is in default. The principal of one of these issues falls due on July 1 next. We are advised that a protective committee of the Cincinnati & Hamilton first mortgage 6 per cent bonds has been formed in Cleveland and proposes to proceed to foreclose the mortgage, the interest on which was defaulted on Jan. 1. There are outstanding \$2,700,000 of Cincinnati, Dayton & Toledo bonds. With such a large amount of prior liens, interest already defaulted on some, and maturity near at hand with others, the danger is that by foreclosure of some or all of the five mortgages the investment of the Cincinnati, Dayton & Toledo bondholders will be entirely wiped out. As prompt action is important the committee will shortly announce a time limit for the deposit of bonds with the Provident Savings Bank & Trust Company, Cincinnati, Ohio, after which no further bonds will be accepted. Many bonds have already been deposited."

**Clarksville & Dunbar Cave Railway, Clarksville, Tenn.**—The Citizens' Street Railway, organized by business men of Clarksville, has completed arrangements to take over the Clarksville & Dunbar Cave Railway, which the owners had decided to dismantle. Service will shortly be resumed. A five-year agreement has been entered into between the Citizens' company and the Clarksville Electric Company to provide the necessary power. A committee of the stockholders consisting of John J. Conroy, W. E. Beach, C. W. Bailey, W. A. Chambers and M. L. Cross has been named to arrange for the incorporation of the proposed successor company.

**Fort Wayne & Springfield Railway, Decatur, Ind.**—Judge John H. Aiken, sitting as special judge in the Circuit Court of Jay County at Decatur, Ind., has passed upon all the claims against the Fort Wayne & Springfield Railway. After the allowances were made, the receiver was directed to settle according to the order of the court. A number of the claims, including those of several Fort Wayne and Decatur banks, were settled upon a 90-cent basis. The receiver and his attorneys were allowed \$9,500 for their services. A few of the claims were treated as preferred ones and were allowed in full, although the court ruled that should there be a surplus after the claims were paid according to the order of the judge it should be distributed pro rata among those who received less than face value for their accounts against the company.

**Georgia Railway & Power Company, Atlanta, Ga.**—P. S. Arkwright, president of the Georgia Railway & Power Company, was quoted recently as follows in regard to the year ended recently: "We have had a trying year. Our revenue has suffered from various causes and we have been at unusually heavy expense in some respects. We have got through nicely, however, and have taken care of our bonds, maintenance, improvements, etc., in first-class shape, but there will not be any surplus to speak of. We consider ourselves well off, nevertheless, and look forward to a good year."

**Idaho Traction Company, Boise, Idaho.**—The railway operating revenues of the Idaho Traction Company for the year ended June 30, 1915, as reported by the Idaho Public Utilities Commission, amounted to \$352,141, while the railway operating expenses totaled \$248,145, leaving net revenue from railway operation of \$103,995. The net revenue from auxiliary operations amounted to \$8,037, giving a net operating revenue of \$112,033. Taxes assignable to operations amounted to \$13,620, so that the operating income was \$98,413. The non-operating income totaled \$645, and deductions from gross income equaled \$99,052, leaving an income balance of \$6 for profit and loss. This company carried 3,273,908 regular fare passengers during the year, the total number of passengers carried being 3,485,386. The total car mileage amounted to 1,369,937. The properties of this company, which formerly operated under lease

the railway lines of the Idaho Railway, Light & Power Company, are now owned by the Boise Valley Traction Railway, as noted in the *ELECTRIC RAILWAY JOURNAL* of Sept. 4, 1915.

**Interborough Rapid Transit Company, New York, N. Y.**—J. P. Morgan & Company, New York, as syndicate managers, announce that they have taken an additional \$15,000,000 of the expected total allotment of \$160,658,000 of first and refunding 5 per cent mortgage bonds of the Interborough Rapid Transit Company, making the amount taken to date \$143,678,000 and leaving \$17,000,000 to be taken before Dec. 31, 1916. The bonds were authorized in 1912 in connection with the agreement with the city for the construction of subway and elevated extensions and the interest during the construction period was provided for as part of the cost of the work. Of the \$128,658,000 of the issue put out prior to December, 1915, \$76,043,000 represented new subways and extension and third tracking of the elevated roads. The Public Service Commission will adopt an order granting the application of the Manhattan Railway for permission to issue \$5,409,000 in bonds for the purpose of reimbursing the Interborough Rapid Transit Company, the lessees of its lines, for permanent improvements made thereto, including the lengthening of station platforms. It is the purpose of the Manhattan Railway to issue \$3,708,069 at the present time. The bonds are to be issued under a second mortgage, which will also be approved by the commission.

**Kansas City (Mo.) Railways.**—There seems now no impediment to the successful consummation of plans for the reorganization of the street railways of Kansas City, and the coming into existence of the Kansas City Railways about Feb. 15. It is said that definite decision has not yet been reached as to the personnel of the officials or the titles that the operating officials shall bear, and the work they shall do. It has been announced, however, that the company's member of the board of control will be president of the road and its chief operating official, though possibly an operating official may be selected subordinate to the board of control and to the company member. P. J. Kealy is now the company member of the board, and Robert P. Woods is the city's member.

**Marlboro & Westboro Street Railway, Worcester, Mass.**—A block of the \$160,000 of 5 per cent bonds of 1901 of the Marlboro & Westboro Street Railway is being offered for subscription by Cropley-McGaragle & Company, Boston, at 102.41 to yield about 4½ per cent. The bonds are due on July 1, 1921, but are callable on any interest date at 105 and interest. The issue is secured by a closed first mortgage at \$11,500 per mile on 13.43 miles of the main track through Westboro and Marlboro now forming part of the Worcester Consolidated Street Railway, the first refunding 4½ per cent bonds of which are reserved to retire the Marlboro & Westboro Street Railway issue.

**Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn.**—It was announced recently that the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company would on Jan. 31 terminate its lease with the Chicago & Great Western Railroad covering the 57-mile section of line between Randolph and Mankato, Minn. On that date the Chicago & Great Western Railroad was again to take over the operation of this line, the Minneapolis, St. Paul, Rochester & Dubuque Electric Traction Company to continue to operate its original line between Minneapolis and Northfield.

**Monterey Railway, Light & Power Company, Monterey, Mex.**—The British Empire Trust Company, Ltd., and the National Trust Company, Ltd., London, as trustees for the 5 per cent first mortgage debenture stock of the Monterey Railway, Light & Power Company, have sent a circular to the holders of these securities explaining the reasons for not taking legal proceedings in view of the default in the payment of interest. The circular states that the management appears to be competent, that there are no creditors' proceedings or preferential payments threatened, and that legal measures might result in disturbing the company's friendly relations with the Mexican authorities.



**Northern Electric Railway, Chico, Cal.**—John P. Cogan, receiver for the Northern Electric Railway, filed in the federal court on Jan. 27 an account covering the first nine months of the receivership, from Oct. 5, 1914, to June 30, 1915. The total income during this period was \$738,190, and total expenditure amounted to \$672,639. These expenditures included \$113,287 for extraordinary repairs (deferred for several years) and \$44,000 for new construction. During the receivership the revenue from the several lines, bonus for car service and miscellaneous receipts totaled \$611,261, while gross maintenance and operating expenses amounted to \$584,316, the difference, representing operating surplus, being \$26,944. When the road was turned over to the receiver, the report states, the cash on hand amounted to only \$829, current bills totaled \$51,000 and the monthly payroll then due called for \$35,000.

**Public Utilities Company, Evansville, Ind.**—The Public Utilities Company of Evansville, a subsidiary of the Commonwealth Power, Railway & Light Company, has asked the Public Service Commission of Indiana to approve the issue of \$320,000 of stock and \$1,109,000 of bonds, and also for authority to issue its own bonds for the retirement of underlying securities. The underlying securities which it is desired to retire are \$1,200,000 of Evansville Electric Railway bonds, \$350,000 of Evansville & Princeton Traction Company bonds, \$1,208,000 Evansville & Southern Indiana Traction Company bonds, \$1,250,000 Evansville Gas & Electric Light Company bonds and \$300,000 Evansville Public Service Company bonds. The company also asked authority to sell the \$1,109,000 of bonds at 85, the proceeds to be used in paying for improvements and additions. The Evansville Public Service Company asked authority to issue \$450,351 of bonds.

**Salt Lake & Utah Railroad, Salt Lake City, Utah.**—E. H. Rollins & Sons, Boston, Mass., are offering at par and interest an additional block of \$500,000 of first mortgage thirty-year, 6 per cent gold bonds of Salt Lake & Utah Railroad, making the total issued to date \$1,250,000.

**San Francisco (Cal.) Municipal Railway.**—The public utilities committee of the Board of Supervisors of San Francisco on Jan. 26 considered the proposed purchase by the city of the United Railroads lines west of Twin Peaks, but did not reach a conclusion. The purchase was recommended last year by the city engineer, who said the city should buy these lines for the purpose of connecting them with the railroad to be constructed through Twin Peaks tunnel, and the utilities committee of the old Board of Supervisors made a favorable report on the proposition.

**Southern Traction Company, Dallas, Tex.**—The earnings of the Southern Traction Company for the year ended Dec. 31, 1915, are reported unofficially as follows: total operating revenues, \$1,051,417; operating expenses, \$605,756; net operating revenues, \$445,661; taxes, \$41,036; operating income, \$404,624; miscellaneous interest and discount, \$15,912; balance available for fixed charges, etc., \$388,712; interest on first mortgage bonds, \$300,000; interest on second mortgage bonds, \$25,000; surplus, \$63,712. Albert T. Perkins of the St. Louis Union Trust Company, who is a director and member of the executive committee of the Southern Traction Company, is quoted as follows: "The company has more than earned all interest charges on its bonds and other obligations during its two years of operation. Prospects are good that a dividend will be earned on the preferred stock during the present year."

**Toledo Railways & Light Company, Toledo, Ohio.**—The Interurban Station Company, the Toledo, Ottawa Beach & Northern Railway and the Maumee Valley Railway all re-elected officers at the annual meeting on Jan. 20. R. E. Berger was elected to the board of the Toledo & Western Railroad to succeed F. J. Derge.

**Washington (D. C.) Interurban Railroad.**—The Washington Interurban Railroad has filed with the Public Utilities Commission of the District of Columbia an application for authority to issue \$150,000 of first-mortgage bonds and \$150,000 par of common stock, divided into shares of \$50 each. It is stated in the petition that the proceeds of the proposed bond and stock issue are to be used for the payment of the purchase price of the property and other indebtedness, including reorganization expenses.

**DIVIDENDS DECLARED**

Cleveland & Eastern Traction Company, Cleveland, Ohio, one-half of 1 per cent.  
 Connecticut Railway & Lighting Company, Bridgeport, Conn., quarterly, 1 per cent, common and preferred.  
 Illinois Traction System, Peoria, Ill., three-quarters of 1 per cent, quarterly.  
 Lehigh Valley Transit Company, Allentown, Pa., quarterly, 1¼ per cent, preferred.  
 Lincoln (Neb.) Traction Company, quarterly, 1½ per cent, preferred.  
 Tampa (Fla.) Electric Company, quarterly, 2½ per cent.  
 United Power & Transportation Company, Camden, N. J., \$1.55.  
 Washington Railway & Electric Company, Washington, D. C., quarterly, 1¼ per cent, preferred; quarterly, 1¾ per cent, common.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

ATLANTIC SHORE RAILWAY, KENNEBUNK, ME.						
Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income	
1m., Dec., '15	\$22,659	\$19,445	\$3,214	\$607	\$2,607	
1 " " '14	23,721	22,241	1,480	631	849	
AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.						
1m., Dec., '15	\$154,562	\$100,705	\$53,857	\$44,559	\$9,298	
1 " " '14	152,658	103,250	49,408	43,556	5,852	
6 " " '15	1,024,321	649,951	374,370	270,255	104,115	
6 " " '14	1,097,376	685,063	412,313	261,265	151,048	
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
1m., Nov., '15	\$7,872	*\$7,763	\$109	\$1,102	†\$993	
1 " " '14	8,056	*8,721	†665	1,140	†1,805	
12 " " '15	115,133	*96,204	18,929	13,525	5,404	
12 " " '14	121,375	*101,495	19,880	13,075	6,805	
CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.						
1m., Nov., '15	\$33,012	*\$17,790	\$15,222	\$6,642	\$8,580	
1 " " '14	30,044	*17,847	12,197	6,601	5,596	
12 " " '15	350,740	*205,380	145,160	79,330	65,830	
12 " " '14	356,269	*209,974	146,295	77,252	69,043	
CITIES SERVICE COMPANY, NEW YORK, N. Y.						
1m., Dec., '15	\$532,195	\$17,788	\$514,407	\$40,833	\$473,574	
1 " " '14	404,808	12,045	392,763	40,833	\$351,930	
12 " " '15	4,479,800	172,856	4,306,944	490,000	3,816,944	
12 " " '14	3,934,453	116,908	3,817,545	420,000	3,397,545	
CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.						
12m., Dec., '15	\$2,636,364	*\$1,505,786	\$1,130,578	\$792,414	\$338,164	
12 " " '14	2,513,620	*1,457,020	1,056,600	758,859	297,741	
EASTERN TEXAS TRACTION COMPANY, BEAUMONT, TEX.						
1m., Nov., '15	\$71,406	*\$33,824	\$37,582	\$8,714	\$28,868	
1 " " '14	56,867	*31,412	25,455	8,606	16,849	
12 " " '15	709,293	*382,518	326,775	106,163	221,612	
12 " " '14	672,441	*403,390	269,051	101,110	172,811	
FORT WAYNE & NORTHERN INDIANA TRACTION COMPANY, FORT WAYNE, IND.						
1m., Nov., '15	\$120,580	\$90,559	\$30,021	\$52,994	†\$22,601	
1 " " '14	147,015	82,375	64,640	53,130	12,154	
11 " " '15	1,506,883	918,301	588,582	590,903	12,102	
11 " " '14	1,668,508	963,123	705,380	580,711	129,052	
HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.						
1m., Nov., '15	\$22,846	*\$12,910	\$9,936	\$5,422	\$4,414	
1 " " '14	19,590	*13,901	5,689	5,613	86	
12 " " '15	271,259	*159,269	111,990	66,600	45,390	
12 " " '14	279,980	*180,484	99,496	67,068	32,428	
KENTUCKY TRACTION & TERMINAL COMPANY, LEXINGTON, KY.						
1m., Nov., '15	\$65,480	\$32,745	\$32,735	\$20,283	†\$14,273	
1 " " '14	61,559	33,353	28,206	19,776	11,421	
5 " " '15	371,507	188,123	183,384	101,895	†87,446	
5 " " '14	366,120	192,738	173,382	98,662	†82,661	
SAVANNAH (GA.) ELECTRIC COMPANY						
1m., Nov., '15	\$66,449	*\$43,138	\$23,311	\$23,121	\$190	
1 " " '14	69,870	*43,201	26,669	23,089	3,580	
12 " " '15	796,988	*519,795	277,193	278,584	†1,391	
12 " " '14	845,466	*557,273	288,193	274,880	13,313	
VIRGINIA RAILWAY & POWER COMPANY, RICHMOND, VA.						
1m., Nov., '15	\$465,884	\$214,260	\$251,624	\$142,528	†\$117,349	
1 " " '14	427,352	202,825	224,527	134,235	†96,868	
5 " " '15	2,282,517	1,084,646	1,197,871	715,507	†525,288	
5 " " '14	2,189,055	1,049,716	1,139,339	677,925	†495,870	

\*Includes taxes. †Deficit. ‡Includes non-operating income.

## Traffic and Transportation

### MASSACHUSETTS COMMISSION REPORTS ON BOSTON PROBLEMS

#### Public Service Board Orders Measures for Relief of Congestion at Dudley Street Transfer Station and for Other Improvements

A comprehensive report was submitted to the Massachusetts Legislature on Jan. 26 by the Public Service Commission relative to means of improving service on the Boston Elevated Railway at Dudley Street transfer station and the adjacent Roxbury district served by elevated and surface car lines. The growth of traffic in recent years has caused considerable congestion at the Dudley Street station, one of the most important transfer points in Boston and the original southerly terminus of the elevated system completed in 1901. The Legislature of 1915 requested the commission to investigate traffic conditions at this point, with the practicability of requiring the company to issue paper transfers in place of the bodily transfer in vogue since the opening of the rapid transit lines; to consider the necessity for an additional elevated station at Dale and Washington Streets, the need of a more extended use of the Egleston Square station of the elevated lines, and the general methods of handling traffic in the territory. In its finding the commission sustains the contentions of Matthew C. Brush, vice-president, that the issue of paper transfers at Dudley Street is undesirable, holds that by certain changes ordered on the date of the report in the arrangement of platform facilities, car routing and increase in elevated train capacity congestion at the Dudley Street station will be materially relieved, and points out that the transfer of the Mattapan surface line to Egleston Square in consonance with the use of that station as a supplementary transfer point will facilitate travel in the district, as will the institution of a shorter-interval surface car service south of Dudley Street.

Dudley Street station is still the terminus of many surface lines operating in Dorchester and Roxbury and the principal transfer point between these lines and the rapid transit system. The station was enlarged in 1909, and the method of operation changed. As now operated, there are three levels; the top level serves through south-bound rapid transit trains; the intermediate level serves north-bound trains and certain surface lines using the so-called east and west loops on this level; and the lower or ground level serves certain surface lines routed to or through the station. The station is so designed that a passenger entering on any car or train can transfer, without going outside the station limits, to any other train or car going in the same general or in a lateral direction.

It is estimated that about 85,000 passengers, both inbound and outbound, transfer daily in this station, and about 40 per cent of these transfer in the rush hours. The present congestion is most acute at the east loop, where more than 40,000 passengers transfer daily in each direction. About 10,000 of these transfer to and from the Mattapan line, a through route extending axially to the southern limit of the company's system. This line is to be diverted to Egleston Square station as its terminus, affording quicker and better transportation for the Dorchester district and relieving Dudley Street station accordingly, the usual transfer between trains and surface cars to be in vogue at Egleston Square. It is expected that the necessary changes at the latter point will be completed within six months.

Further relief at Dudley Street east loop will be obtained by using the central circular area inside the loop as a loading platform and outer circular platform for unloading surface cars. Cars coming into the upper prepayment area on the east loop will stop at any point on the loop that traffic will permit and discharge passengers anywhere on the outer platform. When the car has been emptied, doors on the unloading side will be closed and

the opposite ones opened to permit loading from the central area. This arrangement will separate inward and outward passengers. It will require only one stop for each car for the loading and unloading operations, shortening the time the car remains in the station, and will increase the available space for cars loading and unloading. The maximum distance from the center of loading area to any car in a loading position will be decreased, various obstructions now leased to concessionaires will be removed, and a better view of cars with consequently greater accessibility for transfer will result.

Under this plan the standing room for passengers waiting to load at the east loop will be increased by about 2000 sq. ft., or about 50 per cent. The car movement will be accelerated, and nearly double the present number of cars may be loaded and unloaded at one time. To further improve the efficiency of operation the board has ordered the company to install an indicator showing the stopping place of each car during the evening rush hours. The commission states that the tendency to lease portions of important station inclosures for mercantile purposes should be discouraged, pointing out that no commercial establishment should be allowed within the areas which interfere with their functions as agencies of rapid transit. Additional switch connections are to be made on the surface level to route surface cars from the north through the station via Warren Street, thus diverting about 60 cars an hour from tracks on this level which are most congested. This will result in a better distribution of both cars and passengers and will better the service materially.

Regarding the crowding of elevated trains during rush hours, the only immediate relief appears to be the increase in the number of cars per train from six to seven in the morning rush and from seven to eight in the evening rush hours. Certain rearrangements of signals and other facilities will be completed to enable this service to be enlarged by about Feb. 5. The completion of the Dorchester tunnel to Andrew Square will further relieve congestion at Dudley Street through resultant diverting of routes.

In discussing the paper transfer as related to the free bodily transfer afforded by the operation of cars in prepayment areas, the board sets forth views of general significance. The legislative resolution required the commission to consider the practicability and advisability of requiring the company to issue to each passenger a free transfer ticket enabling him to transfer from any car running into or out of the station or on any adjoining street, to any other car going in the same general direction. The question raised here was the feasibility of issuing paper checks for transfer in place of the bodily transfer now afforded. It was not contended at the hearings that passengers should have the option of bodily transfer or transfer by check, a duplication of facilities which the commission believes would be wholly without precedent in street railway operation. The inquiry resolved itself into a question of the expediency of providing in the case of certain lines for the transfer of passengers upon the streets adjacent to the terminal station through the use of paper transfers rather than within the station by bodily transfer.

The advocates of the use of paper transfers, the board states, failed to show in what respect the use of such transfers as a general policy of railway operation has any inherent advantage for the traveling public as compared with a bodily transfer. The latter facilitates a more rapid and efficient car movement and usually permits a quicker and easier transfer without exposure to inclement weather or danger from vehicular traffic in the streets. The enormous number of paper transfers issued by the company, amounting to more than 100,000,000 yearly, makes it practically impossible to provide effectively against their misuse.

From data presented in great detail by the company it appears that the illegitimate use of the paper transfers deprives the company of a substantial annual revenue which might otherwise be available for needed improvements in its present transportation facilities. The board points out that where paper transfers are necessary in order to provide reasonable facilities, the possibility of their misuse is not an adequate reason for withholding them. In this connection the board states: "At the same time there would seem to be no sound reason for advocating a method of transfer

which has proved so wasteful in operation if more economical and equally convenient facilities are available by a bodily transfer."

The report states that the bodily transfer better promotes rapid transit and that the advocates of paper transfers were largely identified with merchants and property owners in the Dudley Street district seeking business and enhancement of property values through stop-over trading. The latter is not the object of transfer privileges.

The commission reviews the evidence relative to the need of establishing a new elevated station at Dale Street. This station, the company figures, would cost \$88,000, with annual costs of \$28,000. In view of the delay of two minutes a day to the 40,000 or 50,000 passengers using the rapid transit lines south of Dudley Street, the commission feels that the 2500 or 3000 patrons from the Dale Street district cannot justly ask for the building of the new station, especially at a point without intersecting surface lines. An increase in surface car service on Washington Street, south of Dudley Street station, however, will improve the service.

#### RAILWAY RECEIVER FAVORS NEW JERSEY JITNEY BILL

Judge C. L. Cole, receiver for the Atlantic City & Shore Railroad, Atlantic City, N. J., which was forced into the hands of a receiver recently, due to unrestrained jitney competition, justifies the legislation pending in New Jersey for the regulation of jitneys in all the cities in the State. Without legislative protection, bringing jitneys under fair and reasonable regulation, he asserted, the railway system cannot hope to recover. Judge Cole said that fair play demands that the jitneys should be subjected to adequate regulation. He maintained also that the motor conveyances should be placed under the control and regulation of the State Public Utility Commission.

In the interest of economy and in order to make it possible to keep the maximum number of men on the payroll, Judge Cole has reduced the working time of car crews to nine hours a day. The men are paid on the hourly basis. Another order has stopped the running of cars below Portland Avenue in Ventnor City, a suburb of Atlantic City. This curtailment of service was also a direct result of jitney competition.

**Jitneys Suspend in Bakersfield, Cal.**—About forty jitneys which have been running since October, 1914, have retired from the field in Bakersfield, Cal., owing to the new ordinance passed by the City Council. This measure requires a surety bond of \$5,000.

**New Jersey Jitney Bill Tabled.**—The Kates bill providing for jitney regulation in New Jersey was tabled on Jan. 31, following a demonstration by jitney owners which has been described as "the greatest aggregation of motor vehicles ever lined up in Trenton."

**Decision Reserved in Fare Case.**—Decision has been reserved by the Public Service Commission for the Second District of New York on the application of patrons of the Warren & Jamestown Street Railway for a reduction in fare between Jamestown and Frewsburg, from 10 cents to 5 cents.

**Kentucky Jitney Bill Killed.**—The Kentucky Senate has killed a bill which was introduced to provide for regulation of jitney bus lines and for placing them on the same basis as other common carriers. Senator Robertson, author of the measure, contended on the floor that the bill had been denied a full hearing, but he was unable to get the favorable attention of the Senate.

**Stock for Rockford Employees.**—An arrangement is being worked out by which employees of the Rockford & Interurban Railway and the Rockford City (Ill.) Traction Company will be permitted to purchase on the installment plan stock of the Commonwealth Power, Railway & Light Company, which controls the properties in Rockford, through ownership of the stock of the Union Railway, Gas & Electric Company.

**Increased Service Ordered in Hartford.**—The Public Utilities Commission of Connecticut has issued an order directing the Connecticut Company to take immediate steps to do away with overcrowding of cars. The order is the result of a petition addressed to the commission on Jan. 14 by the Hartford Board of Health. The commission directs

the company to make a report of its progress along the lines of improved service on or before March 1.

**"To the Click of the Wheels."**—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has reprinted in a booklet 6 in. high by 3½ in. wide, entitled "To the Click of the Wheels," the poems touching safety and many other subjects which have appeared in the company's bulletin. The pamphlets are being distributed through racks in the cars. Each poem occupies a single page and is introduced with a line cut bearing on the subject of the verses.

**Express Package Business in Reading.**—The Reading (Pa.) Transit Company is so well pleased with the express package business started on Dec. 20, that it has been decided to continue the service, and to prohibit the carrying of express packages on the regular cars, which practice had assumed such proportions that it interfered with passenger service. All express matter will now be carried on regular express cars which will be run at stated intervals on all suburban lines, excepting Temple and Stony Creek. A receiving station has been established at the Third Street carhouse. The company has requested the public to communicate suggestions which if adopted would tend to improve the service.

**Fatal Accidents in New York in January.**—According to the report of the National Highways Protective Society thirteen children lost their lives on the streets and highways of New York City in January, automobiles killed ten and wagons three. The total number of persons killed by vehicles was thirty-four. Of these, twenty-two were killed by automobiles, seven by electric railways and five by wagons, as compared with twenty-three by automobiles, four by electric railways and four by wagons during the corresponding month last year. Eighteen persons were killed by vehicular traffic in the State of New York outside of New York City during the month. In New Jersey, for the same period, fifteen persons were killed by automobiles and one by wagon, as compared with thirteen by automobiles for a like period in 1915.

**Bay State Fare Hearing Continued.**—The Massachusetts Public Service Commission resumed hearings upon the fare case of the Bay State Street Railway on Feb. 1. Following the announcement that the company is not as yet ready to present all its witnesses, the hearing was continued until Feb. 8, at the board's offices in Boston. A resolve has been introduced into the Legislature extending the time at which the proposed fare increase shall become effective, counsel for the numerous municipalities affected having found the task of investigating the company's evidence and books too great for completion since the last hearing in November. James F. Jackson, counsel for the company, announced that within a week a schedule of proposed fares for workmen, supplementing the present suggested tariff, would be filed with the commission.

**Effect of Jitney Operation in Seattle.**—The department of Public Utilities, Seattle, Wash., of which A. L. Valentine is superintendent, has a traffic division which each day makes observations of the street railway lines, particular attention being given to the morning and evening rush-hour periods. The report of this department for the year ended Nov. 30, 1915, recently filed with the Mayor, is of particular interest because the results of the aforementioned observations threw a clear light on the effects of jitney competition in Seattle. The report shows a summary on one day—Oct. 15, 1914—for all lines during the evening rush hour, to be 27,606. A count taken on the same date of 1915 shows 23,162, a decrease of 4444 in the number of passengers, or exactly 16 per cent. This count is further supplemented by an eighteen-hour count of travel over four drawbridges for 1914, which shows a total of 81,322 persons crossing these bridges, 73,030 being carried on street cars and 8292 in automobiles and other vehicles. A count taken in 1915 shows a total of 81,003 persons crossing these bridges for all conveyances, 60,278 being on street cars, a decrease of 12,752 or 16 per cent, and 20,725 being in automobiles and other vehicles, an increase of 12,433 in the number carried in automobiles. This is said to show that the same number of people (the difference being but 319) passed over these bridges during 1915, but 16 per cent of them had been diverted to automobiles.

## Personal Mention

Mr. Frank D. Edmunds, who has been connected with the New York (N. Y.) Railways for some time, has been appointed claim agent of the company, vice Mr. P. C. Nickel.

Mr. Frank W. Frueauff, New York City, who has been a vice-president of the City Light & Traction Company, Sedalia, Mo., has been elected president of the company to succeed Mr. Henry L. Doherty.

Mr. D. D. Price, who has been master mechanic of the Cumberland & Westernport Electric Railway, Cumberland, Md., has been promoted and has assumed charge of track maintenance in addition to his other duties.

Mr. Charles S. Hervey has been nominated by Governor Whitman of New York for appointment to the Public Service Commission, First District, for the one-year vacancy caused by the resignation of Mr. George V. S. Williams.

Mr. Harry Hartwell, who has been connected with the Pearson Engineering Corporation, New York for the last four years as assistant to the vice-president, has been appointed acting general manager of the Winnipeg (Man.) Electric Railway.

Mr. Travis H. Whitney has been nominated by Governor Whitman of New York for appointment to the Public Service Commission, First District, for the five-year term to succeed Mr. J. Sergeant Cram, whose term of office has expired. Mr. Whitney has been secretary of the commission since its inception.

Mr. Frank Irvine has been nominated by Governor Whitman of New York for reappointment to the Public Service Commission, Second District, for a five-year term. It was stated recently that Mr. Irvine expected to retire from the commission to return to his post at Cornell University as dean of the college of law.

Mr. Ralph E. Truesdell, who has been connected with the electrical department of the Empire United Railways, Syracuse, N. Y., and associated lines for the last eight and one-half years, has severed his connection with that company to accept the position of chief electrician with the Halcomb Steel Works, Syracuse, N. Y.

Mr. Harold A. Crane, connected with the banking firm of Bodell & Company, Springfield, Mass., and Providence, R. I., has been elected treasurer of the Connecticut Valley Street Railway and Massachusetts Northern Street Railway, with headquarters at Greenfield, Mass. He was at one time assistant treasurer of the Massachusetts Agricultural College.

Mr. Louis H. Egan, general manager of the Kansas City (Mo.) Electric Light Company, has resigned from the company. Mr. Egan went to Kansas City in 1910 and in addition to his work with the Kansas City Electric Light Company he acted as advisor to his father, Mr. John M. Egan, president of the Metropolitan Street Railway, that city, on technical electrical matters affecting that property.

Mr. R. E. McDougall, claim agent of the New York State Railways, Rochester Lines, and first vice-president of the American Electric Railway Claims Association, was elected acting president of the association by the executive committee at the mid-year meeting in Chicago on Feb. 4. He will serve in the place of Mr. George Carson, Seattle, who was elected at the San Francisco convention, but who has since severed his connection with the Puget Sound Traction, Light & Power Company.

Mr. George W. Shockey, who has been chief inspector of the Capital Traction Company, Washington, D. C., for several years, has been made superintendent of transportation of the company. Mr. Shockey entered the service of the company as a conductor in 1895, and in 1900 was promoted to the position of inspector, being the first open inspector in the employ of the company. In 1910 he received the title of chief inspector. For the last fifteen years Mr. Shockey has been looking after the operation of cars on all the lines of the company and reporting on traffic conditions, taking care of special parties, etc.

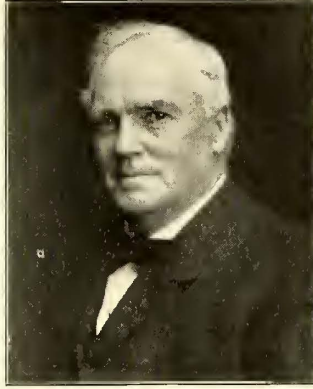
Mr. W. W. Wysor, for the last eight years chief engineer of maintenance of way of the Lehigh Valley Transit Company, Allentown, Pa., has resigned to accept the position of assistant chief engineer of maintenance of way of the United Railways & Electric Company, Baltimore, Md. Mr. Wysor became connected with the company at Allentown at the beginning of the rehabilitation program undertaken by Mr. R. P. Stevens, former president of the company, and took an important part in the work that has made the Lehigh Valley Transit Company one of the most substantial urban and interurban electric railways in the country. Mr. Wysor was formerly chief engineer for the Chattanooga (Tenn.) Railways and previous to January, 1908, he was connected with the Norfolk & Western Railway as assistant engineer in charge of location and construction work for a period of about seven years. Mr. Wysor also served for a short while as a mining engineer in the Pocahontas coal fields of West Virginia.

Mr. Charles E. Jenkins has been appointed chief engineer of maintenance of way of the Lehigh Valley Transit Company, Allentown, Pa., succeeding Mr. W. W. Wysor, resigned, who has become connected with the United Railways & Electric Company, Baltimore, Md. Mr. Jenkins has had a long and varied experience with both electric and steam railways and has been engaged in municipal and general engineering work in New York City and Newark, N. J. Early in his career he was connected with the White Plains & Elmsford Street Railway in the construction of its lines between White Plains and Tarrytown, N. Y. He was next associated with the Passaic & Paterson Street Railway in building its connecting link between Passaic and Newark, N. J., and later with the Long Island Railroad in the reconstruction of its passenger and freight terminals in Long Island City, N. Y. For the last eleven years Mr. Jenkins has been engineer of the Easton Transit Company, Easton, Pa., now a subsidiary to the Lehigh Valley Transit Company, and in addition to his new responsibilities will retain supervision of the lines of the Easton company.

Mr. Frank S. Krug, city engineer of Cincinnati, has been chosen administrative head of the proposed Cincinnati Rapid Transit & Interurban Railway project by the Rapid Transit Commission of that city. Mr. King is also to be chief engineer of the commission, and will have charge of the actual construction if the citizens approve the \$6,000,000 bond issue for the improvement that is to be submitted to them in April. Following his graduation from Pennsylvania Military College in 1884, with a degree in civil engineering, Mr. Krug obtained a position in the office of the county engineer of Hamilton County, Ohio, and rose to the rank of assistant county engineer. In 1891 he became county engineer, which office he held for fourteen years. In recognition of his work his alma mater conferred the degree of master of engineering on him in 1904. Following his service with Hamilton County, Mr. Krug became associated with the Kirchner Construction Company, Cincinnati, Ohio, as secretary and chief engineer. In January, 1914, he accepted the appointment of city engineer of Cincinnati.

Mr. Elon von Culin, formerly chief clerk in the transportation department of the Capital Traction Company, Washington, D. C., has been appointed superintendent of traffic of the company. All Mr. von Culin's business experience has been in the railway work or in railway construction. From 1890 to 1895 he was in the office of the chief engineer of the Baltimore (Md.) Traction Company and the office of the president of that company. From 1895 to 1897 he was with Mr. Edmund Saxton, street railway contractor, who built the cable railway systems in Washington and part of the underground electric railways in that city. From 1897 to 1898 he was with the Nassau Construction Company, New York City, sub-contractors for a portion of the Amsterdam Avenue and Madison Avenue conduit lines in that city. He was also engaged in 1898 on the construction of the Huntington (L. I.) Railroad, controlled by the Long Island Railroad, for which the Nassau Construction Company had the general contract. Mr. von Culin entered the service of the Capital Traction Company in December, 1898, and for several years thereafter was with the engineering department of that company. He has since been in the operating department.

Mr. John M. Egan, who went to Kansas City in February, 1910, to manage the rehabilitation of the street railways, expecting to remain three years, has tendered his resignation as president of the various companies and as general manager of the Metropolitan Street Railway, effective on Feb. 11, when the companies will go out of existence, and the Kansas City Railways will take charge of the property. Mr. Egan is sixty-nine years old. He will retire, at least temporarily, from active work. Mr. Egan was born in Springfield, Mass. His father was associated with the group of men who went West in 1851 and became the officials of the Illinois Central Railroad. Mr. John M. Egan served as apprentice in a machine shop of the railroad at Amboy for more than three years and then went into the superintendent's office. After serving in various other capacities with the company, he became connected with the division engineer's office of the Illinois Central, until the division engineer's appointment as chief engineer of the old Northern Missouri Railroad, at St. Louis, Mr. Egan going with him as chief clerk. Mr. Egan was promoted to assistant division engineer, division engineer and assistant chief engineer. The superintendent of the St. Louis, Kansas City & Northern, the successor to the Northern Missouri Railroad, was William Van Horn, who later became Sir William Van Horn, under whom Mr. Egan served on the Southern Minnesota Railroad and the Canadian Pacific Railway at Winnipeg. From Winnipeg he went to St. Paul as general superintendent of the old Manitoba road, now the Great Northern. He next went to the Chicago Great Western. Mr. Egan afterward operated an iron ore road in Michigan, and went thence to Savannah, Ga., as vice-president of the Central of Georgia Railroad and the Ocean Steamship Company. In 1904 he took charge of the Armour-Swift-Burlington holdings in North Kansas City. In 1906 he was made president of the Kansas City Terminal Railway and laid the foundation that resulted in the present Union station. In 1907 he went to South America to manage Brazilian railroad properties, but returned to the United States in 1909. Mr. Egan was made president of the Kansas City Railway & Light Company in 1910, and upon the accession of the receivers, he continued as president of the companies, and was made general manager for the receivers.



J. M. EGAN

#### OBITUARY

Clarence A. Henley, who had been connected with the McGraw Publishing Company, Inc., for several years as a member of the business staff of the *ELECTRIC RAILWAY JOURNAL*, died on Feb. 1 as a result of injuries received in an automobile accident on Jan. 29 as he was on his way from New York to Washington on a short pleasure trip. Mr. Henley was only twenty-four years old. He was greatly respected and esteemed not only by the staff of the *ELECTRIC RAILWAY JOURNAL*, but by the staffs of the affiliated McGraw papers as well. He is survived by his mother, a sister and a brother.

Frederick Heber Eaton, president of the American Car & Foundry Company, died on Jan. 28 at his home in New York. Mr. Eaton was born in Berwick, Pa., on April 15, 1863, and after a public-school education went to work in the offices of the Berwick Rolling Mills. Later he went with the Jackson & Woodin Company, and became one of the organizers of the American Car & Foundry Company. Since 1902 he had been its president. At the time of his death Mr. Eaton was a director of the American Agricultural Chemical Company, the American Car & Foundry Export Company, the Columbia-Knickerbocker Trust Company, New York, the Hoyt & Woodin Manufacturing Company, Hale & Kilburn Company, the Susquehanna, Bloomsburg & Berwick Railroad and other companies, and a trustee of the Mutual Life Insurance Company, New York.

## Construction News

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

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

#### RECENT INCORPORATIONS

Martinez & Concord Interurban Railway, Martinez, Cal.—Incorporated in California to construct a line from Martinez to Concord, 7 miles. Capital stock, \$200,000. Incorporators: Clifford McClellan and I. H. Steffan, San Francisco; Irving Peterson and G. F. Peterson, Berkeley, and J. A. Olson, Alameda. [Jan. 15, '16.]

\*Youngstown & Suburban Railway, Youngstown, Ohio.—Incorporated in Ohio to construct a line from Youngstown to Leetonia. Capital stock, \$10,000. Incorporators: John T. Harrington, James P. Wilson, J. W. Blackburn, Fred J. Heim and Clyde W. Osborne.

Vercheres, Chambly & La Prairie Tramways Company, Montreal, Que.—Application for a charter has been made by this company to the Quebec Legislature. Capital stock, \$500,000. Incorporators: James W. Domville, Rosemere; Alfred Colas, Longueuil; Douglas W. Ogilvie, Ernest Pitt and Edmond Durcharme, all of Montreal. [Jan. 8, '16.]

#### FRANCHISES

Arlington, Cal.—The Pacific Electric Company has asked the Council for permission to abandon its Brockton line from Tibbetts Station to Magnolia Avenue and its Victoria line from the west end of the Victoria Bridge to the present terminus.

San Diego, Cal.—Bids will be received until March 6 by the Council of San Diego for the franchise to construct a line on University Avenue from Fairmont Avenue to Euclid Avenue requested by the San Diego Electric Railway.

Lawrence, Kan.—The Kansas City, Kaw Valley & Western Interurban Railway has asked the Council for a franchise through Lawrence in connection with its proposed extension to Topeka. The proposed franchise names three optional grants, each providing for a different route out of town to the west, and provides that within one year after its adoption the company shall adopt and accept one of the routes named and that the other optional grants immediately become null and void.

Kansas City, Mo.—The Metropolitan Street Railway has received a franchise from the Council to extend its double track on Broadway from Southwest Boulevard to Twenty-fourth Street.

Reading, Pa.—It is reported that the Reading Transit & Light Company will ask the Council for a franchise to construct a line on Twelfth and Thirteenth Streets, Reading.

Dallas, Tex.—Formal acceptance of the franchise granting interurban rights on Jefferson Avenue between Commerce Street and the river has been filed with the City Commission by the Northern Texas Traction Company. The ordinance was effective Jan. 10. Upon this grant was conditioned the construction of a viaduct over the steam lines entering the Union Depot and work has already been begun on this project.

#### TRACK AND ROADWAY

Birmingham-Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala.—This company plans to make extensive improvements on its line between Tuscaloosa and Holt, and also will build a spur to the depot of the Mobile & Ohio Railroad.

Little Rock & Hot Springs Electric Railway, Little Rock, Ark.—Financial prospects indicate a possibility of early construction work on this company's proposed line between Little Rock and Hot Springs. All preliminaries have been finished, right-of-way and depot sites obtained and surveys completed for the line. M. B. Moore, Little Rock, president. [Aug. 22, '14.]

**Pacific Electric Company, Los Angeles, Cal.**—Plans are being considered to construct a line to serve the north end of Lamanda Park. The line would be an extension of the north loop out on Villa Street to connect with the Sierra Madre line on Santa Anita Boulevard.

**Municipal Railways of San Francisco, San Francisco, Cal.**—The contract for the construction of the Church Street municipal line from Sixteenth to Eighteenth Streets and from Twenty-second to Thirtieth Streets has been awarded by the Board of Public Works to the Western Motor Draying Company on its bid of \$57,455. The contract for furnishing and installing reinforced concrete trolley poles has been awarded to John Spargo for \$6,590. The Contra Costa Construction Company is now building the line between Eighteenth and Twenty-second Streets. The city engineer of the San Francisco Board of Public Works has requested the supervisors of that city to set aside \$5,000 for preparing preliminary estimates and reports on several proposed extensions to the Municipal Railway system. The following extensions are proposed: Stockton Street line across Market Street to the Southern Pacific depot at Third and Townsend Streets; present Potrero Avenue line to Hunter's Point; Fifteenth Street and Park Hill line, and Townsend Street from the Potrero Avenue line. It is also proposed to construct and purchase various lines in the Sunset district and modify the former plan for a line across Golden Gate Park.

**Georgia Railway & Power Company, Atlanta, Ga.**—This company is contemplating extending its Atlanta-Lindale transmission line to furnish electrical service to Cedartown.

**Southern Illinois Railway & Power Company, Chicago, Ill.**—During this year this company plans to build about 60 miles of track to connect Harrisburg with Marion, Johnson City, Herrin and Benton, as noted more in detail on page 283 of this issue.

**Southern Illinois & St. Louis Railway, Chicago, Ill.**—Orders have been placed by this company for material to be delivered this year to be used in the construction of its line to connect Harrisburg, Marion, Pittsburgh and Johnston City. Actual construction work is expected to begin the middle of March, the financing of the road having been completely arranged for. W. H. Schott, 111 West Monroe Street, Chicago, president.

**Aurora, Elgin & Chicago Railroad, Wheaton, Ill.**—Plans are being made by this company to extend its Park Street line in North Liberty Street, Elgin, to the north factories.

**Union Traction Company, Anderson, Ind.**—This company has been granted permission by the Council of Anderson to raise the grade of its tracks across North Main Street. These tracks must be raised 8 in. in order to conform with the grade of the traction bridge over White River. The company is also lengthening its bridge at Anderson in accordance with federal plans designed to prevent high waters. The fill to the north abutments of the bridge has been removed and a new section has been placed in service.

**Evansville, Ind.**—Preliminary plans for a vehicle and traction bridge over the Ohio River 5 miles above Evansville, Ind., have been drawn by Laub & Fetterman, contracting engineers of Pittsburgh. These plans were drawn from a survey of the Evansville & Henderson Traction Company, the cars of which are now ferried over the river from the Illinois Central incline near the same point. It is estimated that the cost of the bridge would be about \$700,000, exclusive of the cost of the approach. Under the project Evansville would raise \$300,000 of this sum, while it is proposed that the remainder be raised in some other manner. Mayor Benjamin Bosse is head of the bridge committee of the Evansville Chamber of Commerce, which would undertake to promote the improvement.

**Gary & Interurban Railroad, Gary, Ind.**—Plans are being considered by this company to construct a 2-mile extension to the new Gary tin mills. The consent of the Federal Court for the expenditure of the necessary money for the extension must be secured before the line can be built.

**\*South Bend, Ind.**—A. E. Anderson of the Union Bank of Chicago has obtained an option on a traction line right-of-way between South Bend and Plymouth from Gabriel R. Summers of South Bend.

**Hutchinson (Kan.) Interurban Railway.**—The stockholders of the Hutchinson Interurban Railway have voted to spend the 1915 earnings for reconstructing and building additions to its line.

**Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.**—This company has asked the Public Utilities Commission of Maine for its approval of the construction of an extension of its lines from Bowdoin and Summer Streets, along Summer Street to the property of the Wadsworth & Woodman Company, Winthrop.

**Detroit (Mich.) United Railway.**—Following a conference between the members of the Street Railway Commission and officials of the Detroit United Railway, the commission recommended to the Common Council that permission be granted the company to construct several miles of extensions. The Council has referred the recommendation to its committee on public utilities for a report. The commission recommends the extension of the Warren Avenue crosstown line to the westerly city limits, the extension of the Forest Avenue crosstown line to the easterly city limits, the completion of the so-called workingman's belt line, part of which was constructed a year ago, and the extension east of the Kercheval Avenue line. To these extensions the company has agreed, the same to be built this year under the day-to-day agreement now existing between the city and the company.

**Mesaba Railway, Virginia, Minn.**—This company has awarded a contract to the Winston-Deer Company for the construction of a 6-mile extension to Sheridan Mine, Hibbing.

**Mexico Investment & Construction Company, Mexico, Mo.**—It is reported that plans are being considered by this company to construct extensions into Callaway and Monroe Counties in the spring.

**International Railway, Buffalo, N. Y.**—An order has been issued by the Public Service Commission for the Second District of New York, prescribing the manner in which the International Railway Company's new high-speed line from Buffalo to Niagara Falls is to cross the various streets, highways and other tracks. The commission also granted its approval of the franchise. For the greater part of the way the new line will extend through private right-of-way. Important highways will be crossed on viaducts, as will all main lines of steam roads. The franchises approved include those from the city of Buffalo and town of Tonawanda for crossing Kenmore Avenue. A condition of the order which the company must accept is that if at any time in the future the crossings now provided at grade should be sought to be eliminated the company will hold itself a party to such proceedings as if it were a steam railroad and will pay a steam railroad's share of cost of such a separation of grades and not plead exemption as a surface railway under the law. In addition the commission requires the railway to go to the Supreme Court for an order approving these crossings in the village of La Salle and the towns of Tonawanda and Wheatfield, and to accept and file with the commission the agreement with the city of Buffalo whereby the company is bound to pay its share of any future elimination of the crossing of Kenmore Avenue.

**New York City.**—Reconstruction of the roadway of the Queensboro Bridge and the transfer of the car track service to the outer brackets of the structure, which was recommended by Bridge Commissioner F. J. H. Kracke, has been approved by Mayor Mitchel. The estimated cost of the new work is \$144,000.

**Interborough Rapid Transit Company, New York City.**—The Public Service Commission for the First District of New York will hold a public hearing on Feb. 14 upon the proposed terms and conditions of a contract for the construction of a railroad yard at 239th Street on the White Plains Road extension of the Lenox Avenue branch of the first subway. The yard is to be built in an open cut, with a two-track approach to it built partly in open cut, partly on embankment and partly on steel construction, upon private property in The Bronx, bounded by White Plains Road, East 239th Street, Nereid Avenue and Baychester Avenue. The work must be completed within ten months from the delivery of the contract. The commission has readvertised for bids for the installation of tracks upon the

White Plains extension of the Lenox Avenue branch of the first subway. This contract was first advertised last November, and bids were opened Nov. 23. The lowest bidder at that time was the Coast & Lakes Contracting Corporation, whose bid aggregated \$53,930. The proposal of the next lowest bidder footed up more than \$102,000, and the Coast & Lakes Contracting Corporation claimed that it had made a mistake in its figures, and desired to withdraw its bid. The commission, however, awarded the contract to the company at the figure named. Later the Coast & Lakes Contracting Corporation filed a stipulation, agreeing to pay the cost of readvertising for bids if the commission would relieve it of its obligation under the original award, and also agreed to put in a bid under the readvertisement at a figure not to exceed \$94,280, which the company says is the amount it intended to bid in the first place. A readvertisement for bids, to be opened Feb. 16, was accordingly ordered.

**New York State Railways, Utica, N. Y.**—The Public Service Commission for the Second District of New York has issued an order to the New York State Railways to repair its track in Whitesboro. The work must be begun on or before May 1.

**\*Columbiana, Ohio.**—At a recent meeting of the Chamber of Commerce of Columbiana an electric line from Columbiana to East Palestine was discussed, and it is believed that the road will be built during the summer.

**Stuebenville & East Liverpool Railway & Light Company, Steubenville, Ohio.**—An entirely new street lighting system will be installed in Steubenville by this company if the lamps installed on trial prove satisfactory.

**\*New Hamilton, Pa.**—A municipal light plant and trolley line between New Hamilton and the works of the Ætna Explosive Company was assured at the close of a public meeting recently held at New Hamilton when the first \$1,000 was subscribed toward the capital necessary for the project. J. W. White, superintendent of the Ætna Explosive Company, pledged his company to take up one-half of the capital stock to build and equip the new line and would guarantee receipts aggregating \$50 per day from the same source.

**Pottstown & Phoenixville Railway, Pottstown, Pa.**—It is reported that work will be begun in April on this company's extension from Spring City to Linfield.

**Rhode Island Company, Providence, R. I.**—Work will soon be begun by this company repairing its line on Cranston Street. New and heavier rails will be laid from the city line to School Street. Plans are being made by the company to double track its line on Randall Street from Charles Street to North Main Street next spring.

**Brownsville (Tex.) Street Railway.**—Plans for an extension of its lines are being considered by this company. It is expected that a franchise for a line across the Rio Grande to Matamoros, Mexico, may be acted upon soon.

**Corpus Christi (Tex.) Traction Company.**—J. J. Caswell has deposited \$5,000 with the Council to guarantee the construction of the proposed electric railway from Corpus Christi to Wards Island, 8 miles. The line is to be completed and in operation within twelve months. [Aug. 21, '15.]

**Dallas (Tex.) Consolidated Electric Street Railway.**—Work has been begun by this company on the paving and reconstruction of tracks and roadbed on Commerce Street from the Houston & Texas Central Railroad tracks to Exposition Avenue. Steel ties, instead of wooden ones, will be used and will be set in concrete foundation in such a way as to permit their subsequent removal without disturbing the sub-layer of concrete or the gravel that will be placed the ties and the concrete. The company has been directed by the Board of City Commissioners to reconstruct its tracks on Henderson Avenue from Ross to Monarch Street with 90-lb. rail, preparatory to the paving of the street.

**Northern Texas Traction Company, Dallas, Tex.**—This company has begun the construction of a steel and concrete viaduct across the railway tracks leading into the proposed union station. Double tracks will be laid on the main structure and on both approaches. The floor of the viaduct will be of solid reinforced concrete.

**Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis.**—It is reported that this company is considering the construction of an extension from Chippewa Falls to St. Paul and Minneapolis.

**Milwaukee Western Electric Railway, Milwaukee, Wis.**—A report from this company states that prospects are favorable for beginning construction of its line next spring. The proposed line will connect Milwaukee, Sussex, Pewaukee, Waukesha, Neosho, Hustisford, Juneau, Beaver Dam and Fox Lake. Alvin P. Kletzsch, Milwaukee, president.

#### SHOPS AND BUILDINGS

**Gulfport & Mississippi Coast Traction Company, Gulfport, Miss.**—This company has removed its offices to the Dukate Theater Building. The building is being remodeled and will contain a passenger waiting room and also a freight room.

**Dallas, Tex.**—A permit for the new union interurban station to be erected by Stone & Webster has been issued by City Building Inspector H. J. Emmins. The permit calls for the erection of a structure to cost \$600,000. This is exclusive of the trackage and other features. Construction of the interurban building began on Dec. 8. The main building will face on Jackson Street, extending from Browder Street on the west to within a short distance of Ervay Street and will be eight stories high. The contractors expect to complete the building and the yard tracks and loops on city streets by Sept. 1.

#### POWER HOUSES AND SUBSTATIONS

**Oskaloosa Traction & Light Company, Oskaloosa, Iowa.**—This company will rebuild its power lines in the business district.

**Northern Ohio Traction & Light Company, Akron, Ohio.**—It is reported that preparations are being made by this company to triple the output of its plant at the Gorge. The plans provide for the installation of two 20,000-kw. turbo-generators and accessories.

**Cleveland (Ohio) Railway.**—The power department of the Cleveland Railway has recommended the following improvements: Turbine at the Cedar Avenue power plant, \$250,000; four 600-hp. boilers at the Cedar Avenue plant, \$75,300; power department headquarters at the Cedar Avenue battery building, \$10,000; line department headquarters at the Cedar Avenue power plant, \$10,000; additional equipment at the West Twenty-fifth Street substation, \$17,000; additional return circuit equipment, \$52,300; additional feeders, including cables across the new Superior Avenue viaduct, \$27,000. These amounts, plus 15 per cent for engineering and contingencies, total \$507,840.

**Montreal (Que.) Tramways Company.**—Considerable additions to its steam generating plants in Montreal will be made by this company, and plans have been prepared providing an ultimate capacity at the Hochelaga plant of about 60,000 hp. The company will install large-sized turbo-generator units, and the first order has been placed with the Canadian General Electric Company for one 12,500-kw., 15,630-kva. Curtis turbine. The contract for boilers has been placed with Babcock & Wilcox, Ltd. The boilers are of the steel-cased marine type, with superposed economizer and equipped with superheaters and chain-grate stokers. Further plans call for the linking up of the Hochelaga power house with all the substations of the Montreal Tramways Company by means of 12,000-volt, high-tension feeders.

**Tennessee Railway, Light & Power Company, Chattanooga, Tenn.**—Construction has been begun by the Tennessee Power Company, the principal generating subsidiary of the Tennessee Railway, Light & Power Company, on a new hydro-electric station on the Caney Fork River near Great Falls, Tenn. The initial installation at the new station will be 10,000 hp., to be later increased to 40,000 hp. A dam will be constructed across the river and the water will be taken by a tunnel through the mountain to the power house. There has been such an increase in the demand for power in the section served by the company that plans are now being considered for a third hydro-electric plant on the Ocoee River in addition to the Caney Fork plant and the 10,000 hp. steam auxiliary station now under construction at Parksville.

## Manufactures and Supplies

### ROLLING STOCK

Cumberland Traction Company, Edmonton, Ky., expects to purchase motor cars during 1916.

Macon & Birmingham Railway, Macon, Ga., is reported as having purchased an additional motor car.

Toledo, Fostoria & Findlay Railway, Fostoria, Ohio, expects possibly to purchase one car body during 1916.

Lehigh Valley Transit Company, Allentown, Pa., is reported as having ordered twelve cars from the Southern Car Company.

Androscoggin Electric Company, Lewiston, Me., has ordered one flat car and trucks from the Laconia Car Company.

Arkansas Valley Railway, Light & Power Company, Pueblo, Col., may purchase one or two single-truck car bodies during 1916.

Bay State Street Railway, Boston, Mass., is reported to be considering the addition of 200 new cars and the remodeling of a number of its present cars for prepayment operation.

Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., is reported as expecting to order one arch roof steel baggage, smoking and passenger car, and one smoking and passenger car.

Binghamton (N. Y.) Railway is preparing specifications for sixteen all-steel cars, having a 16-ft. body and mounted on a Radiax truck. The order will be placed for this equipment within the next thirty days.

Columbus Railway, Power & Light Company, Columbus, Ohio, is rebuilding in its own shops seventeen open, side running board, motor cars into semi-convertible, fully-enclosed prepayment cars.

Public Service Railway, Newark, N. J., noted in the ELECTRIC RAILWAY JOURNAL of Jan. 29 as being in the market for twenty interurban cars, has ordered this equipment from The J. G. Brill Company.

Fairburn & Atlanta Railway & Electric Company, Fairburn, Ga., has ordered from the Railway Storage Battery Car Company of New York three Edison storage-battery cars to operate over its line from College Park, Atlanta, to Fairburn, Ga. The new installation replaces four gasoline-propelled cars. This service is being adopted to meet the rapidly increasing passenger and freight traffic brought about by the growing condition of this section, which shows promise of becoming a very prosperous residential and manufacturing suburban district. The battery cars will serve this community from 6 a. m. to 11 p. m. in an hourly service. They will be of the standard suburban type, equipped for double-end operation and will seat forty-four passengers. M. C. B., semi-steel construction will be followed throughout. It is expected that the cars will be completed so as to be placed into regular service on this line about June 1.

### TRADE NOTES

Edwin G. Hatch, New York City, engineer, has received an order from the Montana Power Company, Butte, Mont., for a large number of seamless copper splicing sleeves for its extensions.

Automatic Ventilator Company, New York City, has received an order to equip with its E-4 type ventilators the forty cars recently ordered by the Des Moines (Iowa) City Railway from the McGuire-Cummings Manufacturing Company.

American Car & Foundry Company, New York City, at a meeting of its board of directors, elected William H. Woodin president, to succeed the late Frederick H. Eaton. Mr. Woodin since 1902 has been a director and assistant to the president.

Bates Expanded Steel Truss Company, Chicago, Ill., has received orders for its expanded steel trolley or transmis-

sion poles from the following companies: Tulsa (Okla.) Railway; Oklahoma Railway; Enid (Okla.) City Railway; Midland Water, Light & Ice Company, Dodge City, Kan., and the Public Service Company of Oklahoma, Oklahoma City, Okla.

Nelson P. Hall, who for a number of years represented the Electric Service Supplies Company, has opened a manufacturers' agency at Room 900, 14 East Jackson Boulevard, Chicago, Ill. Among other concerns Mr. Hall will represent the National Brake Company, the Locke Insulator Manufacturing Company and the Coil Manufacturing & Repair Company.

### ADVERTISING LITERATURE

Chicago (Ill.) Pneumatic Tool Company has issued a bulletin which contains small illustrations of certain of its many types of pneumatic compressors and Giant fuel oil and gas engines.

General Electric Company, Schenectady, N. Y., has issued Bulletin No. 47750, superseding Bulletin No. 4967, which describes and illustrates its various types of switchboard structural devices and accessories.

Reinforced Concrete Pipe Company, Chicago, Ill., has issued a catalog describing its reinforced concrete pipe. A number of illustrations are included, which clearly show the methods and types of construction of this pipe, and its adaptability to various uses. It is stated that this form of pipe is now in use in more than 140 cities in thirty States in the United States and Canada, Mexico and South America.

James G. Biddle, Philadelphia, Pa., has issued an illustrated catalog describing the applications of his Megger testing set, a portable direct-reading meter that registers ohmic values up to 5000 megohms. Among the electric railways stated as being users of this apparatus are the Chicago Railways; Citizens Traction Company; Cleveland Railway; New York Railways; New York, New Haven & Hartford Railroad; New York, Westchester & Boston Railway; Norfolk & Western Railway; Pittsburgh Railways; Portland, Eugene & Eastern Railway, and Transit Development Company.

### NEW PUBLICATION

The Experience Grading and Rating Schedule. By E. G. Richards. Published by the National Board of Fire Underwriters. New York. 104 pages.

The section of this book under the above title is designed to be a United States standard for measuring fire insurance costs based upon combined experience averages. The book also contains the "Standard Classifications of Occupancy Hazards and Loss Report Form of the National Board of Fire Underwriters."

### ROOSEVELT ON THE RAILROADS

In the course of a speech which he made in Philadelphia on Jan. 20, Colonel Roosevelt said:

"California, under Governor Johnson, has tried to do justice to the railways, as well as to exact justice from them. This effort has been partially nullified by the fact that, in direct contravention of one of the main purposes which the United States Constitution was designed to put into effect, we have permitted interstate commerce largely to pass under the control of the States, instead of keeping it under the control of the nation. When, for instance, California, appreciating the fact that railroads cannot possibly be successfully operated unless they are allowed business opportunities which will enable them to make a reasonable profit, acted accordingly, the action was nullified by certain neighboring State commissions. California's experience has shown that it is impossible permanently to secure good results in dealing with the instrumentalities of interstate commerce, the railroads doing an interstate business, through the commissions of forty-eight different States, and that the only way is to have the whole business of interstate commerce and everything pertaining to it handled by the administrative officers at Washington. I believe in a national incorporation law for corporations of any size engaged in interstate business."