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The Prevention of Accidents

The prevention and treatment of accidents and the various problems incident thereto is a subject which was never of greater importance than at the present time. This issue contains the first of a series of articles by F. W. Johnson, of the Philadelphia Rapid Transit Company, who expresses the belief that many of the efforts which have been made to solve these troublesome problems have failed to effect improvement at one fundamental source of the difficulty. It apparently increases the work of the claim department if a more determined and systematic attempt than has been the custom in the past is made primarily to teach new trainmen all that they should know to help them to avoid accidents; but this method, if followed conscientiously, is a precaution that would not involve an excessive outlay of money and may result in the reduction of casualties. The exercise of constant vigilance on the part of the trainmen would decrease the seriousness of preventable accidents, and cause a reduction in the large number of claims for which there is little or no justification. To teach trainmen by impressive lessons to keep their minds alert to protect life is a humane course of action and one which a company is justified in following, even at apparent great expense. The problem would be easier of solution if trainmen in large cities would remain in the employ of the companies for a longer time than is the usual custom, but the fact that this condition makes necessary a practically continuous effort is an obstacle that needs to be recognized, if it is to be surmounted.

An Extra Charge for a Transfer

The effect of the establishment of a charge of 1 cent each for transfers by the Newton (Mass.) Street Railway, as reported in the ELECTRIC RAILWAY JOURNAL of Jan. 2, 1909, page 34, affords a significant illustration of the extent to which the unwarranted use of transfers may go.

The Newton company, as was shown in the series of articles on the Massachusetts fare situation published in this paper, imposed the charge for transfers, with the approval of the Board of Railroad Commissioners, because its revenues were inadequate. The change was made effective on Sept. 1, 1908. The results may be given greater emphasis by partial repetition of the figures published in our issue of last week. During the three months ended Nov. 30, 1907, the number of transfers issued amounted to 13.97 per cent of the total cash passengers carried. In the corresponding three months of 1908 the proportion was 10.50 per cent. In this period there was a decrease of 0.11 per cent in the number of cash passengers carried, which is so insignificant that it has no substantial bearing on the decrease of nearly 25 per cent in the total transfers issued.

The reduction in the aggregate number of transfers issued by the company in the three months indicates a decline of 3.1 per cent in the number of passengers that it was necessary to carry. When the total number of transfers issued in the three months of 1908 is shown to have been 178,810, being a reduction of 59,365 in the net number of transfers issued, it will be clear that there must have been some waste in the use of the privilege by the public.

The real effect of the action of the company in establishing a charge of 1 cent each for transfers was to make the unit of fare for about one-eighth of its passengers 6 cents if they desired to continue to exercise the transfer privilege. A charge of 1 cent also meant that all the passengers who had been in the habit of taking transfers for which they had no real use would abandon the practice, and that some very short trips by individual passengers whose destination was within reasonable walking distance of the line on which they paid their fare would be discontinued. To what extent the reduced issue of transfers would be due to dissatisfaction at the extra charge is, of course, a matter of speculation. The Newton Street Railway, it will be understood, is one of a group of companies controlled by the Boston Suburban Electric Companies, several of whose properties increased their unit of fare from 5 to 6 cents. The experience of these lines warranted the statement, however, by Matthew C. Brush, vice-president and general manager, that the antagonism displayed by the public when the increased fare was placed in effect passed away very largely.

Outside of the increase in revenue, which is a material advantage, the action of the company in setting up a charge will be important because it gives a value to that which has been regarded altogether too lightly if its effect on earnings is to be given due weight by the public as well as by street railway managers themselves.

Short Cuts in Railway Engineering

While much of a deprecatory nature has been said and written regarding "rule of thumb" engineering methods, yet almost every engineer makes use of a number of "short-cut" formulas which tend greatly to facilitate preliminary calculations, at least. Many of these short formulas seem to be purely empirical; they have become so familiar through long-continued use that their theoretical deduction is all but forgotten. However, for nearly every one of these short cuts, if it be a reliable one, "there is a reason." For instance, a short cut to the determination of power-station generating capacity is to allow 1 kw for every 2 hp of rated motor capacity in car equipments. This is based on an average transmission efficiency of about 75 per cent, which makes 1 kw output at the generator equal 1 hp input to the motor, and the additional fact that the continuous capacity of a railway motor is about one-half its rated capacity.

This rule, however, is modified for substations, which usually operate in parallel with adjoining stations, to 1 kw in rated substation capacity for each 2 hp in car equipments taking more than one-half their total current from that substation, plus 1 kw per hp for those cars taking less than one-half current. The reason for the modification is, of course, obvious.

The engineer's note-book, written or mental, is full of these perfectly legitimate short cuts. That the (long) tons of steel rail per mile of single track are equal to the pounds per yard multiplied by 11 and divided by 7 is not only easy to remember, but is much easier to apply than to multiply by twice 1760 and divide by 2240, even with the assistance of the slide rule, and it is just as exact. Another rule, in this case however a close approximation, is that the speed in miles per hour equals the rail lengths of 30 ft. traversed in 20 seconds. Another is that the number of pounds per yard of rail-weight is double the number of kilograms per meter. Another is to allow 1 sq. in. in cross-section for each 10 lb. per yard in steel rails and for the ordinary composition of track rails each 10 lb. per yard may be assumed as the equivalent of 100,000 circ. mils of copper in conductivity, allowing for the usual conditions of joints and bonding. The volts drop per mile per hundred amperes in third-rail having eight times the resistance of an equal cross-section of copper is equal to 365 (a constant quite easily remembered) divided by the number of pounds per yard of rail. For single track—two track rails, instead of one third-rail—the constant is two-thirds of the above, or the volts drop per mile of single track, per 100 amp, is 243 divided by the number of pounds per yard of single rail. That the resistance of a mile of single 70-lb. track rail is 0.07 ohm is almost as easy to call to mind as is the fact that No. 10 B. & S. gage copper wire has a resistance of almost exactly 1 ohm per thousand feet.

The B. & S. gage copper wire table, owing to the method of its deduction, is particularly susceptible to these short-cut rules. A wire which is three sizes larger than another wire has half its resistance, twice its area in cross-section and twice its weight. A wire which is 10 sizes larger than another has one-tenth its resistance, 10 times its cross-sectional area and 10 times its weight. No. 10 wire has a diameter closely approximating 01 in, its area is approximately 10,000 circ. mils, its resistance is approximately 1 ohm per thousand feet and it weighs close to 32 lb. per thousand feet. No. 5 wire weighs 100 lb. per thousand feet. The relative values of resistance (decreasing) and of area and weight (increasing) for consecutive increasing sizes are in the ratio 1.00:1.25:1.60:2.00, etc., and this same ratio holds good for the diameters of alternate sizes.

By memorizing the few constants named the B. & S. wire table (approximately) is always ready for use, even when, as is sometimes the case, we are revolving some problem in our mind in the interval between lights out and dreamland. Other short cuts in copper wire and cable data are: Number of feet per ohm resistance equals one-tenth the number of circular mils; weight per thousand feet equals one ten-thousandth the circular mils times 32; cost of copper wire per mile (at 15 cents per pound) equals the weight per thousand feet of the next smaller size.

Among the short cuts given above and the thousands of others in more or less common use some give perfectly exact results and others but approximations. A third class are based on certain assumptions which make them applicable to but certain conditions. In their adoption and use great care should be taken in their classification, and especial care should be exercised in the use of those last-named as applicable to certain conditions only, as otherwise they are quite capable of leading us far astray. Without such care the use of these short cuts makes good the disparagement of those who decry the "rule of thumb" methods; with proper care in their use many of the so-called rules of thumb become scientific formulas.

The Future of the American Street & Interurban Railway Association

The ELECTRIC RAILWAY JOURNAL is fortunate in being able to present in this issue a summary by President Shaw of the plans for the coming year of the American Street & Interurban Railway Association and its affiliated associations. The history of the American Association since the reorganization meeting at Philadelphia in 1905 has been one of rapid growth, not only in members but in efficiency and usefulness, and the program for the coming year, as outlined by Mr. Shaw, covers important work in practically every department of electric railway endeavor. As pointed out by him, however, the increase in number of members, while large, has not kept pace with the efficiency and usefulness of the organization. The field being covered is very broad and, while the work is being done thoroughly, even better results could be secured if all of those who could be benefited by the association would take advantage of the opportunity which membership in it affords. To assist in a better understanding of this situation on the part of those who are eligible as active or associate members, two committees on membership have been appointed, one to secure active and one associate members. The membership of these committees is drawn from all parts of the country, so that each section can enter into friendly rivalry with the others to see which will have the largest representation in the association.

We also notice that President Shaw states that probably the next convention will be held somewhere in the Middle West. We are heartily in favor of this plan, and believe that such a selection will not only be desirable for the reasons mentioned by Mr. Shaw, but will be of great educational value to the Eastern companies, especially those whose officials have not recently seen the latest railroads constructed in that section of the country. The article by Mr. Shaw is one which is in every way well worth careful perusal.

The Consolidated Gas Decision

The decision of the United States Supreme Court this week in the Consolidated Gas case is interesting on account of what it contains and what it does not contain in regard to what constitutes a reasonable return upon the value of public utility properties in large cities, where the receipts are large and reasonably certain to increase. The full report has not yet been filed, but according to the press reports, one of the rulings of the court was briefly this: That since the New York State Legislature had established a rate for gas which permitted, under existing rates of consumption, a return of from 5½ per cent to 6 per cent upon the present value of the company's property, and that since a possible increased consumption of gas would probably increase the net earnings of the company, a court of equity should not interfere before a bona fide test had been made of supplying gas at the rates mentioned in the statute. The court, however, expressly denied any intention of fixing the reasonable rate of return which any corporation should be permitted to obtain without legislative interference. The proper rate of return, it says, depends upon circumstances and locality, but in this particular case "the complainant is entitled to a return, if possible, of 6 per cent upon the fair value of its property actually used in this business of supplying gas." In regard to the franchises, the court ruled that their value should be taken as $7,781,000 in determining the value of the entire property for rate-fixing purposes. This was the figure at which the franchises were capitalized and valued in 1899-1900 at the time of the consolidation, which was effected pursuant to a State statute, and the court considers that the State should not now question this amount. The court held, however, that the general question of the method of valuing franchises for rate-fixing purposes was not before it and would not then be decided. No allowance should be made for good-will in this case. The digest of the decision so far made public indicates that the full decision will make most instructive reading. It is equally apparent that the court in passing upon other cases of like nature would give due consideration to all circumstances and conditions which differentiated them from those of the Consolidated Gas Company.

Reducing Wastes in Car House Lighting

We took occasion last week to discuss methods of lighting car houses and shops, but there is another point which should be emphasized in connection with that subject, namely, waste. The cost of lighting a car house of average size is not a serious matter from the point of view of current consumed, but here is often one of the little loose ends of service which in the long run is well worth attention. In many car houses there are no adequate methods of knowing whether lights are being burned needlessly or not, without making a personal trip through all the house. With the more careful planning of car house and shop designs now noticeable in electric railway practice, there is a general tendency toward the installation of centrally controlled circuits, bunching the auxiliary electrical equipment switches for different sections in one convenient location, and on a suitable fireproof switchboard panel. For this service there is a field for the use of pilot lamps in the switching compartment, with red bulbs to show when the outlying incandescents are in use.

It is often the case that a great many more lamps are burned around a car house than are needed. Aside from the power and consumption, this means a waste of lamps and fixtures which in turn calls for extra maintenance. The maintenance of pit lights is usually a matter of considerable cost, relatively speaking. Much of this cost may be caused through absence of pockets for permanent lamps and carelessness in the use of portable lamps. The cord and lamp of a portable outfit may be left in the pit or across the rail, so that when the car is pulled out of the pit track and run to another part of the house the cord is likely to be destroyed. This means stopping at busy times to fix the pit lamp cords, or else doing work by an inferior light while waiting for the repair force to go the rounds. Where it is the practice to supply lamps to the car house, without a proper record at the storekeeper's window, careless use and breakage often result. No item is too small to be of importance in the administration of a railway property, and lamp breakage can easily amount to quite a large sum if attention is not directed to it.

THE FUTURE OF THE AMERICAN STREET & INTERURBAN RAILWAY ASSOCIATION

BY JAMES F. SHAW, PRESIDENT OF THE AMERICAN STREET & INTERURBAN RAILWAY ASSOCIATION

It is a departure for the president of the American Street & Interurban Railway Association to prepare a formal address to the members and others interested in the industry at any other time than at the annual meeting. The work before the members of the association, however, is so important this year and the necessity of securing the co-operation of all interested in street railway affairs is so great that the writer has decided to disregard precedent in this particular. In consequence he has taken advantage of the offer of the publishers of the Electric Railway Journal to discuss in its columns some of the important topics which now confront the association and which are of interest to non-members as well as members of it.

MEMBERSHIP

One of the most important matters to be undertaken by the association during the coming year is an addition to both classes of its membership. There has been a gratifying increase in the number of both active and associate members since the submission of the report of the secretary-treasurer at the Atlantic City convention. On Sept. 30, 1908, the record stood: Active members in good standing, 262; associate members in good standing, 249. Since Sept. 30, 1908, 44 companies have applied for active membership, and there have been 97 applications for associate membership, making a total on Jan. 2, 1909, of active members, 306, and of associate members, 346, provided these applications are accepted at the next meeting of the executive committee.

While this increase in three months of 17 per cent in active membership and 39 per cent in associate membership is very gratifying, the total is far short of what should be the number of members in the association if we look upon the statement from the standpoint of (1) the benefits conferred by membership, or (2) the magnitude of the interests represented by the association, or (3) the members in similar organizations.

The electric railways constitute one of the large industries of the country with their capitalization of over $4,000,000,000, exclusive of floating debt, upon which they were paying more than $2,000,000 in interest in 1902. Not including the electrified steam lines, they are estimated to have an annual income of $350,000,000. I refer to these facts here only to indicate the importance of the industry and work to be done and the necessity for including in the association all those interested in its work. Realizing this condition, the writer has appointed two committees on membership whose members are so distributed geographically that inquiries in regard to active or associate membership in the association can be taken up easily by any one interested. The committees consist of the following:

COMMITTEE ON ACTIVE MEMBERSHIP

C. S. Sergeant, Boston, Ch'm.
E. A. Newman, Portland, Me.
H. C. Page, Springfield, Mass.
R. S. Goff, Fall River, Mass.
W. Caryl Ely, Buffalo, N. Y.
C. Loomis Allen, Utica, N. Y.
W. G. Ross, Montreal, Que.
C. L. S. Tingley, Philadelphia.
W. E. Harrington, Pottsville.
J. N. Shannahan, Baltimore.
A. H. Ford, Birmingham, Ala.
W. H. Glenn, Atlanta, Ga.
R. I. Todd, Indianapolis.
Jas. H. McGraw, New York.
P. P. Crafts, Clinton, Ia.
C. B. Fairchild, Chicago.
A. W. Warnock, Minneapolis.
A. H. Classen, Okla. City.
John A. Beeler, Denver.
E. E. Potter, Seattle, Wash.
C. N. Black, San Francisco.
Harro Harrsen, Mexico City.
D. A. Hegarty, Little Rock.
C. C. Smith, Milwaukee.

COMMITTEE ON ASSOCIATE MEMBERSHIP

C. L. Allen, Utica, Chairman.
Howard F. Grant, Seattle.
C. H. Hile, Boston.
W. W. Sargent, Fitchburg.
M. C. Brush, Newtonville.
J. S. Doyle, New York, N. Y.
H. H. Adams, New York.
W. O. Wood, Long Island City.
P. N. Jones, Pittsburg, Pa.
C. E. Flagg, Spokane, Wash.
L. D. Mathes, Dubuque, Ia.
D. A. Hegarty, Little Rock.
R. E. Danforth, Newark.
W. H. Staub, Baltimore.
H. S. Cooper, Galveston.
J. B. McAfee, Lexington.
T. W. Passalaigue, Charleston, S. C.
A. W. Warnock, Minneapolis.
R. E. Hunt, Salt Lake City.
C. F. Hewitt, East St. Louis.
W. S. Dimmock, Tacoma.
J. A. Beeler, Denver, Colo.
W. T. Bivins, San Francisco.

The appointment of these committees, however, is not intended to relieve any active or associate member of the association or any member of the Manufacturers' Association from co-operating in the work. It is to be hoped that all of those who showed such enthusiasm at Atlantic City in regard to the association itself and the work accomplished by it will be able to impart some of this interest to others who are not members, and that each will informally constitute himself a member of the membership committee. The work of the association ought to attract the support of all companies, because no company is too large to be outside the association, and none is too small not to be interested in and helped by it.

THE FUTURE WORK OF THE ASSOCIATION

In each of the affiliated branches of the association, as well as in the main body, questions are pressing for settlement which are more important now than perhaps ever before in the history of the organization. For the main body of the American Street & Interurban Railway Association one of the most important topics is that of State and federal legislation. A new condition, so far as the electric railway companies are concerned, has arisen during the past two or three years which will require the application of the best thought on the part of the railway managers, governmental authorities and all versed in political and economic questions. The policy of governmental ownership of steam railways and of municipal ownership of urban railways never aroused very much enthusiasm in this country. It was of European origin and essentially adapted to conditions other than those which prevailed in the United States, and the foreign exotic never flourished here or showed any indication of material growth or suitability to the conditions here existing.

The history of government control or regulation of public utilities is entirely different. Commencing as it did in federal matters, as illustrated by the Interstate Commerce Commission and legislation similar to that of the Hepburn act, it has been taken up by different States, some of which have gone farther than others. I am far from believing that strict supervision of the securities issued by street railway companies, the condition of a company's physical property and the regulation of its operation, if intelligently and impartially directed, will be detrimental to the interests either of the companies themselves or of the public. But whether it is a menace, as some believe, or is not, as held by others, it has undoubtedly come to stay in one form or another. Some of the laws passed by different States on this subject are drastic, some have much to commend them, some seem to be ill-advised. The whole subject is one which demands most careful consideration and hearty co-operation on the part of both railway companies and authorities, if a satisfactory solution is to be reached.

The question of commission regulation of public service utilities implies, or should imply, co-operation in securing betterments in the transportation service and a greater

security for invested capital in these important industries. There have been three serious obstacles in the past with which railway managements have had to contend. One has been the lack of sympathy, or, perhaps quite as often, unwarranted prejudice against the railway companies on the part of the public, owing to misunderstanding of the high cost of the equipment required, the expense of providing transportation and the taxes which the railway companies pay for the use of the streets. Part of this may have been due to absence of full publicity in many States of annual and operating reports, but whatever the cause the companies have been the chief sufferers. The second obstacle has been the absence of a responsible and intelligent single body with sufficient power to review matters both of construction and operation, grant franchises upon reasonable terms when they were for the interests of the public and ameliorate the conditions of the latter, even to granting permission for an increase of fare when the conditions warrant, as has been done in Massachusetts. The third condition which has handicapped the railway companies in the proper development of their properties has been the anomalous condition in some States of awarding franchises, by which the status of the company's investment in the public streets upon the termination of its franchise is at least uncertain. Under these conditions it has often been difficult to raise capital except under arduous terms. Through its committees on public relations and municipal ownership the association is studying this problem and through its main office is collecting statistics which will be of value in determining the best solution for many of the questions involved.

Another committee appointed at the last meeting was that on the revision of dues. The purpose of the appointment of this committee is to go carefully over the subject of annual dues paid to the association with the idea of possibly making them more equitable.

Other committees of the American Association which have been appointed to carry on special investigations in each of the departments indicated by its title are: Compensation for carrying United States mail, insurance, education, welfare of employees and the committee to consider the suggestions contained in ex-President Goodrich's address.

THE LOCATION OF THE 1909 CONVENTION

The place of meeting in 1909 will be determined at the meeting of the executive committee to be held in New York the latter part of January. Every effort will be made to have the attendance the largest in the history of the association. It is probable that the convention will be held somewhere in the Middle West. This plan will not only be a convenience to the member companies in that section which have sent representatives East for the two last successive years, but will give an opportunity to the many new companies which have been organized in that rapidly developing part of the country and have not yet joined the association to become acquainted with its scope.

WORK OF THE AFFILIATED ASSOCIATIONS

It is difficult to designate which of the technical associations affiliated with the American Association is of most importance to the welfare of a railway company. Each is undertaking work in its respective field which is of vital interest to the operating department.

ACCOUNTANTS

It might be invidious to refer to the establishment of a standard classification of accounts as the most important service rendered by the Accountants' Association through its honorable career, but this work has been of the greatest practical value, revised and amended as it has been by the association as the occasion demanded and as the needs of the railways grew. The promulgation of a new classification of accounts by the Interstate Commerce Commission, in the preparation of which it had the assistance of the Accountants' Association, will create a need for still greater services from this association, but the past history of the organization indicates that this work will be properly done. It must not be expected that a classification of the form recently promulgated by the Interstate Commission, and adopted in whole or in part by many of the State commissions, can be put into immediate force by the companies easily. Even if practice does not disclose any changes which will be required in the classification itself, the plan will involve changes in many blanks and forms used by the companies, as well as in the organization of their accounting departments. In devising methods of simplifying this work alone the Accountants' Association can render the street railway industry a tremendous benefit during the next few years, until the companies which adopt the new classification become accustomed to the new forms. This work will also result in saving money for every company that becomes entitled by membership in the American Association to participate in its benefits. It belongs with great propriety within the province of the Accountants' Association, which in the past has given as much attention to the methods of conducting the accounts of railway companies as to questions of classification. The development of interurban railways is also bringing changing needs in the systems and policies of accounting, while the application of electricity to heavy forms of traction is opening still other problems which can best be solved by the broad plan of co-operation which the Accountants' Association represents. Notable is the appointment this year of a committee on interline accounting to shape a class of questions entirely new to the industry.

ENGINEERS

To the Engineering Association have been assigned all of the questions relating to engineering topics which occupied the attention of the main association up to a year ago, such as car house construction, car wiring and standardization, as well as the subjects on which this association had previously been engaged and in which it had secured results which are of benefit to every member company. Of these the one of greatest economic importance is perhaps that of standardization, on which two reports have already been rendered. Up to this time the effort in standardization has been confined to rolling stock, but during the coming year a change has been made in the organization of the committee on standardization by which the committee will include among its members the chairmen of those other committees of the Engineering Association which have charge of the branches particularly affected by the establishment of standards, thus increasing the effectiveness of the work. While the topic of maintenance and repair does not lend itself in the same way as that of construction to standard forms, it is equally, or almost equally, susceptible of improvement in the direction of standardization of methods, dimensions and parts. This was clearly demonstrated by the report of the committee of the Engineering Association last fall on subjects of maintenance and inspection and on economical maintenance, in both of which the practice of the companies investigated throughout the country in repair methods was

tabulated and considered. Similar beneficial work has been initiated in car house design and the best methods of protecting car houses and the cars stored in them from fire by the committee on car houses and that on insurance. The subjects of overhead construction and transmission lines possess equal interest and value for investigation, and are cared for by separate committees, while power generation, a fruitful topic for investigation, demands and is receiving careful thought. The plan to include the purchasing agents in the Engineering Association is a wise move, as it will lead to closer associations of these two important branches of the industry.

CLAIM AGENTS

The meetings of the claim agents have proved, if any proof was necessary, the advantages of association work. Railway companies, and especially street railway companies, have long been considered a fair field for accident fakirs and shyster lawyers. An accident fakir rarely repeats his doings in the same city, but until the organization of the Claim Agents' Association there was little to prevent him from victimizing the companies in one city after another, except by a tedious and expensive process of correspondence between individual companies. Through the Claim Agents' Association, however, a general bureau of information has been established, by which prompt reports of suspicious cases and characters are transmitted to the headquarters of the association and the opportunity for the successful prosecution of fraudulent claims is greatly reduced. This service would alone justify the work of the claim agents, but it is by no means their only claim for support. The annual meetings are devoted to discussions not only of methods of caring for accident claims after they have been commenced, but of reducing the number of accidents, and one of the most important plans for the coming year is the establishment of a joint committee of the Claim Agents' Association and Engineering Association, by which the experience of the former on the causes of accidents will direct the efforts of the latter to changes in the equipment by which it is hoped the causes will be removed.

TRANSPORTATION & TRAFFIC

To the lately organized Transportation & Traffic Association have been assigned the questions to which the attention of the general manager and general superintendent of a company are especially directed. This includes the formulation of standard rules for city and for interurban service, which has been assigned to standing committees of the association. In previous reports rules have been formulated for each of these branches of electric railway service, and experience has shown that these must be revised and extended each year to meet the changing conditions of electric railway service and embody the lessons acquired through experience.

At the last meeting of the association a series of papers was presented on the subject of publicity in its relation to the promotion of traffic, and it is proposed during the coming year to investigate this subject still further and determine the economic relations between the expenditures for advertising street railway parks and other means of stimulating traffic and the net income thereby induced. The most important work of the Transportation & Traffic Association during the coming year will be that of the committee on training of employees, and the preparation of papers upon this subject to be read and discussed at the next convention. There is no greater or more appreciated public service than the intelligent effort of the trained and efficient employee to please the patrons of the road.

STATISTICAL BUREAU AT ASSOCIATION HEADQUARTERS

One object of establishing permanent headquarters for the association was to permit the engagement of a statistical force to secure and disseminate information which would be of value to the member companies. The bulletins which have already been prepared and issued through the secretary's office have proved so helpful that it has been decided to increase this department and thus insure a continuation and extension of this work. The office of the association in New York is being more generally recognized than ever before as the natural headquarters for the railway managers who are visiting the city, and it is hoped that those who have not used the office for this purpose will do so. It is the purpose to make the office the source of any information which a railway company requires in the operation of its service, and if there is an inquiry for data which is not on file in the office an effort will be made to secure it.

The present organization is no longer an untried experiment. In 1905, when the plan was first suggested, there may have been many who doubted its wisdom. But the association has demonstrated its value to the industry. The tendency of the times is overpoweringly toward co-operative and concentrated effort, and the need for this effort can be supplied only through an active association. This object the American Street & Interurban Railway Association fulfils and expects to perform more efficiently each year. Whether the problems to be solved relate to engineering, accounting, legal or transportation matters, the association is prepared to undertake them. The field for the association exists and is fallow, but it remains with each company and each individual connected with the industry to decide to what extent he or it will participate in the work.

CONTRACTS FOR NEW HIGH-TENSION SINGLE-PHASE RAILWAYS IN SWITZERLAND AND ITALY

The Allgemeine Elektricitäts-Gesellschaft, of Berlin, has secured a contract for the Lötschberg line of the Berner Alpenbahn-Gesellschaft for the supply of one electric locomotive, which will be equipped with two 15-cycle single-phase motors of the Winter-Eichberg type, each having a one-hour rating of 800 hp. The line pressure will be 15,000 volts. The maximum speed will be 75 km (46.5 miles) per hour, the normal one about 40 km (24.8 miles) per hour. The maximum tractive effort will be 13,500 kg (29,754 lb.). The locomotive is to consist of two parts, each of which will have two driving axles and one trailing axle, so that the whole locomotive will possess six axles, four of which will be used for driving. The motors are to be mounted directly on the axles, the wheels of which will have connecting rods. The overhead equipment contractor has not yet been announced.

The same company has equipped the Padua-Fusina, which has a length of about 35 km (27.7 miles). It is a single-track line for standard gage. The line pressure is 6600 volts, but 600 volts will be used where the line enters Padua. The overhead construction is of the catenary type. The rolling stock comprises 10 motor cars and six trailers. Each motor car is equipped with two 25-cycle single-phase motors of the Winter-Eichberg type, each having a one-hour rating of 65 hp. The running speed on the level is about 40 km (24.8 miles) per hour.

HIGH-TENSION CURRENT COLLECTION—SOME RESULTS OF THE SWEDISH ELECTRIC RAILWAY TESTS

BY OTIS ALLEN KENYON

A great deal of attention has been given to the subject of the collection of high-tension currents from an overhead wire at high speeds on the Continent of Europe. As the readers of this paper know, many of the electric railways in Europe have long used the sliding bow instead of the trolley wheel. Hence, when the single-phase system became a commercial possibility it was natural that the sliding contact should be given special consideration by the German contractors who were familiar with the use of the system for tramway purposes. During the recent tests on single-phase railway operation, conducted by Robert Dahlander under the auspices of the Swedish Government, special attention was given to the subject of the best design of overhead conductors and collectors for high-speed single-phase railway operation. The results of these tests are now available through the publication of a voluminous report by the engineers in charge of the work. This report is available now in printed form only in Swedish, but the early publication of an edition in German is announced, and it is quite possible that it will be translated into English. The following notes on recent European practice in overhead construction and current collection are based largely upon this report, but are amplified by data on the same subject from other sources.

Types of overhead construction can be divided into two classes according to the method of suspending the contact wire, thus:

1. Direct suspension by span wires, brackets or bridges.
2. Suspension from messenger wire or wires by hangers placed at short intervals.

Various types of both these classes were thoroughly tested by the Swedish Electric Railway Test Commission, and a new type of the first class, or direct suspension, was developed which, according to the report, is considered best adapted to the needs of the Swedish railways. The three most important points to be considered in overhead construction are: insulation, operating performance and cost.

INSULATION

So far as insulation is concerned, the second class of overhead suspension mentioned above, the catenary, has fewer points of support than the ordinary span, bracket or bridge construction, and therefore requires fewer insulators. Other things being equal, the chances of breakdown due to defects in insulators are directly proportional to the number of insulators.

In the tests of the Swedish commission, the voltage on the contact wire varied from 5000 to 20,000, and the average working voltage was from 12,000 to 13,000. The results indicate that either class of overhead system can be satisfactorily insulated for these voltages. The weakest point in both systems seems to be the insulation of the collector. It was here that breakdowns invariably occurred when the highest voltages were tried in the Swedish tests. The commission recommended 15,000 volts as a conservative choice for the Swedish railways.

As regards the insulators themselves the commission found that, all things considered, brown-colored porcelain was the best material. Among other patent insulators, ambroin was tried out and, although it was mechanically stronger than porcelain, it was found that both its dielectric strength and insulation resistance decreased with exposure to the weather. It also costs from 50 to 100 per cent more than porcelain.

A great many shapes of insulators were tried, the most successful being those shown in Fig. 1. The form shown at the left in the diagram is intended for use where fixtures are to be clamped around the top of the insulator. The petticoats are designed to prevent the clogging of the space between them with soot and dirt.

Experiments were also tried with the Oerlikon system of overhead construction, but the report states that it is not very satisfactory on a high-speed road where there are many crossings, bridges, tunnels, etc. In the open where the collector can run along on top of the contact wire the system has the advantage of being cheap to install and easy to repair. With the Oerlikon construction, also, it is easy to have two independent contact wires, one on each side of the track. The troubles experienced with this system are all due to the necessity of bringing the wire from alongside to a position over the middle of the track. The transition must be smooth and requires that supports of special design be placed at short intervals, thus increasing the cost and reducing the reliability. Then again, the effect of high speed is to extend the zones on each side of the crossing where this complicated construction is required, since the change in position of the collector must not be made too suddenly. The Swedish report also states that the Oerlikon overhead line is difficult to insulate properly. Though the

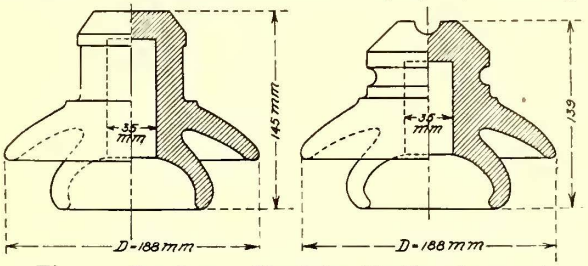


Fig. 1.—Insulators Used for Trolley Suspension

section used in the Swedish tests was built for 15,000 volts, it could not be operated satisfactorily above 6000 volts.

OPERATION

Both classes of overhead construction operated satisfactorily at low speeds, but the first class, that is, the span construction, ceases to operate well when the speed exceeds 70 km per hour (approximately 45 m.p.h.). As the speed increases the spans must be shortened until a point is reached where it is better to use the catenary form of construction. The shortest span which it is practicable to use on straight track seems to be 30 m (or approximately 100 ft.).

Tension in the contact wire must be kept within a certain range or trouble will result. In cold weather the wire is liable to break and in warm weather it may become so slack as to render the operation of the collector impossible. Experiment showed that unless some automatic device for maintaining a constant tension was installed, the tension had to be adjusted once or twice a year. The proper operation of the collector required that the tension in the contact wire exceed 4 kg per square millimeter (or 5700 lb. per square inch).

Fig. 2 shows the type of construction recommended by the commission for operation at 15,000 volts and average speeds of about 40 m.p.h. There are two lines of poles, one on each side of the track, and each line of poles carries a separate single-phase feeder. Except on curves the trolley spans are 30 m (about 100 ft.) in length, thus making the feeder spans 60 m. The brackets which carry the con-

tact wire are movable about their point of attachment to the pole and the ends of the contact wire are loaded with weights which thus maintain a constant tension in the wire. In case an insulator breaks, the bracket can be swung around out of the way and repaired and the wire will automatically pull up so that trains can pass at reduced speed. In station yards where it is desirable to reduce the number of poles to a minimum, the type of construction shown in Fig. 3 is used. Here the poles are staggered at intervals of 60 m and a guy wire run from the center of the span to the top of each pole.

COST

The catenary or second class of overhead construction, while more expensive to build, is more substantial than the span wire construction and, having fewer supports to be insulated, should be more reliable and cheaper to maintain. For speeds above 50 m.p.h. the catenary type of construction must be used regardless of the cost of installation if smooth operation of the collectors is to be obtained.

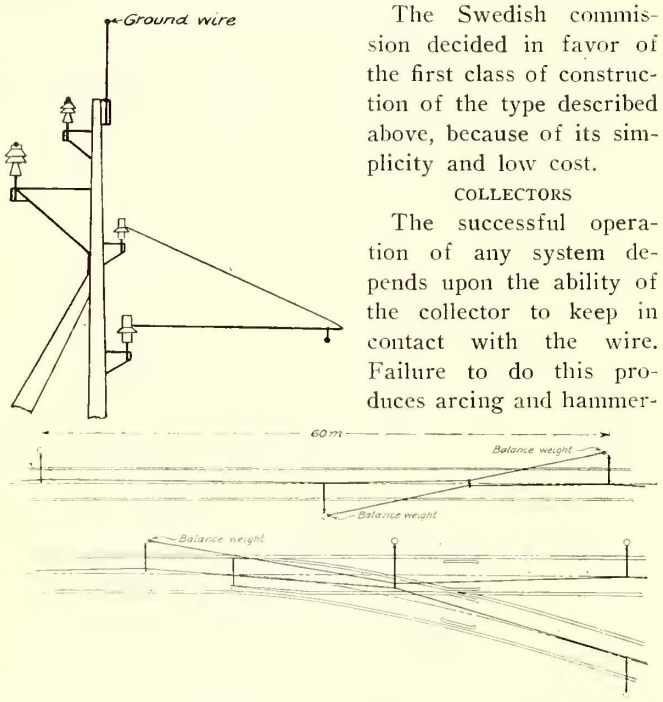


Fig. 2.—Overhead Line Construction with Double Line of Poles for Feeders

The Swedish commission decided in favor of the first class of construction of the type described above, because of its simplicity and low cost.

COLLECTORS

The successful operation of any system depends upon the ability of the collector to keep in contact with the wire. Failure to do this produces arcing and hammering. The arcing destroys both the collector shoe and the wire, while the hammering accelerates the wear, kinks the wire and breaks the fastenings. The difficulty of keeping the collector in contact with the wire increases very rapidly with the speed, and the minimizing of this difficulty is one of the important problems in high-speed operation.

The variations in the position of the wire over the track, and the swaying of the car require the collecting device to be so construed as to adapt itself to all such variations, thus forming a flexible connection between the wire and the car. At low speeds it is comparatively easy to design such a device, since all variations in position take place so slowly that the inertia of the collector does not prevent it from following the wire. However, at high speeds the effect of every little variation is exaggerated and tends to produce vibration. Large variations in position, such as are caused by passing under bridges, etc., when made gradually, have little or no effect on vibration. The three principal causes of vibration are:

(1) Unevenness of the contact wire, due either to imperfect suspension or non-uniform wear.

(2) Vibration and swaying of the car or locomotive.

(3) Inertia of the contact device.

Unevenness of the contact wire due to the sagging between the supports, as explained, can be reduced to a minimum by use of the catenary type of suspension. The non-uniformity of the wear is more an effect than a cause. It is produced by the action of non-homogeneous material, arcing and non-uniform pressure on the contact wire.

The vibration and swaying of the car can be reduced to a minimum by careful ballasting of the track. Furthermore, in cases where very high speeds are reached, the cars themselves may be balanced. In the Berlin-Zossen tests, where the cars attained speeds of 130 m.p.h., it was found absolutely necessary to balance the cars in order to keep them on the track. At high speeds, however, vibration and swaying of the cars cannot be entirely avoided, and no matter how well the wire is suspended, it cannot be made absolutely parallel to the plane of the track. The collecting device must follow these variations of car and wire if it is to remain in contact, otherwise there will be arcing which will destroy the contact surface, and hammering of the wire which will produce non-uniform wear of the wire. Both of these causes still further exaggerates the trouble. If the collector is to operate with perfect satisfaction, the natural period of vibration of the part that carries the contact shoe must be greater than the highest vibration which it will be called upon to make.

The experience of the New York, New Haven & Hartford Railroad, as given by W. S. Murray in his last paper before the American Institute of Electrical Engineers, illustrates this point and shows the disastrous effect of attempting to collect current at high speed by a heavy contact device with low natural period of vibration. The method followed by the New Haven road to reduce the trouble consisted in rigidly suspending by clamps an auxiliary steel wire from the old copper conductor. That this expedient has not been a perfect remedy is shown by the statement in Mr. Murray's paper that probably even better results could be obtained by suspending the auxiliary wire by loops instead of rigidly from the copper conductor.

In appearance, the New Haven auxiliary wire construction is very similar to the type of construction installed some years ago by the Siemens-Schuckert Company on the Hamburg-Blankenese road, and described in the Street Railway Journal for April 6, 1907. However, it is quite different in principle. On account of its rigid construction the practical benefit of the introduction of the steel wire on the New Haven road is limited to that which results from substituting for copper a metal that can stand the treatment administered to the contact wire by the collector, there being no gain in the flexibility in the construction other than that due to the character of the metal itself.

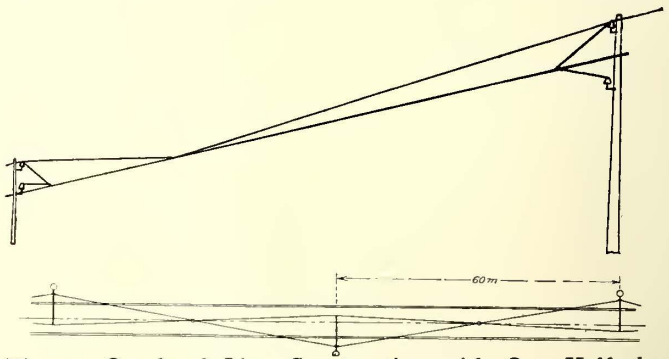


Fig. 3.—Overhead Line Construction with One Half the Usual Number of Poles

The Siemens-Schuckert system does not employ a steel wire but one of hard copper, the purpose of the auxiliary wire being solely to reduce vibration. The whole secret of the improvement lies in the use of a special clamp, which allows a longitudinal and vertical movement of the contact wire of the kind recommended by Mr. Murray as advisable. The tension in the contact wire is adjustable and is automatically maintained constant by balance weights.

The principal types of sliding contact collectors used in Europe are shown schematically in Figs. 4 to 9.

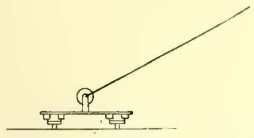


Fig. 4.—Plain Bow Collector

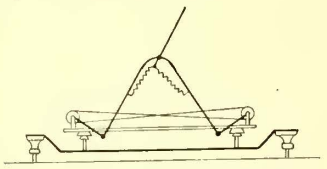


Fig. 5.—Siemens-Schuckert Collector for Swedish Tests

Fig. 4 shows the plain bow trolley employed on the direct-current street railway systems. It can be used for high tension when mounted on porcelain insulators. The arm is balanced by springs so disposed as to exert a uniform pressure of about 5 kg (11 lb.) against the wire, independent of the angular position. The arm is long and therefore the natural vibration period of this system is low. In the Swedish tests it was found entirely unsuited to speeds above 25 km per hour (15 m.p.h.).

The Siemens-Schuckert Company designed the type shown in Fig. 5, which was tried out during the railway tests in Sweden. This device consists of two parts: the main body, which is hinged to the stand in such a way as to take care of the large variations in height of the wire, and the upper piece, which carries the shoe and is hinged to the lower part. The upper part is about 80 cm (32 in.) long, and although the construction is very light, the length is such as to give it a natural period of vibration which limits the speed at which it will work satisfactorily. The report of the Swedish tests, however, does not specify the exact limitations of this type except that the bearing friction was found to be great and the balancing springs complicated as compared with other types tested. The same company built a similar device shown in Fig. 6, which is in use on the Hamburg-Blankenese road.

Fig. 7 shows a type which is a modification of the design of Brown, Boveri & Company used on the

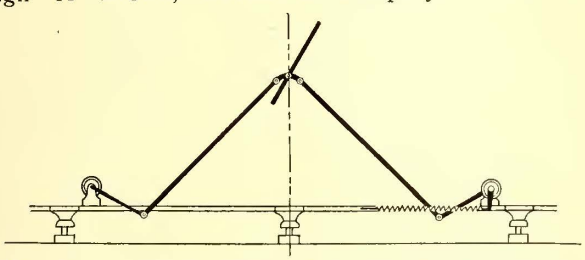


Fig. 6—Siemens-Schuckert Collector for Hamburg-Blankenese Line

Simplon locomotive. This form was developed by the Allmänna Svenska Elektriska Actiebolaget in consultation with the engineers of the Swedish State Railways. The device consists of two long arms so interconnected as to balance the wind pressure and exert a uniform pressure against the wire, as are all the modern types. The upper part, which is supposed to follow the variations of small amplitude, is pivoted to the end of the long arm and is equipped with stops in such a way that the rear upper contact arm cannot be deflected backward more than 30 deg.; this guards against the possibility of the forward bow refusing to lower at points where the wire descends into tunnels, under bridges, etc. If the front top bow gets stuck in one position the rear bow, not being able to bend backward more than 30 deg., will depress the front bow through the cross connections. This requires a rather long upper bow (80 cm), and therefore, as far as inertia goes, it has the same limitations as the design shown in Fig. 5.

The pantograph bow as designed by the Allgemeine Elektricitäts Gesellschaft is shown in Fig. 8, and like practically all of the other collectors built by European manufacturers, consists of two parts, one being a trailing collector. The pantograph or lower part takes up all the great variations in height of the wire, while the upper arm, which is very light and only 30 cm high, takes up the slight variations. This upper arm has a comparatively high natural period and therefore works very satisfactorily. In the Swedish railway tests, a simple aluminum contact shoe gave perfect satisfaction with this type of collector.

The side rod contact system, developed by the Oerlikon Company, has been described at various times in the pages of this journal. It is a very radical departure from the usual form and, as explained, involves considerable difficulty in the line construction and the operation at cross-overs, tunnels and bridges where the contact wire must be

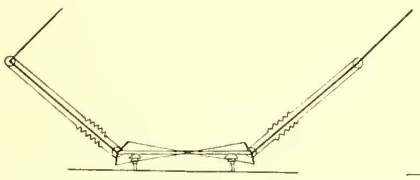


Fig. 7.—Collector Designed for Swedish Tests

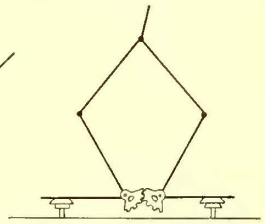


Fig. 8.—A. E. G. Pantograph Bow Collector

gradually brought up from a position alongside to a point over the car. This system was installed on one section of the test tracks in Sweden and tried at moderate speeds (45 m.p.h.) and with 6000 volts on the contact wire. The special overhead construction required, like all types of direct suspension, is not suitable for high-speed work, although on straight track in open country the collector seems to follow the wire with but slight sparking at the supports. The principal disadvantages pointed out in the report of the Swedish commission are: Short distance of the high-tension contact wires over the track in stations, due to the necessity of keeping the pivot of the collector rod inside the clearance limits; complication and cost of overhead construction under bridges, in station yards, at crossings, etc.; liability of the collector rod catching in the contact wire at crossovers and switches, and poor contact on curves taken at speed when the wire is on the inside, due to centrifugal force lifting the rod and causing it to vibrate against the wire, producing vicious sparking.

CONTACT SHOE

The wear of the contact shoe does not mean much unless the wear of the contact wire is also known. However, if aluminum or some soft alloy is used it is fair to assume the wear of the contact wire is negligible compared with that of the shoe. Siemens & Halske build a shoe that is U-shaped in section, the inside being filled with a hard grease. This reduces the wear and also the singing, which is sometimes objectionable.

Wear of the wire and shoe can be traced to two causes,

mechanical and electrical. The mechanical causes are due to pressure and cannot be entirely eliminated. Non-uniformity of pressure is the most serious trouble. The springs can be so designed as to make the pressure constant for any position of the collector. However, the speed at which the collector changes its position affects the pressure to an extent which can only be controlled by reducing the inertia of the mass to be moved. Throughout Europe the average pressure of the contact shoe against the wire is about 5 kg (11 lb.). An exception to this practice is the Oerlikon collector, which exerts only 0.7 kg (1.5 lb.). This low pressure is necessary on account of the great length and lightness of the rod. A greater pressure would necessitate a heavier rod and introduce greater inertia.

The electrical causes are secondary, being due to arcing, which is caused by insufficient contact surface. Arcing is especially destructive in that once started the surface is left more predisposed to arcing than before and conditions rapidly go from bad to worse. The cause is due to imperfect contact and vibration and the resulting wear is a function of the current rather than of the power. For a given power the lighter the voltage the less destructive is the arc. Soot deposited on the contact wire by steam locomotives increases the wear to an astounding extent. The Swedish commission found that the wear of the shoe on a soot-covered wire is about 10 times as rapid as on a clean one. In these tests the Oerlikon collector wore out at an extremely rapid rate. The rod was of brass 9 mm in diameter, and had to be removed after traveling between 200 and 400 km. The aluminum shoes on the other types of collectors ran about 2500 km (1500 miles on soot-covered wires. It is estimated in the report that on clean wires they would run at least 20,000 km (12,500 miles). The practice of the Swedish tramways indicates an average life of such shoes, when used in tramway service, of 20,000 km (12,500 miles) before renewal, but if left until worn out they will run as high as 100,000 km (62,000 miles).

CONCLUSIONS

The results of experiments made thus far seem to point to a type of collector which should consist of two parts, namely, a main part to take up the large variations in the height of the wire and an auxiliary part to take up the vibrations. The main part may be comparatively large and heavy and should be balanced for wind pressure and provided with springs arranged to exert a constant pressure irrespective of the position of the shoe. The auxiliary part, which should trail, must be light and designed to have a high natural period of vibration which will enable it to follow the most rapid vibrations of the car to which it will be subjected.

About 25 per cent of the total railway mileage in Italy is operated by electricity. There are 1792 motor cars and 952 trailers in service. Nearly one-third of the lines are operated by Belgian companies.

Fifty-three of the street railway companies in Germany, representing a capital of $81,840,000, earned net profits of $7,087,500 in the year 1907-8, or 9 per cent on the capital. Five of these companies, however, showed a loss of $3,375,000. The total average amount distributed in dividends was 6.5 per cent. Twenty companies paid dividends ranging from 2 per cent to 5 per cent; 23 paid dividends of between 5 per cent and 10 per cent, and three companies dividends over 10 per cent. Seven companies paid no dividends at all.

THE PROBLEM OF REDUCING ACCIDENT DAMAGES—I.

BY FREDERICK W. JOHNSON, ASSISTANT GENERAL CLAIM AGENT, PHILADELPHIA RAPID TRANSIT COMPANY

The subject of accident damages is to-day, always has been and doubtless always will be, more or less of a thorn in the side of the management of the average street railway property.

That such should be the case is, of course, to be expected. As a business proposition, it is a self-evident fact that this constant drain upon the resources of a company must in time become a menace of no little magnitude to the success and development of the enterprise. In many instances the situation has been still further complicated by the fact that, despite every effort of the past, no permanent material progress has been made in the direction of effecting a reduction in the demands upon the treasury of the company from this direction, leaving the outlook for the future anything but promising.

With many companies the management of its claim department in past years has proved to be a rather refractory proposition. In practically all of its other departments the company has been able to estimate and to gage the probable expenditures of the future in the light of those of the past. But with respect to its claim department conditions have been different.

It will hardly be necessary to enter into an extended discussion of the causes which contribute to, or which are largely responsible for, so unsatisfactory a condition of affairs. It is sufficient to say that the very nature of claim and of accident work is such as to render any forecast of the future extremely hazardous. We can figure with reasonable accuracy upon the probable cost of construction, maintenance or operation of this, that or the other department of the street railroad. But how are we to arrive at a conclusion regarding the possible cost of accidents which have not yet happened; of the extent and severity of injuries which have not yet been inflicted, or of the probable action of juries which have not yet been drawn?

That accident damages have been increasing in recent years in amounts that are out of all proportion to the normal increase in the business is a fact that is viewed with considerable apprehension in more than one section. That active measures will have to be adopted at no distant date to offset this tendency may be regarded as one of the certainties of the future. Just how this end is to be accomplished by each individual company will remain more or less of a problem until such time as its management awakens fully to the real seriousness of the situation.

The problem is one which will require the best thought and earnest endeavor not only of the officials of a company, but also of the rank and file, before satisfactory progress can be made in the direction of solution. It is, of course, possible for the management of a railway company to effect an arbitrary reduction in the expenditure or cost of operation of practically all of its various departments, save only the claim department, by the mere issuance of orders. But the situation in the claim department is so vastly different that a totally different course of action must necessarily be pursued in order to accomplish a reduction in expenditures.

Reviewing the past briefly for the purpose of ascertaining just what has been accomplished in the way of perfecting the organization and management of the average street railway claim department, one can but feel that in recent years encouraging progress has been made in this direction. Greater attention has been given to the work-

ings of this expensive and, for that reason if for no other, important department, with a decided increase in efficiency as a natural and logical result. Fortunately, the day seems to have passed when the claim department could be considered a harbor of refuge for the misfits and incompetents of all of the other departments. At the head of the average department of to-day one finds men of admitted business ability, capable, efficient and competent, who take the deepest possible interest in the business welfare of their employers and realize the importance of surrounding themselves with clean-cut, intelligent, energetic assistants. One finds further that the methods followed in conducting the affairs of the department are along intelligent, progressive, businesslike lines. The physicians employed by the department to aid in determining the extent and severity of injuries sustained by claimants are usually prominent in their profession, while the attorneys retained to assist in the preparation and trial of cases in court rank invariably among the ablest in their respective communities.

The formation of an association wherein men engaged in this branch of electric railroads might meet in annual convention, where views, opinions, experience and helpful suggestions may be freely interchanged for the purpose of bringing to the surface for mutual advantage the latest ideas in all phases of the work, unquestionably marked another step in advance. These and many other developments too numerous to mention clearly indicate a decided improvement over conditions which prevailed ten, or even five, years ago.

OPPORTUNITIES FOR FURTHER ADVANCEMENT

And yet, have the immediate opportunities for still further advancement really been exhausted? It will be admitted, we believe, that as far as the average claim department of to-day has been developed, its condition compares very favorably with that of other departments of the company. But is it not rather a fact that many of our claim departments have unconsciously stopped a trifle short of the actual possibilities for development in the claim and accident field? Either this is the condition or else it is necessary to admit that the accident damage question in its present proportions is a little beyond our control. We are strongly inclined to favor the former explanation for the reason that the average department has been devoting its efforts in recent years almost exclusively in the direction of perfecting its organization from the moment of the occurrence of an accident forward, so to speak. That it lay within the power of the department to deliver some mighty powerful strokes before the actual occurrence of the accident itself is a truth that seems to have been overlooked, or else underrated, in some quarters.

HOW CLAIM DEPARTMENTS CAN PREVENT ACCIDENTS

In order that we may make this point quite clear, let us attempt to express it a little differently. The tendency of the past with some companies has been for the head of the department to start the machinery at his command into active operation immediately upon receipt of notification of the occurrence of an accident. In some cases he has even gone to the extent of putting his department upon an emergency basis in order that instantaneous service might be given at any hour of the day or night. From the moment of the accident his organization has been as complete and as efficient as it has been within his power to make it. His outside force of investigators, inspectors and adjusters comprises men of experience and of ability. The surgeons and attorneys who assist him in their respective lines are men of excellent capabilities. The blanks and forms and methods in use by the department are of the most approved order. In short, the organization of his department, as stated, is as nearly complete as it is possible for him to make it.

And yet, suppose that the conductor or motorman of the car concerned in an accident should neglect to turn in a report of the occurrence to the company, as has happened times without number in years past! Suppose that the crew turns in a report, but fails to obtain witnesses to the occurrence because of a lack of appreciation of the vast importance of this feature! Well, little defects of this nature are sufficient in themselves to cripple and humble a department effectually, however thorough and complete its organization and management may be. There is nothing new or novel in this. It is merely a restatement of old conditions, advanced for the purpose of pointing out to railway companies the fact that they must of necessity go deeper than has been the practice in the past if a reduction in accident damages is really desired. The task of perfecting the organization of the claim department is of vast importance, but this, of itself alone, while it unquestionably will assist in checking the growth of the evil, never will accomplish much of value in the direction of effecting an actual bona fide reduction.

By way of illustrating this phase of the situation let us go briefly through the records of the average claim department for a period of three years, picking out a few cases at random, and noting whether there is any foundation in fact for this statement.

"In 1905 we note that a verdict of $1,000 was rendered against the company. What were the facts?"

"A passenger alighted from a moving car. The company was not responsible for the injuries which he sustained, yet he secured a verdict against us for the amount named."

"Why?"

"Because we were able to produce but one witness out of a carload of passengers. If we had only had three or four more of those passengers the verdict would have been in favor of the defendant."

"Why were you able to produce but one witness?"

"Because a careless conductor thought it unnecessary to obtain more."

"Well, now, you mentioned a case back in 1906 where you felt that the company had been mulcted of $3,000. How about that?"

"That was the case of the driver of a team. His horses got beyond his control and crashed into the side of one of our cars. The accident was unavoidable under the circumstances, our car being at a standstill at the moment."

"But why was the verdict of $3,000 given?"

"Because the trainmen were comparatively new men and did not appreciate the importance of obtaining witnesses, though there were plenty available at the time. It was the word of the teamster against that of the crew, and we lost."

"What was the nature of that $2,500 case in October, 1907?"

"That was the case of a passenger who was injured while attempting to board a moving car. The men failed to make out a report of the occurrence, as they felt at the time that the matter was of little importance."

"You have had other cases similar in character to these during the last three or four years?"

"Yes, we've had a good many of them, off and on. Somehow or other, our men don't seem to be able to get

the necessary witnesses to enable us to defend successfully our cases in the courts. And then, again, we have a number of unreported accidents each month; more than we should have."

"You have, then, long recognized the fact that this condition was seriously impairing the work of your department? In other words, you've known for the last three years that you were losing many of your cases in the courts because your men were not reporting all of their accidents, and also that in many cases the men were neglecting to obtain the necessary witnesses?"

"Yes."

"What, then, in view of this fact, have you been doing, or are you actually doing to-day, to remedy this defect? What measures have you adopted to prevent recurrences of these conditions in the years to come? If accidents of this kind have been costing your company $10,000 or $20,000 or $50,000 a year in the past, what efforts are you making to effect a saving in this direction?"

DISREGARD OF NEEDED WORK

Right here, it seems to us, is the crux of the accident damage problem of to-day. The question is a pertinent one, and can probably be considered to advantage by the great majority of street railway companies throughout the country, both large and small. To be perfectly frank, the fact of the matter is many of us have been plowing along for years with a studied disregard of the very field which offered the greatest possible opportunities for missionary work. We have been engaged busily in training everybody in the various branches of accident work, except the men upon the firing line, viz., the conductors and motormen upon the cars.

This is one of those unpleasant things that we do not like to admit; no, not even to ourselves. Yet the facts speak for themselves. Many times in the past, trial attorneys representing defendant companies have complained: "If we only had had two or three witnesses to that accident, the plaintiff's case would have been futile." It is not to be expected that unjust causes of action can be met successfully by defendant attorneys unless they have evidence with which to refute the fictitious facts advanced by claimants. Nor is it to be expected that they will have this evidence unless the foundation for it is laid by the men on the cars, who have the opportunities to obtain the names and addresses of eye witnesses. And, lastly, it is not to be expected that the men on the cars will give uniformly satisfactory service in this respect unless they have been instructed properly and thoroughly in this highly important part of their duties.

The practice has been followed generally of requiring the new employee to spend a certain number of days on the cars as a student, for the purpose of learning the runs, routes, operation of his car, the collection of fares, mysteries of the day-card, and so forth. Then he has been turned in as competent to handle his end of the car, and has been sent to headquarters for a final rehearsal, at which time he has received his instructions covering accident work. The superintendent proved generally to be a busy man, with but little time to devote to instruction work of this sort, and the recruit has been given a few perfunctory words of advice, usually terminating with this very suggestive admonition: "Now, be careful and don't have any accidents. We can't afford to have careless men upon the cars, you know. If you do have an accident, make out a report. Here's a rule book that will tell you all about it. Now, be careful not to have any accidents."

With this parting word ringing in his ears, the more or less bewildered recruit, who has had more advice and instruction shot into his system within the week than he could hope to assimilate in a month, goes forth to protect the interests of his employers against—he knows not what. Without chart or compass, he is set afloat upon the sea of accidents, to learn by bitter experience and at the expense of his employers that of which he should have been forewarned. If the conditions were other than those of a serious character, such extensive preparation would border closely upon the humorous. Probably the most unfortunate feature lies in the fact that his instruction course in accident work is now complete, for no provision is made for following this first effort up from time to time in order that he may be kept up to concert pitch.

But let us go back to those instructions for a moment. The superintendent who thus gave to the new employee the only instruction that he has received, or will receive, on this subject honestly believed that he had practically covered the essential features. And yet, as a cold-blooded matter of fact, he had in reality done more toward "padding" the "unreported accident" column of his employers than any other 10 men upon the system; for the principal thought that the new employee carried away in his head was this: "The superintendent said not to have any accidents; that means that if I do have one I'm done for here." And the result when the new employee meets with his first accident is about what might have been expected. If he gets away successfully with that first one, it encourages him to try the same tactics again. Meanwhile his employers get neither accident reports nor witnesses upon his mishaps. Furthermore, it may safely be taken for granted that he is not the only man upon the system who is following the same course in his accident work.

Some time ago an official of one of the larger systems of the Middle West was asked the question: "What do you do to keep down your unreported accidents?" The answer was: "Why, we lay men off, and frequently discharge them, when we find accidents unreported." This custom is representative of the course followed by many other companies in their fruitless endeavors to check growing abuses in this direction. Such a practice savors strongly of the old adage of "locking the barn door after the horse has been stolen," and of itself alone can accomplish but little good toward the end desired. At best, it is but a secondary measure of doubtful preventive value.

THE INCREASING TOLL FOR DAMAGES

Is it to be wondered that the annual toll for accident damages continues to increase steadily in volume? Is it overstating the facts to say that much of this annual waste is traceable directly to the languid, apathetic manner in which many of our electric railway companies have viewed the subject for years past? If a reduction in accident damages is actually desired, it can be brought about only through the adoption of active measures, planned intelligently, applied systematically and carried through energetically to ultimate success. No haphazard, hit-or-miss, narrow-gage policy will insure results of a permanent and satisfactory nature.

That a material reduction in the number of preventable accidents, as well as in the matter of accident damages, is entirely feasible stands to-day as an established fact, as demonstrated by companies which have taken the matter up seriously. Furthermore, that the real possibilities of work of this character are practically unlimited, and that the results obtained are but the merest fractional part of

what should follow in the natural course of events must also be accepted as established facts.

It should be understood clearly, however, in considering a subject of this character that distinction must be made between claims which are just and those which are unjust; between those which are founded upon fact and those which are not; between demands growing out of just claims which are fair and reasonable and those which arise out of just causes of action, but are clearly unreasonable or exorbitant.

The thought, therefore, should be in the direction of accomplishing a reduction in expenditures by operating against false, fraudulent, unjust and exorbitant claims, rather than as an arbitrary movement against all classes of claims, irrespective of their individual merits.

In the papers which follow there will be given, as comprehensively as limited space will permit, a resumé of the results of five years' experimental and research work in the field of instructing street railway employees in the various branches of accident work. Progress has not been as rapid as might have been desired, due primarily to the fact that the trail has had to be blazed much of the way as the possibilities of the work unfolded, and also to the fact that nine-tenths of the work has been carried on independently of and in addition to regular departmental duties.

In considering the subject it may be well to bear the following facts in mind:

That 10 critics of the work will be encountered to one supporter. It is urgently recommended, however, that choice front seats be reserved for these critics, as experience in the past has demonstrated the fact that they will be among the first to come tearing breathlessly into camp as soon as encouraging results begin to show above the surface.

That no claim is made that identically the same methods will produce identically the same results in each individual locality. The underlying principles of the work, however, are pretty much the same the country over. The application of these principles must be governed to a certain extent by the local conditions existing in each particular community.

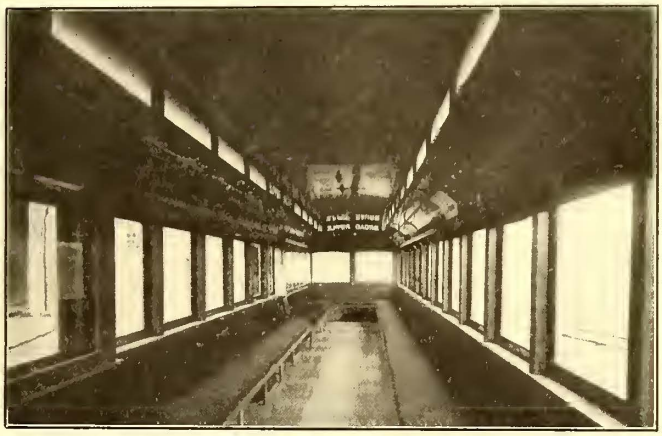
That if the material is prepared properly, and the plan of campaign drawn properly, it will be found that the men on the cars will be as anxious to receive the instruction as the company is to impart it.

Finally, that it will require unlimited time, patience and energy to produce the desired results. Adverse conditions which have been in force in a community for many years cannot be overcome satisfactorily by the work of a few months. In some instances it will require many, many months' work before the encouraging results will begin to appear all along the line.

(To be continued)

A UNIQUE CONVERTIBLE CAR

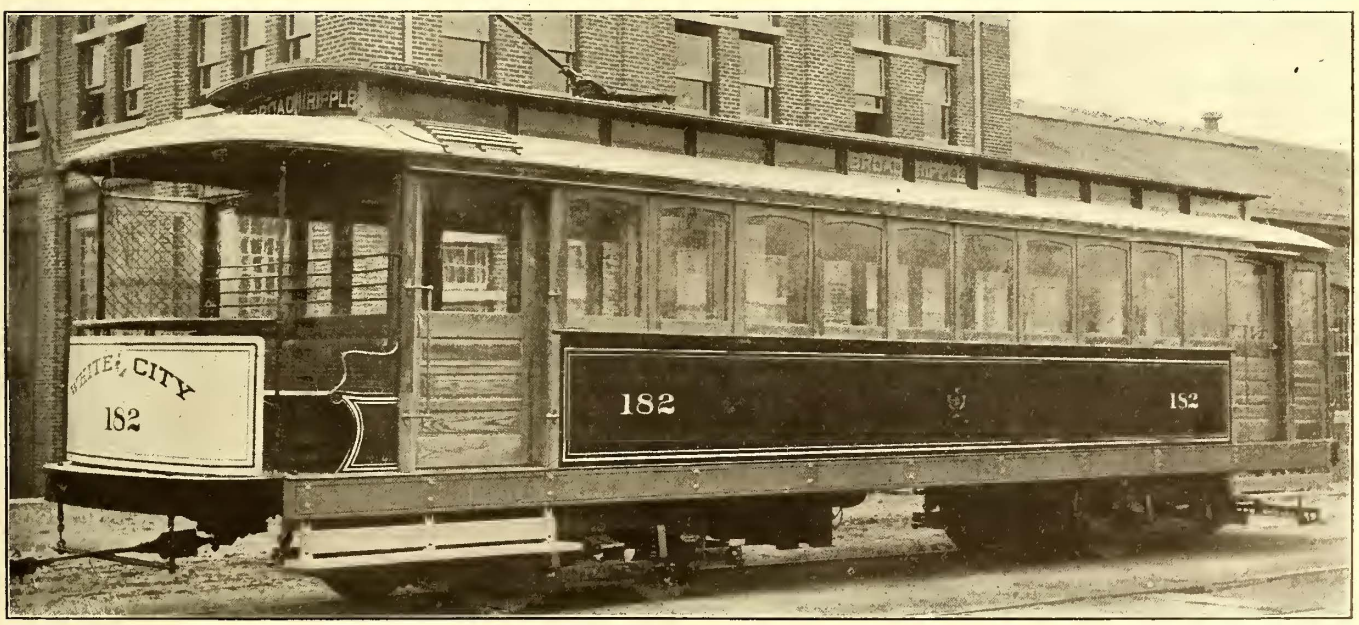
The accompanying halftones and elevation show a solution of the convertible car problem as worked out on the



Interior of Broad Ripple Car in Winter

Broad Ripple line of the Indiana Union Traction Company. The following details, as well as the illustrations, were furnished through the courtesy of R. C. Taylor, superintendent of motive power.

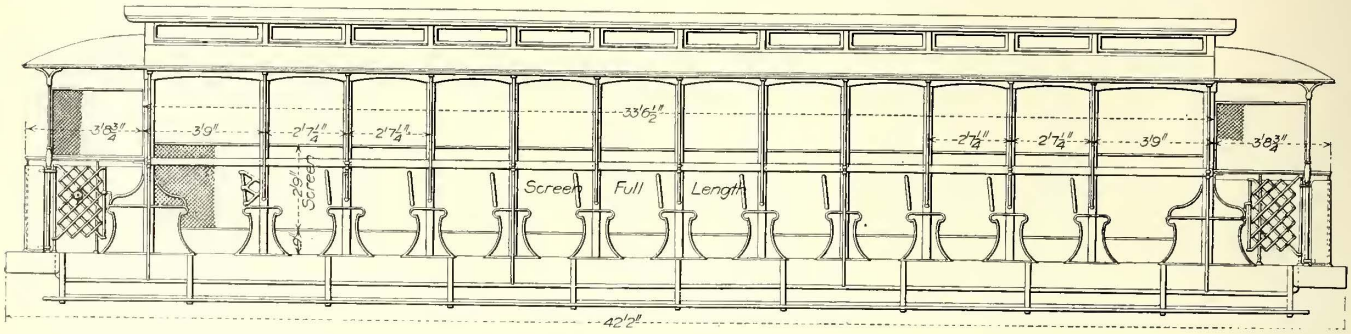
Before alteration the car was an open cross-seat car of the 15-bench type made by the Cincinnati Car Company. The alteration consisted in making the closed sides and sash removable and installing longitudinal seats, but leaving the end benches in as before. The car body proper was not changed in any particular, so that the sides and seats may be readily removed and the ordinary open car



Broad Ripple Car in Winter Service, Showing the Application of Side Doors without Disturbing the Bulkheads

seats replaced. In winter the car is heated by electric heaters, which are attached to the winter seats and removed with them.

The arrangement of side doors shown is unique, and was decided on to save cutting the end bulkheads. The end side door is operated by air from the front vestibule.

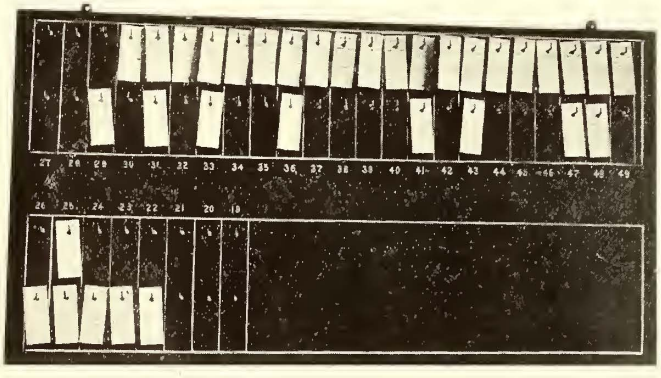


Broad Ripple Car—Side Elevation, Showing Car as Used for Summer Service

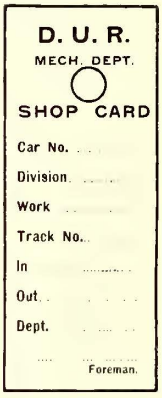
The rear platform has been left open and the front vestibule has been closed with drop sash, and is intended to be left on for both summer and winter operation. The car is equipped with Brill trucks, Westinghouse No. 93 A motors and Westinghouse automatic air brakes. It is 42 ft. 2 in. long over all and 33 ft. 6½ in. long between bulkheads.

CAR REPAIR RECORDS OF THE DETROIT UNITED RAILWAY

Sylvester Potter, master mechanic of the Detroit United Railway, has adopted a simple system for keeping car repair records at the main shops of that company. When a car comes into the shops it is accompanied by a conductor's tag, indicating the defects to be repaired. In the office of the master mechanic is kept a card index of every car on the system, using cards 12 in. x 9½ in. in size. The ruling of one of these cards is reproduced in an accompanying illustration. As the cars come to the shop the dates on the conductor's tags are entered in the left-hand column of the record card bearing the same number as the car number, together with the station or car barn from which the car was sent to the shops. The foreman of each department of the shops turns into the master mechanic's office at the end of each day a report made out on a blank, 8¼ in. x 10½ in., ruled with spaces, showing the numbers of all cars leaving his department on that day, and the nature of the repairs made to each car. From these daily reports a clerk enters the repairs made to each car on the proper card in the record index. When a car leaves the shop and is returned to service the date is entered in the third column of its card. Both sides of the index cards are ruled alike, so that a large number of entries can be made on a single card. In this way a complete and condensed history of each car on the system is kept in one small case in the office.



Detroit United Car Repair Record Board



Repair Record Tag

Another simple and convenient feature of the system of shop records used by this company is a board mounted on the wall of the master mechanic's office, which shows at a glance the location of every car in the shops. This board is 36 in. long and 18 in. high, and is ruled into 31 rectangles, representing the 31 repair tracks of the Monroe Avenue shops. These tracks accommodate two cars each, and in each space on the board are two hooks on which small record tags are hung. These tags, one of which is reproduced, are 1¼ in. x 3 in., and are printed as shown. When a car is brought to the shop for overhauling several of these cards bearing the number of the car and the division from which it was sent are made out, and one is given to the foreman of each shop department through which the car will pass. As each department finishes its work on the car the foreman signs the record tag and turns it in at the master mechanic's office, where it is hung in the space corresponding to the track on which the car is standing. When a car is moved from one track to another the tags on the hook are shifted. A master tag, bearing the car number and a brief summary of all repair work to be done, is made out in the office and hung on the hook with the shop tags. It serves to check the progress of the work in all departments.

FORM 451 A

DETROIT UNITED RAILWAY
CAR REPAIR RECORD
MONROE AVE., SHOPS

Car No. ..... Type .....

Date on Tag	Station	Date Repaired	CLASS OF REPAIR

Detroit United Car Repair Record Card

SECOND CONDENSATION OF OPERATING EXPENSE ACCOUNTS FOR NEW YORK ROADS

The second condensed scheme of accounts for street railroad corporations prescribed by the New York Public Service Commission, Second District, and comprising the system for corporations with gross operating revenues amounting to less than $100,000 a year, has been issued. As has been stated in previous articles relating to this system of accounts, the condensations apply only to the operating accounts. The balance sheet accounts and traffic accounts remain the same for corporations of all classes.

The titles of the primary accounts in the complete system, with the operating expense accounts for lines with annual operating revenues of $500,000 or more, were published in the ELECTRIC RAILWAY JOURNAL of Nov. 14, 1908, page 1373.

The titles of the condensed primary operating expense accounts, for corporations with annual revenues of $100,000 or more, but less than $500,000, were published in the ELECTRIC RAILWAY JOURNAL of Dec. 12, 1908, page 1567.

Following are the operating expense accounts for roads with gross operating revenues of less than $100,000 a year:

I. MAINTENANCE OF WAY AND STRUCTURES.
- Superintendence of way and structures.
- Roadway and track repairs.
- Cleaning and sanding track and removing snow.
- Other repairs of way.
- Repairs of electric power line.
- Repairs of buildings and structures.
- Other operations—Dr.
- Joint way and structures—Dr.
- Other operations—Cr.
- Joint way and structures—Cr.
- Depreciation of way and structures.

II. MAINTENANCE OF EQUIPMENT.
- Superintendence of equipment.
- Repairs of power plant equipment.
- Repairs of substation equipment.
- Repairs of cars and locomotives.
- Repairs of car and locomotive electric equipment.
- Miscellaneous equipment expenses.
- Other operations—Dr.
- Maintaining joint equipment—Dr.
- Other operations—Cr.
- Maintaining joint equipment—Cr.
- Depreciation of equipment.

III. TRAFFIC.
- Traffic expenses.

IV. CONDUCTING TRANSPORTATION.
- Superintendence of transportation.

GROUP I. POWER.
- Power plant labor.
  - a. Power plant superintendence and care.
  - b. Boiler room labor.
  - c. Producer labor.
  - d. Engine labor.
  - e. Electrical labor.
  - f. Cable power plant labor.
- Substation labor.
- Fuel for power.
- Other power supplies and expenses.
- Power purchased.
- Jointly produced power—Dr.
- Power exchanged—balance.
- Other operations—Dr.
- Other operations—Cr.
- Jointly produced power—Cr.

GROUP II. OPERATION OF CARS.
- Conductors, motormen and other trainmen.
- Miscellaneous transportation expenses.
- Joint operation of cars—Dr.
- Joint operation of cars—Cr.

V. GENERAL AND MISCELLANEOUS.
- General administration.
- Insurance.
- Relief department and pensions.
- General amortization.
- Other operations—Dr.
- Joint general expense—Dr.
- Other operations—Cr.
- Joint general expense—Cr.
- Injuries to persons and property.
- General stationery and printing.
- Store and stable expenses.
- Undistributed adjustments—balance.

ACCOUNTS FOR ROADS UNDER JURISDICTION OF FIRST DISTRICT COMMISSION

The First District Commission of New York has promulgated its classification of accounts for street and electric railways. Companies under the jurisdiction of the First District Commission are divided into the same classes respecting the treatment of operating expenses as those in the Second District.

The Commission of the First District has made public a report from Commissioner Milo R. Maltbie, who was appointed a committee to take charge of the preparation of uniform systems of accounts. An abstract of this report follows:

The systems of accounts will undoubtedly need revision from time to time. Certain new features have been incorporated which have not been sufficiently tested to determine their real merit. The corporations themselves were not a unit upon all points, some desiring one method and some another. Your committee has accepted the suggestions made by a majority of the corporations affected except where they involved the indorsement of an incorrect principle.

In the preparation of the three systems of accounts herewith transmitted, your committee has considered that the fundamental purposes of the law were:

(1) To establish uniformity between all corporations of the same class, such as street railways, electric railroads, gas undertakings and electricity supply undertakings. Street railways are operated mostly by electricity, and it was found practicable to include all, whether operated by animal power or electricity, in one group, and also to cover by the same classification all railroads running over a private right of way principally and operated by electric current.

(2) To establish systems of accounts which will show clearly and accurately the specific source of all income and the purpose of every expenditure. The facts must be had in order to determine whether it is reasonable for the consumer to demand improved service at existing rates, or whether an increased charge will be necessary. It has been urged by some that the public—the consumer, the taxpayer, the citizen and the public official—is not entitled to prescribe accounting systems for corporations or to know about its financial affairs. This theory has been exploded, and it is sufficient to recall the facts that public service corporations have been granted certain very valuable and special rights by the State and local authorities which individuals and corporations generally do not possess, that these corporations are using the streets and public places—the property of the public—that the public is therefore in a sense a partner in the enterprise, and as such is clearly entitled to know what the firm is doing, that many corporations have a virtual monopoly and that having tried a policy of non-interference experience has shown that the welfare of the individual, of the city and of the State is not adequately protected without regulation and control. An important reason for the general approval of highly differentiated forms of accounts is that they serve to protect and profit the thrifty and honest corporations. It is not the purpose of public regulation by reducing rates to take from a corporation all of the proceeds of enterprise and thrift that it may earn beyond a reasonable dividend. If a thrifty and intelligent corporation can, at a smaller expense to itself, supply a public service than a careless and incompetent corporation, the former should not be compelled to charge the public less than the latter. To do so is to discourage progress and economy. The systems of accounts reported will show what corporations exercise care, economy and ingenuity in operation and good judgment in the selection of employees. Present obscure and varying methods of keeping accounts furnish no basis of comparison, and a tendency is to put the thrifty and unthrifty in the same class and seek to deprive the stockholders of the thrifty corporation of their fair rewards. Where there is no prescribed system of accounting and no reasonable degree of publicity, there is a likelihood that the corporation will fall into the hands of the speculator. It goes without saying that the present bond and stock holders, having put their money into the enterprise, are entitled to know the results of operation and the actual status of the company, in all its details.

(3) To state the fundamental principles according to which accounts shall be kept, so as to prevent the charging of items to wrong accounts. The danger upon the one hand is that a sufficient amount will not be expended or set aside to keep the property of the company up to the proper standard. Sometimes rates are too low, but more often the straining for big dividends leads to the setting up of a large

book profit by neglecting repairs, renewals or provisions for depreciation. The virtual effect of such a policy is to hand each stockholder year by year a small portion of the plant in dividends. Even the common method of including the cost of repairs and upkeep of the productive plant in operating expenses for the year in which the money was actually spent is objectionable, for it allows the managers of the enterprise to put either more or less money into maintenance and thus overstate or understate true costs at will. Under conscientious management, operating costs would vary from year to year according to the amount of reconstruction necessary. If the machinery and plant required a minimum of expenditure in the way of replacement, the net income would appear large, and stockholders would demand its distribution through dividends, despite the fact that the neglect to include in operating expenses an allowance for fixed capital consumed had resulted in a false statement of profits and in the payment of dividends out of capital rather than earnings. The history of public service corporations has shown numerous instances of this kind, where large dividends have been paid for a series of years because no provision has been made in the costs of operation for the consumption of capital, other than the most obvious wear and tear. On the basis of attractive dividends, securities have been marketed, and in due time the buyers have found themselves loaded with worn-out property and no reserves for reconstruction.

The other danger, with which we have had less experience so far, is that an undue amount will be taken out of earnings and spent upon the plant, usually in the form of extensions. In this case, provided the capital receives a fair return, it is the user who suffers, for he has been taxed without his leave to provide capital for the undertaking and without receiving in return stock or bonds. To guard against this possible overstatement of the operating costs, it is necessary to provide that extensions and improvements of the property shall be charged to capital and not to operating expenses.

DEPRECIATION

The primary purpose of the three systems of accounts is to ensure the integrity of "capital" and the correctness of the charges to "cost of operation." The corporations are required to ascertain the life or term of service of their fixed capital, and to include in each year's operating costs a sufficient allowance to cover that part of the life of the productive plant which has expired within the year. The deterioration that has taken place during the year may at times be no greater than the expenditures for repairs (and included in operating expenses); in which event, the operating expenses afford a true statement of the real cost of the service rendered. The consumption of capital invested in a machine that gives 10 years' service is just as much a part of the expense of operation as is the cost of materials consumed in a single day, and it would be just as false accounting to reckon profits before paying for materials consumed as to do so before meeting the cost of expired outlay on machinery and other productive plant. A true statement of expenses will, therefore, include an allowance for the replacement of tangible and intangible capital, based on the most intelligent estimate that can be made of the probable life of such capital.

In order that "capital" may not be impaired, a corporation must provide not only for repairs and eventual replacement but also for depreciation due to obsolescence and inadequacy. Cities are expanding and conditions are changing, so that occasionally certain portions of the physical property have to be reconstructed because the original plans have been outgrown or rendered useless thereby. Street railway tracks, for example, sometimes have to be moved to new streets because the direction of traffic has changed. Central stations or works are removed to new locations because urban growth has made their first locations undesirable or uneconomical. These changes often come very gradually and sometimes infrequently, but all expenditures for such purposes should be paid out of earnings and not out of capital.

The corollary of the principle that capital accounts shall be charged only with actual money cost is that discounts and commissions upon securities and other commercial paper issued in payment for capital shall not be charged to capital, but shall be charged to a suspense account called "unamortized debt discount and expense." Another important requirement, which carries out statutory provisions, is that the account "franchises" shall be charged only with the amount actually paid to the State or to a political subdivision in return for the granting of franchises or rights, exclusive of taxes or other annual charges.

TREATMENT OF APPRECIATION

In conclusion, it should be noted that the systems of accounts do not recognize appreciation in the value of property as an offset for depreciation. The policy adopted by many public service corporations of depending upon the increase in the value of their assets consequent upon community growth or changes in market values is not recognized as proper. Of course, ultimately the accounts will reflect these facts. If a piece of real estate is purchased for $100,000, if that amount is charged to capital, if it increases in value to $200,000 and it is found wise to sell it for that sum and purchase another piece of land equally suitable for $150,000, the ultimate result may be that "land" will be represented in capital at an amount of $150,000 instead of $100,000; and that the surplus account will be increased by $100,000, which may be used as a reserve or distributed in dividends. The fundamental principle of the accounts, however, is that any appreciation shall not appear in the accounts until it is an actuality and until the amount of such appreciation has been determined by an actual sale of the property or the substitution of more expensive property. What shall be done when such a case arises is naturally a matter to come before the commission. It is not necessary in the systems of accounts to lay down a hard and fast rule.

SPECIAL WORK SPECIFICATIONS OF THE INTERSTATE RAILWAYS

The Interstate Railways Company is a Philadelphia corporation, which now controls 16 electric railways scattered through Pennsylvania, New Jersey and Delaware, as given in the accompanying list of the properties:

RAILWAYS CONTROLLED BY THE INTERSTATE RAILWAYS COMPANY OF PHILADELPHIA

Wilkes-Barre & Wyoming Valley Traction Company, Wilkes-Barre, Pa.
Wilkes-Barre, Dallas & Harvey's Lake Railway Company, Wilkes-Barre, Pa.
Lebanon Valley Street Railway Company, Lebanon, Pa.
*United Traction Company, Reading, Pa.
Schuylkill Valley Traction Company, Norristown, Pa.
Roxborough, Chestnut Hill & Norristown Railway Company, Roxborough, Pa.
Holmesburg, Tacony & Frankford Electric Railway Company, Tacony, Pa.
Delaware County & Philadelphia Electric Railway Company, Clifton Heights, Pa.
Southwestern Street Railway Company, Chester, Pa.
Chester & Philadelphia Railway Company, Chester, Pa.
Chester Traction Company, Chester, Pa.
Wilmington City Railway Company, Wilmington, Del.
Trenton Street Railway Company, Trenton, N. J.
Philadelphia, Bristol & Trenton Street Railway Company, Bristol, Pa.

Uniform engineering standards have been applied to all of these railways, especially in the adoption of special work specifications prepared in simple blueprint form by Thomas K. Bell, chief engineer of the Interstate Railways Company. These specifications cover all new 9-in. rail installations and replacements. The specifications follow:

SPECIAL WORK SPECIFICATIONS

Lengths of switchpieces to be the same as given on pages 161-162, catalog No. 10, of Wm. Wharton, Jr., & Company, plus 2 ft. at the heel end. Frogs as per page 163.

*Note.—The United Traction Company includes the Oley Valley Street Railway and the Boyertown & Pottstown Railway.

Spirals to be the Wharton standard, as given on pages 167-174, inclusive.

Tongue switches and mates to be Bell's patent heelless type, as shown on pages 6 and 7 in supplement No. 2 to Catalog No. 10.

Wheel flange data to be obtained from pages 178-179 and the accompanying wheel outline, Fig. 1.

For curb and car clearances, that of the Oley Valley car, 51 ft. over all, will be used in accordance with the diagram, Fig. 2, and the accompanying table of car sweep for circular curves.

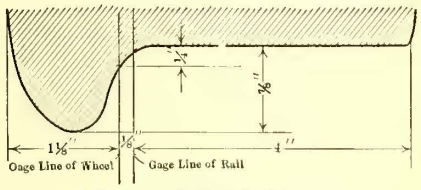
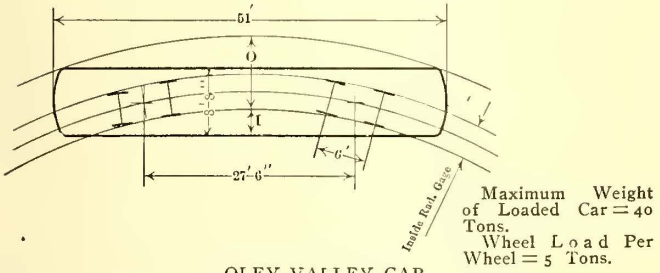


Fig. 1.—Wheel Flange



Maximum Weight of Loaded Car = 40 Tons.
Wheel Load Per Wheel = 5 Tons.

OLEY VALLEY CAR.

Inside radius. Ft.	In.	O. Ft.	In.	I. Ft.	In.
33	0	12	1	4	5⅞
35	0	11	10½	4	4
37	6	11	7 11-16	4	1 15-16
40	0	11	5⅛	4	0⅛
42	6	11	2¾	3	10½
45	0	11	0 9-16	3	9⅛
48	0	10	10⅛	3	7⅝
50	0	10	8 11-16	3	6 11-16
57	0	10	4⅛	3	4 1-16
60	0	10	2 7-16	3	3 1-16
65	0	9	11 15-16	3	1 11-16
70	0	9	9 11-16	3	0½

Fig. 2.—Car Sweep Data for Circular Curves

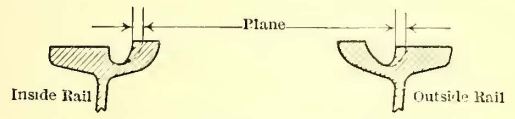


Fig. 3.—Method of Planing Rails

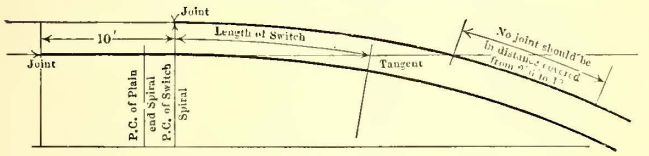
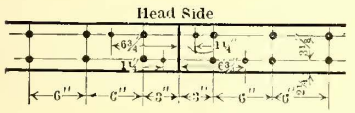


Fig. 4.—Location of Joints on Curves



Bolts 1 in. x 4 in. for L. S. Co., 119-341.
Bolts 1 in. x 4½ in. for L. S. Co., 141-395.
Joint Holes 1¼ in. in diameter.
Bond holes 13/16 in. in diameter.
Joint Plates 36 in. long.

Fig. 5.—Joint Bolt Spacing

Grooves to be as prescribed below for the following conditions: 7 ft. 6 in. wheel base, No. 3 flange, 3 in. tread.

Radius 33 ft. 0 in. up to 36 ft. 0 in., inside rail, 1¾-in. groove for T and girder rail.

Radius 36 ft. 0 in. up to 42 ft. 6 in., inside rail, 1 11/16-in. groove for T and girder rail.

Radius 42 ft. 6 in. and over, inside rail, 1 9/16-in. groove for girder rail only.

The minimum width of groove is to be 1⅜ in. Grooves for frogs, crossings, curved grooves of mates and both grooves of open point switches to be ⅞ in. deep, and to have an easy rise. All other grooves are to be at least 1⅛ in. deep, except at intersecting steam grooves, where the depth of such grooves is to be governed by the steam railroad in question.

(Note: On T-rail construction for 42 ft. 6 in. to 149 ft. radius, 1 9/16-in. groove; for 150 ft. radius and over 1⅜-in. groove.)

The minimum radius tried for as a standard is 42 ft. 6 in. No work with a lesser radius will be accepted unless special permission in writing has been obtained from the chief engineer.

The rails are to be planed to obtain 1 11/16-in. or 1¾-in. groove; plane them as shown in Fig. 3.

On spiraled plain ends of all layouts the rails should end as shown in Fig. 4.

(Note: If the spirals were ended as indicated by the Wharton Company, namely, stopping the outer rail at the P.C. (point of curve) of the spiral and extending the inner rail for 5 ft. beyond the P.C., then if the railway should desire later to run a straight track through a spiraled end of a plain curve, it would find that the joint on the outer rail, being stopped at the P.C., would leave a trackage space of 4 ft. plus or minus. Consequently, in setting the switch and mate, the guard rails might extend over the existing joint of the straight track on the switch side, but the straight track on the mate side would fall short, as previously stated. The spirals, therefore, have been laid out to have the inner rail extend 10 ft. beyond the P.C. of the switch end and to have the outer rail end on the P.C. of a switch end spiral. The switch mate, guard rail, switch head and frog can be dropped in place without loss of time and trackage. It will be further noted from Fig. 4 that no joint is permitted within the space 2 ft. 6 in. to 12 ft. beyond the intersection of the tangent and outside rail. This is done to avoid complications when putting in a switch mate and frog by having short pieces of rail occurring near the frog.)

Guard rail for all curves to be Lorain Steel Company, section No. 119-341. The same company's section No. 141-395 to be used through the straight of all special work. Bevel guards ½ in. below head. Angle of bevel to be 1 in 6. All flares are to be groove plus 1¼ in. except at steam crossings and where governed by the rail joint and bond drilling. (See Fig. 5 for joint plate hole spacing.)

Tie rods spaced every 7 ft. 6 in. and to have 1-in. round ends with four nuts. Body of rods to be 2¼ in. x 13/32 in. Tie spacing to be 2 ft. center to center. Spikes to be 5½ in. x 9/16 in.

All work to be thoroughly painted and proper assembly marks indicated in white.

The manufacturer will be held responsible for engineering data and alignment of work.

All plans are to be submitted to the chief engineer of the Interstate Railways Company for his approval.

The Interstate Railways Company will not countenance any delays in the delivery of work by the manufacturer unless said manufacturer has been duly notified by letter to hold up the work.

When work is shipped the manufacturer will notify the chief engineer of the Interstate Railways Company, enclosing to him the bill of lading, with two blueprints on heavy paper, one blueprint on linen cloth and one Van Dyke print. (Note: The two paper prints are for field work, the linen print for the office and the Van Dyke serves for a tracing.)

ANNUAL REPORT OF THE MASSACHUSETTS RAILROAD COMMISSION

The annual report of the Massachusetts Railroad Commission for the year ended Sept. 30, 1908, was submitted to the State Legislature which assembled on Jan. 6. The report is of a preliminary character, embodying various recommendations and comments by the commission, and the principal statistics relating to steam and electric railway operation for the year. An abstract of some of the features of the report follows:

In the report for 1908 the board recommends a change in the law as to the time of filing annual returns of street railway companies. The present fiscal year ends on Sept. 30, and it is recommended that June 30 be made the termination of the electric railway year to correspond with the recommendations and statistics of the Interstate Commerce Commission. All returns are desired by Sept. 30 under this arrangement.

STREET RAILWAY FARES

During the year several street railway companies have established increased rates of fare upon the whole or portions of their lines. In more than one instance the traveling public, recognizing the justice of this course, has acquiesced in it without requesting the board to review the action of the company.

In other cases petitions have been addressed to the board praying for its adjudication of the reasonableness of the increases. Some of these petitions have been decided in favor of the petitioners, others in favor of the companies.

The tendency to increase the unit of fare on street railway lines in this Commonwealth, while due in part to business depression existent the past year, is founded primarily upon the decreased purchasing power of the nickel for labor and material. The sustained costs of equipment, maintenance and operation have been out of proportion to the increased riding by the traveling public. The anticipated return to normal business conditions, now in part happily realized, seems to give promise that the companies under wise and sound management may, in many instances, realize a reasonable return upon investment without an advance in rates of fare.

While it is true that the majority of street railway companies in Massachusetts are non-dividend payers at prevailing rates, it by no means follows that an increase of fares will put these companies on a dividend-paying basis; in other words, sound and intelligent study may convince those in control of the properties that a 5-cent fare, while not affording the maximum of reasonable return, may, upon the whole, be a sound charge against the time when increase of population and induced travel may place the companies upon a dividend-paying basis.

The General Court of 1908 passed an act "relative to the transportation by street and elevated railway companies of the pupils of the public day and public evening schools and private schools" (chapter 530). The constitutionality of the act with respect to its provision for half fare for pupils of the public evening schools has been put in issue by the Boston & Northern Street Railway and the board has, upon advices from the company that it would therefore refuse to transport public evening pupils at one-half the regular fare, informed the attorney-general of the Commonwealth and the matter is now in his hands for appropriate action.

FREE TRANSFERS

Intimately associated with the question of street railway fares is the use of free transfers. Coincident with their use has come their misuse. The valid use of free transfers is not only a distinct convenience to the traveling public, but is of service to the companies themselves in permitting a routing of cars and a consequent decrease of car-mileage which makes for economy in operation. But with a free transfer privilege there is an attendant abuse from which the companies and, in the ultimate analysis, the whole traveling public suffer. To reason that free transfers should be withdrawn because improperly used is unsound; and yet their continued and increased misuse must finally present a situation where the companies may rightfully demand some restriction in their number or functions.

We recommend an alert and constant oversight of these conditions by companies to the end that the law, now sufficiently ample in its provisions and penalties, may be invoked in those cases where designing and evil-minded persons are depriving the public of its just rights, and all good citizens should co-operate with the managements of the companies who are endeavoring by recourse to the courts to minimize this growing evil.

BOSTON ELEVATED RAILWAY

The completion and opening for use of the Washington Street Tunnel, the building of the extension to Forest Hills, the projected tunnel, elevated and subway extension to Cambridge and the Malden and Medford extensions will with the consequent rearrangement and adjustment of traffic, both consummated and in contemplation, afford greatly increased facilities to the traveling public of Boston and its suburbs, not only in speed of transit, but in greater freedom in distribution of traffic.

In regard to fenders and wheelguards the board states that while the companies have in good faith endeavored to ascertain the merits of the various devices which have been put in use, the instances where persons have come in contact with the devices have been so few in number that little information of value has been secured for determining the superiority of any one device. The board recommends that companies continue the experimental use of fenders and wheel guards, keeping a record of their results, as in 1908, in order to assist in the determination as to the further use and efficiency of such devices.

COMPANIES AND MILEAGE

Annual returns for the year have been received from 81 street railways and a return to the date of its consolidation was received from one other company. The Amherst & Sunderland, Hampshire and Woronoco companies were dropped from the board's list through consolidation during the year, and the name of the Cottage City & Edgartown Traction Company was changed to the Oak Bluffs Street Railway Company. The Waltham Street Railway was consolidated with the Newton Street Railway. Of the 81 companies 62 operated their railways, 16 were operated under leases or contracts by other companies and 3 had organized and paid in a portion of their capital stock, but had not begun construction.

The net increase in the mileage is .724 mile of street railway line and 13.418 miles of second track, making 14.142 miles of additional main track. There was also an increase of 9.570 miles of side track, making a total single-track increase of 23.712 miles.

The companies now own 2233.845 miles of street railway line, 441.042 miles of second main track and 166.700 miles of side track, a total single-track length of 2841.587 miles, exclusive of 3.2 miles of track of the Rhode Island Company located in Massachusetts, and for which no return was received. All the track owned is surface track, with the exception of 8.660 miles of elevated line and 8.484 miles of elevated second track and 3.688 miles of elevated track sidings located in Boston.

The main track (including trackage rights) operated aggregated 2740.998 miles, a decrease of 4.268 miles from the previous year. The Old Colony leases and operates the Newport & Fall River, having a main and second-track mileage of 20.353 miles located in Rhode Island; and the Boston & Northern leases and operates the Nashua, having a mileage of 14.899 miles located in New Hampshire. Hence 35.252 miles of main and second track are operated outside the State.

COST PER MILE, EARNINGS AND TRAFFIC

The average cost of the street railways of the State per

mile of main track (including the cost but not the length of side track) was $31,004.80 for construction; $11,103.01 for equipment and $15,568.81 for lands, buildings, including power plants and other permanent property, making a total average cost of $57,676.62 per mile of main track.

The total income of the companies from all sources was $32,462,332.53 and the total expenditures, including dividends declared, were $32,318,320.82, making a net surplus of $144,011.71.

The total number of passengers carried computed on the basis of 5-cent fares collected was 602,400,874, an increase of 1,705,058 over the previous year. The total number of car-miles run was 116,982,089, a decrease of 737,114 car-miles from 1907.

The operating expenses amounted to 66.73 per cent of gross earnings, as compared with 67.71 per cent in the preceding year and 67.49 per cent in the year ended Sept. 30, 1908.

The gross earnings per car-mile were 26.31 cents and the operating expenses were 17.56 cents, leaving net earnings of 8.75 cents.

The average gross revenue per passenger was 5.11 cents and the operating expense 3.41 cents, leaving net earnings of 1.70 cents.

The employees decreased in 1908 to 17,267, compared with 18,181 in 1907. The cars owned in 1908 were 7618, compared with 7539 in 1907 and the motors owned were 16,649 in 1908 and 15,626 in 1907.

There were 6193 persons injured, of whom 121 received fatal injuries. The number of passengers injured was 4385, of whom 28 were fatally hurt. The number of employees injured was 299 and 13 of these sustained fatal injuries. The number of injuries to travelers and others on the street was 1509 and 80 of these were fatal.

DRAFTS IN STEAM BOILER PRACTICE

A preliminary bulletin on "The Significance of Drafts in Steam-Boiler Practice," by Walter T. Ray and Henry Kreisinger, is soon to be issued by the Technologic Branch of the United States Geological Survey. The work is in accordance with the general plan for the conservation of the fuel resources of the country. An abstract of the bulletin follows:

The experiments so far made seem to indicate that it is possible to double or treble the capacity of a plant without making any radical changes in the furnaces and boilers. These increases require about double and treble the quantities of air to be put through the fuel beds and boilers. It also seems probable that rebaffling the boilers will often permit the capacity to be doubled or trebled, while still getting more steam than formerly per pound of coal for uses outside the boiler room.

Measured weights of air were passed through two beds of lead shot in series. One bed remained always the same, and represented a boiler; the other was varied as to size of shot and depth of bed, and represented a fuel bed. Careful observations were made on the relative amounts of power required to force air through fuel beds of various thicknesses, composed of various sizes of coal, and through boilers of various lengths and areas of gas passages.

An important part of the discussion relates to an increase in the capacity of boilers by increasing the amounts of power which must be applied to pressure and exhaust fans in order to force several times as much air through the fuel beds and boilers. It must be borne in mind, however, that an attempt must not be made to put more air through existing boilers by running the fans a great deal faster, because the power consumed will increase far faster than the above calculations estimate. New fans and engines must usually be installed of sufficiently larger size to supply the larger quantities of air at as high an efficiency, if not higher.

One way of reducing the work required from the fan is to increase the grate surface, so as to avoid a high increase of pressure drop through the fuel bed. A low pressure drop through the fuel bed would also insure better combustion of the fine particles of coal, which would be carried out of the stack unburned if high gas velocities through the fuel bed were employed, the high velocities being obtained by high pressure drops. This last method is being successfully used by the Interborough Rapid Transit Company, New York City, and was described in a paper read in December, 1907, before the A. I. E. E. In this case the amount of steam produced was nearly doubled, the combined efficiency of the boiler and furnace dropping only about 3 per cent. In this case the pressure drop through the fuel bed was the same as with the single stoker, or perhaps decreased slightly, while the pressure drop through the boiler proper increased considerably. That is, the two fuel beds were in parallel, and with the same potential drop twice the current (weight of gases) was obtained. The same result could have been secured by thickening somewhat the fuel bed on the single stoker and increasing the pressure drop through it, or putting the two fuel beds in series and then, by increasing the drop of potential, twice the weight of gases would be obtained. The method of increasing the grate area is a promising one, because it requires less work from the fans; it is especially to be preferred in those cases where there is a high percentage of slack in the coal, as already explained.

The figures and principles derived from the experiments and tests presented in this bulletin may not be applicable directly to special problems; they suggest methods by which each problem can be studied and its successful solution brought about. The Geological Survey contemplates the making of further experiments with laboratory apparatus as well as with hot fuel beds in the near future.

IMPORTANT NEW RAILWAY IN KANSAS

Active work is now well under way for the construction of a single-phase electric railway between Iola and Kansas City, Kan. This road will be known as the Kansas City, Olathe, Ottawa & Iola Railway, serving the cities included in its name and also passing through Baldwin, De Soto, Mt. Ida and Harris, Kan. The main line will be 108 miles long, and there will be a 10-mile branch to Olathe. While arrangements have not yet been perfected for an entrance into Kansas City, it is expected that the terminal will include a 2-mile elevated structure within the limits of Kansas City, Kan.

The new line is well located for handling freight. The territory served includes not only a farming and stock-raising district, but also cement manufacturing and quarrying industries. One cement plant alone at Iola has a capacity of 5500 bbl. a day. The populations of the larger cities other than Kansas City are: Baldwin, 2500; Iola, 20,000; Ottawa, 10,000, and Olathe, 4500. The preliminary arrangements for the organization of this road are in charge of Hugh A. Holmes, 105 New England Building, Kansas City, Mo. The Standard Engineering Company, of Cleveland, Ohio, will have entire charge, including the supervision and inspection of all engineering work. This company is now represented on the route by George L. Wells, with temporary headquarters at Iola. Later, the principal construction office will be at Ottawa, Kan.

The Kansas City, Olathe, Ottawa & Iola Railway will be laid out as a double-track road, but only the east track will be built through at the start. Survey parties now in the field have a permanent location chosen for about 65 miles of track from Iola north. A low grade with few curves is possible over the entire route. In the first 45-mile section from Iola north there will be but four curves,

and these of 1 deg. This section also will include one 20-mile and one 9-mile tangent. All curves will be spiraled and the grades will be compensated for curvature. The railway company later will establish crushing plants for making ballast, there being excellent limestone at many points along the route.

The entire length of this line will be operated by 6600-volt single-phase current. There will be two lines of creosoted poles, one located on the edge of the right-of-way, comprising 30-ft. poles, carrying the telephone and signal wires only, and the other comprising 40-ft. or 45-ft. poles located for double bracket suspension, and also carrying the transmission wires at the tops. The No. 0000 trolley will be supported at 15-ft. intervals by hangers carried from a ½-in. extra-strength stranded messenger, which, in turn, will be supported by poles and brackets spaced 150 ft. apart. The trolley wire will be divided into six or eight sections, and each pair of sections will be fed from a fireproof static transformer station. Current will be carried between the power station and each transformer section on an independent single-phase feeder. The transmission pressure will be 66,000 volts. Each transmission wire will probably be No. 2 stranded copper, and the sectionalization and the use of independent feeders will be justified because, on account of freight traffic, it will be necessary to have current on the line the full 24 hours of each day. Also, to provide for continuity of service, the four transformer substations will all be equipped with duplicate oil-cooled transformer sets, and all parts of the transmission and distribution system will be insulated for double normal operating voltage.

It is expected that a plant will be installed for treating the poles and all the woodwork of the transmission system. If this is done, the tank will be of such capacity that a pole may be entirely submerged in oil of coal tar heated by steam coils. Also, the cross-arms and all wooden parts and fittings of the transmission system will be saturated with oil.

The power station will be located at or near Iola and in the vicinity of the Neosha River, from which circulating water will be obtained. Probably a settling basin and a filtration plant will be built. The principal equipment of the power station will comprise three 3000-hp gas engines, and provision will be made for an extension. Inasmuch as the power station will be near the center of a natural gas field, fuel for the gas engines will be easily obtainable. It is stated that the price for natural gas is less than 5 cents per 1000 cubic feet. The gas-engine units will be built with especially heavy working parts, and each will drive a three-phase generator furnishing current at 6600 volts for distribution to the trolley or for stepping up and feeding to the transformer stations along the line. It has not been decided whether a frequency of 25 or 15 cycles will be used, but the latter now is favored. One winding only of the three-phase generators will be used for operating the cars. Exciting current will be furnished by one generator driven by a gas engine and one driven by a motor. Each feeder section will be kept independent in the power house, as on the transmission line, and for each outgoing feeder there will be an independent bank of transformers and separate regulating devices, so that trouble at the power station may not hinder the operation of more than one section of the line. It is stated that it may be necessary to equalize the railway load with a battery, although the engineering data on this subject have not yet been completed. Should it be found desirable, such a storage battery in connection with a rotary converter will be installed later to improve the load factor of the power station.

The first installation of rolling stock will probably include eight passenger cars, each with four 125-volt a.c. motors and train control; also, three 800-kw electric locomotives, each with a capacity for handling an 800-ton train 30 m.p.h. on the level. The locomotives will have a maximum speed of 45 m.p.h. with no load, and will be built with pony trucks and equipped with both pantograph and trolley contacts. The Hudson Counties Company, of New York, has the construction contract.

AN APPLICATION FOR EMPLOYMENT

In view of the attention given to the requirements for employees, an application for the position of trainman to a prominent company in the Southwest will be of interest. The applicant forwards 25 to 30 testimonials from acquaintances as to his moral character and good standing as a citizen, but also indicates his technical qualification by putting himself through a long examination on various topics connected with electric railway work, such as "Points about motors which should be examined after." "What causes electricity to heat?" "The term and difference between short-circuit and grounded." "How to locate trouble in a reverse switch and how to overcome it." "Car wiring and current tracing."

These documents are accompanied by the following letter:

Dear Sir I thought I would write you in Regard to my Electrical studies and the industry I have taken to qualify myself for the position to which I aspire with your Company yes I ask for the position of Conductor with your Company although I am taken a thorough study in Electricity I feel Competent Enough to take Charge of a car and Control it as a first Class motorman I think I Can discharge my duties in Evry way to save the Company many Dollars Expense during my Service with them are at least that is my intention if I Cant Be of the Very Best Service to the Company and give Entire Satisfaction in Evry way I am very willing to Step down and out of the way and give my position to another man, Evry Employee of the Company Should use Economy in dischargeing their duties with the Company to Save the Company Evry Dollar they possible Can, for instance if a motorman has the inclination to take advantage of all down grades on his Run he can Save his Company many Dollars in a months Service, Economical Running are a great saving for the Company, but they Should use Economy in all service if my application is accept I will go out to work, Resolved to live up to Evry order and Rule laid down by the Company I think I Can discharge my duties in Evry way So I Can face the Superintendent at any time without fear of having incurred his displeasure

I EnClose you herewith a few of my Electrical Studies which I wish you to Read So you Can see what an interest I take in the project

I Could give you numbers of other Details in Regard to my Electrical Studies, but for the want of time and Space I will not this time, if you Remember me you have my application on file together with letters of my Recommendation, you placed my application on file I Believe the date was august the 19th 1907,

please State Salary you pay to Such positions, as I ask for, also please state what Salary you pay your motormen

Excuse Such lengthy letter

Respectfully

Unfortunately, the company in acknowledging the receipt of this matter was compelled to say: "You have certainly shown enormous industry in your application, but this hardly equals actual practical experience, and we want to start only with experienced men."

RECORD STORAGE IN BROOKLYN

As noted in the second article on the Brooklyn Rapid Transit Company's track and line headquarters, published Dec. 19, all of the company's important records will be stored on the second floor of the stable building at this location. These headquarters are fireproof, well lighted and accessible, offering an ideal place for storing and referring to documents. It is estimated that over 200 tons of records will be transferred to this place, these embracing the history of 36 constituent companies of the Brooklyn Rapid Transit system for a period extending from 1835 to 1908. Arranged according to departments, the records include the following information:

Legal Department.—Accident reports; investigators' papers; court papers consisting of pleadings, minutes and miscellaneous other papers; copy books of accident reports; depot records of accidents; books and papers.

Accounting Department.—Ledgers; journals; auxiliary books; mileage books; traffic accounts; voucher records; statements; bills; time sheets; time books; vouchers; day cards; register cards; miscellaneous forms and reports; pay rolls.

Operating Department.—Miscellaneous forms of reports and correspondence.

Engineering Department.—Miscellaneous reports and correspondence; track and line department records and drawings; building department records.

Mechanical Department.—Miscellaneous forms of reports and shop records, covering all the different shops.

Employment Department.—Applications; deposit orders; badge orders; books of rules; badges; punches; also miscellaneous forms of reports.

Treasurer's Department.—Cash books and correspondence; check books; checks and reports of receivers.

Among the railroad companies the records of which are to be stored at Nostrand Avenue are the following:

American Railway Traffic Company
Grand Street & Newtown Railroad Company
Brooklyn & Crosstown Railroad Company
Transit Development Company
The Brooklyn Heights Railroad Company
Bushwick Railroad Company
The Atlantic Avenue Railroad Company
Brooklyn, Bath & West End Railroad Company
Brooklyn & Jamaica Railroad Company
Brooklyn, Crosstown & Jamaica Railroad Company
South Brooklyn & Central Railroad Company
The Nassau Electric Railroad Company
Brooklyn, Flatbush & Coney Island Railroad Company
Brooklyn & Brighton Beach Railroad Company
Brooklyn Elevated Railroad Company
Railroad Construction Company
Sea Side & Brooklyn Bridge Railroad Company
Union Elevated Railroad Company
Coney Island Elevated Railroad Company
Kings County Elevated Railroad Company
Sea View Railroad Company
Brooklyn Union Elevated Railroad Company
Brooklyn Rapid Transit Company
Coney Island & Gravesend Railway Company
Broadway Railroad Company
Broadway, Flatbush & Metropolitan Avenue Railroad
Broadway, Gates & Flatbush Railroad Company
Broadway, Bushwick & Queens County Railroad Company
Jamaica & Brooklyn Road Company
Jamaica & Brooklyn Plankroad Company
Brooklyn, Queens County & Suburban Railroad Company
Sea Beach Railway Company
South Brooklyn Railway Company
Brooklyn Rapid Transit Employees' Benefit Association
Canarsie Railroad Company
Bridge Operating Company

COMMUNICATIONS

BOW COLLECTOR VS. PANTOGRAPH

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

PITTSBURG, PA., Dec. 26, 1908.

To the Editor:

In your issue of Dec. 19 editorial reference is made to Mr. Murray's recent paper before the American Institute of Electrical Engineers, and the statement is made that the New Haven Railroad might have obtained more satisfactory results by the use of a bow trolley instead of a pantograph. It is further implied that bow trolleys are in successful operation in Europe under conditions comparable with those on the New Haven road.

It seems to the writer that your statement should not have been so positive in pointing apparent neglect of European development unless you knew of some road which was actually using bow trolleys under commercial conditions similar to those existing on the New Haven; that is, speeds of 60 m.p.h. with the overhead contact wire varying by 1 per cent gradients from 22 ft. above the rails to 15 ft. 6 in. under highway bridges. As a matter of fact, the representatives of the New Haven company's contractors (the Westinghouse Electric & Manufacturing Company) have followed with care every detail of European development along these lines and each one of the several designs you mention, as well as others, has been tried out under the New Haven conditions, and having been found wanting, has been discarded and superseded by the design at present in use on the New Haven.

Your editorial of Dec. 19 contrasts the pantograph trolley with the bow, intimating that the one is a radically different arrangement from the other. It is assumed, however, that your criticism refers particularly to the contact member, since pantograph frames with swinging bow contacts have been used in Europe. The New Haven trolley consists of a light pantograph frame with a flat contact shoe. The former arrangement, as referred to in the statements above, has been tried on the New Haven, and has failed.

It is, furthermore, a fact that the New Haven type of pantograph trolley has been selected by several European roads in preference to the designs you have mentioned. The writer's purpose in addressing you on this subject is to correct the impression you appear to have that the New Haven company, as well as its contractors, have rejected any obtainable data in trolley design without due consideration. No doubt you will be glad to correct any wrong impression you may have created through the columns of your paper. THEODORE VARNEY.

[The term "bow collector" is somewhat of a misnomer when used to distinguish the European type of collector from the pantograph. The distinctive points of difference between the two forms are in the shape, weight and direction of movement of the contact piece. The bow collector used on the European high-speed railways is composed of two parts. The lower consists of a short pantograph pole or frame, and takes up the main variations in height. The upper member is usually trailing and is always light, so that it has little inertia, and a high natural period of vibration, and can follow the minor variations of the trolley wire. The article elsewhere in this issue by Mr. Kenyon on European bow collectors, with particular reference to the tests of the Swedish Government, will prove of interest, as will also the accompanying letters

from W. S. Murray, electrical engineer of the New York, New Haven & Hartford Railroad. The first letter from Mr. Murray was an answer to one asking for data in regard to the New Haven collector and his opinion of the European bow collector. The second was an answer to a request to authorize the publication of the first in connection with Mr. Varney's letter, printed above.—Eds.]

New York, New Haven & Hartford Railroad,
New Haven, Conn., Jan. 4, 1909.

To the Editors:

I have your letter of Jan. 2 in regard to bow collectors. We have been experimenting with the auxiliary contactor, the idea being, as you have described it, to make the part that comes in direct contact with the trolley wire a light auxiliary attachment to the main pantograph.

When we first got under way with the New Haven electrification I began experimenting with a light spring-supported shoe, and secured a considerably higher mileage from the contact surface by supporting the shoe with spiral springs, and I intend to continue this line of investigation shortly. Other matters of more importance diverted my attention from this work, but I hope to get some results later which will be of interest, at which time I will be glad to let you have them.

W. S. Murray,
Electrical Engineer.

New York, New Haven & Hartford Railroad,
New Haven, Conn., Jan. 6, 1909.

To the Editors:

I have just received your letter of Jan. 5, and in answer to your request that you be permitted to publish my letter of Jan. 4 concerning the electric locomotive pantograph collector, with and without auxiliary attachment, I can see no objections to your doing so. At the same time I feel the letter would be incomplete, since you have let me read Mr. Varney's letter in advance of its publication, if I did not add that I can see and sympathize entirely with Mr. Varney's point of view in that both the New Haven road and the Westinghouse Electric & Manufacturing Company, our contractors, were exceedingly close to all European development of collector devices, but only lacked, as he has well pointed out, a comparable situation with our own. In mentioning the high speed and extremely difficult gradient conditions our collecting device had to meet, there should not be forgotten also the necessity of it handling large amperages on account of the heavy trailing loads in the New Haven service.

As my letter to you of Jan. 4 would indicate, I cannot quite agree with Mr. Varney's statement that the auxiliary device as tried on the New Haven has failed, in view of our having obtained a considerably higher shoe mileage by using it. I will also take this opportunity to say that while it was the endeavor to cover as much ground as possible in my recent paper prepared for the American Institute of Electrical Engineers, it was quite impossible to touch upon the multitudinous number of little, but interesting, details. Referring to that paper, you will note that under locomotive current collectors, it was stated: "An efficient pantograph shoe has proved itself a very difficult problem. The present cost is about 0.06 cent a locomotive mile. We have made various experiments with aluminum, phono, copper and steel, rigid and spring-supported pantograph shoes." The 0.06 cent a locomotive mile, of course, stands for the present pantograph, which does not possess the auxiliary attachment. Now, if we assume the maintenance and repairs on electric locomotives to be 3 cents a locomotive mile, even at this figure shoe repairs would represent only 2 per cent of the total cost. Considered in this light, even if it was necessary to continue operation indefinitely upon the basis of our present pantograph arrangement, it would not present, as stated in the paper, a serious aspect. Particularly is this true in connection with the consideration of the effect of the present collecting shoes on the overhead system, as it is to be noted that the present rigid form of pantograph shoe seems to have no tendency to kink the trolley wire.

Thus I hope it is clear why I have felt it necessary to add this statement to my letter of Jan. 4, as I can feelingly understand Mr. Varney's point of view in that he gained the impression from your criticism that you thought this feature of our electrification had not received the consideration due it. I might add that 10,000 shoe miles would be a minimum figure to represent the tests with the spring-supported or auxiliary type of shoe.

In conclusion, let me repeat that the shoe situation is one offering an interesting, but not serious, aspect, and in due time a standard for the New Haven conditions will be the substitute for those already giving very good results.

W. S. Murray,
Electrical Engineer.

PAY-WITHIN CARS IN PHILADELPHIA

The first pay-within cars to operate on Chestnut and Walnut Streets in Philadelphia were put in service on Jan. 3 as part of the route of the Nineteenth and Twentieth Street line. The schedule calls for 22 cars, which are the first of this type to be delivered by The J. G. Brill Company of the order placed some time ago by the Philadelphia Rapid Transit Company. With the 50 pay-within cars on the Twelfth and Sixteenth Street lines, and the 100 which are being remodeled in the company's shops, provisions have now been made for 450 pay-within cars in use or to be put in service on the Philadelphia system. Other cars will be converted soon. The press comments on these new cars have been very favorable ever since they were put in service.

A SAFETY COIN WRAPPER

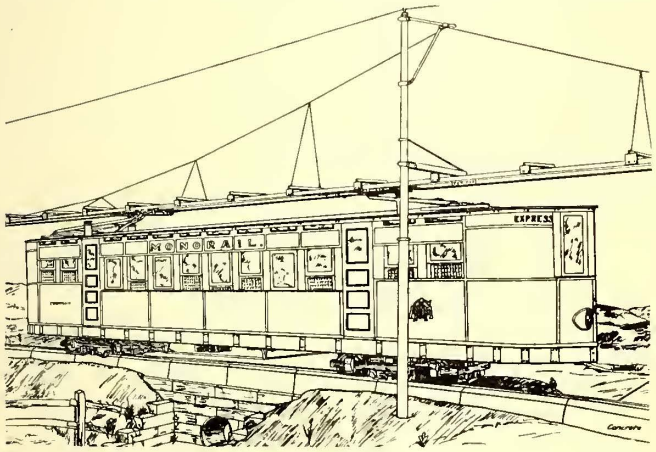
In any business, especially on electric railways, where a great many small coins must be handled, it is desirable that the coins should be wrapped quickly and with such security that the sealed packages cannot be broken without detection. These two important features are said to be combined in the series of wrappers for different sized coins made by the Detroit Coin Wrapper Company, Detroit, Mich., and now used by a large number of transportation companies and others. Aside from the security of these wrappers, it has been found that the quickness with which coins can be packed in them results in considerable economy in time when handling large quantities of change. This is especially the case on street railways where the conductor must keep within the schedule, and wraps two or three bundles every trip. The common form of wrapper would require several minutes of his time, whereas the "Detroit" would enable him to pack the coins

Safety Coin Wrapper

as fast as he could insert them. As the wrapper is made of heavy pressed paper, the conductor's name can be written or stamped on each one. Each packer is responsible for the amount and quality of the coins so done up, as when finished each roll is closed tightly with a self-sealing flap.

PROPOSED MONO-RAILROAD TO PELHAM BAY PARK AND CITY ISLAND, NEW YORK CITY

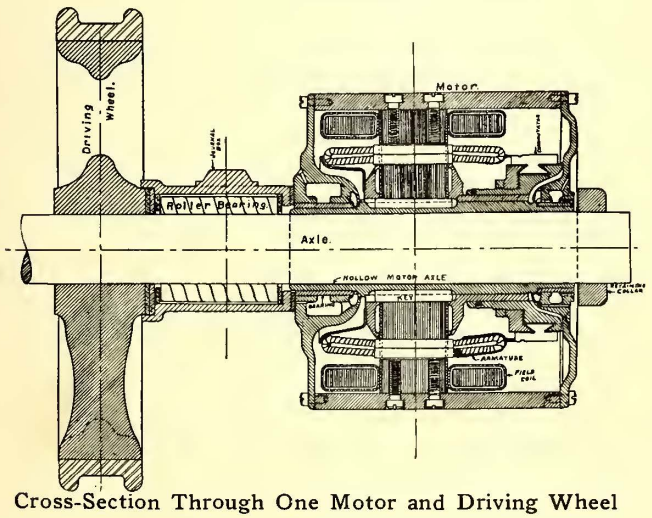
The Public Service Commission of the First District of New York has recently granted the Pelham Park & City Island Railroad the right to change over its present horse-car line to mono-rail electric operation. The route comprises 3 miles of single track running from the Bartow



Mono-Rail Car

station of the New York, New Haven & Hartford Railroad's Harlem River branch by way of Pelham Bay Park to Belden's Point, City Island. The present fare is 10 cents, but will be reduced to 5 cents for commuters after the electrification is completed.

It is said construction is to begin as soon as certain administrative permits are secured from the park commissioner. In spite of the short length of the line oppor-



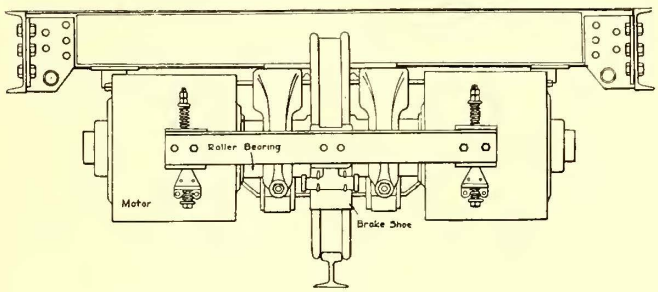
Cross-Section Through One Motor and Driving Wheel

tunities will be afforded for high-speed running, as about half the route is alongside a parkway with no road crossings. The mono-rail system to be used is the invention of H. H. Tunis, whose company installed a line at the Jamestown Exposition.

The single-running ground rail is to consist of a T-rail spiked to ties and set in concrete. The double flanges of the wheels will run in a groove on each side made with vitrified hump blocks laid against the rails.

The guide-rail on part of the line will be carried from brackets on steel poles spaced 75 ft. to 100 ft. To secure greater flexibility and safety, however, the superstructure will also be hung from a catenary cable carried over an upper auxiliary bracket of the poles. In Pelham Bay Park the guide-rail construction will be suspended from wooden bridges carried on steel bents set in concrete. To prevent the sag of the guide rails where the span is over 30 ft., a different type of catenary is to be used. At a point midway between each bent there will be an expansion joint to divide the track into a series of T's in which the upright will be the bent and the horizontal portion the guide-rail track. The guide-rails will be hung from cables passing over an A-frame in the center of the bent, thereby making the entire overhead structure a series of cantilevers.

In both classes of construction the combination guide and current rails for the wheels on the top of the car consist of light angles carried 30 in. apart, but connected with intermediate steel members to make an effective truss. The combination guide and current wheels on the car roof bear horizontally against these guide rails. As there are four wheels on each of the two trolley trucks, eight points of contact are afforded, thereby insuring a steady supply of current to the motors. The trolley trucks, which are of



End View of Truck Showing Double Motors

scissors type, will be made with or without springs, according to conditions.

Gearless shaft-mounted motors will be used to secure a low center of gravity. Each of the two axles of both trucks will carry a pair of 550-volt, 25 (nominal) hp, four-pole motors operated at 800 r.p.m., connected in series for starting and slow running, but in parallel for full speed. The motors are being built by the Sterling Electric Company, of Dayton, Ohio. The controller will be of General Electric type, with an auxiliary multiple unit contactor.

The motor armature is to be clamped on the hollow axle which slides over the car axle and it will be possible to remove the complete motor from the truck simply by taking off the retaining collar which holds the motor on the car axle. The journal is placed next to the wheel and the motor at the end of the axle, as shown in Figs. 2 and 3. This arrangement will make it possible to remove a motor without disturbing anything else, to install larger motors when necessary, and will permit reaching the brush-holders from alongside the car.

It is understood that the three mono-rail cars will be of steel, 50 ft. long, 6 ft. 6 in. wide, and will weigh 15 tons when carrying 50 seated passengers. The cars will be furnished with a pointed motorman's cab at each end.

A British syndicate has been formed to purchase the St. Petersburg, Russia, street railway system and has made an offer of 27,000,000 roubles to the Municipal Council.

ELECTRIC RAILWAY LEGAL DECISIONS

NEGLIGENCE

California.—Street Railroads—Collision of Car with Team—Contributory Negligence.

Whether one who, on the busiest street in the city, at the busiest time, is driving across a street car track, had the hind wheel of his buggy struck by a street car going up a slight grade, at a speed of four miles an hour, without warning and without attempt to stop it till it was within five or six feet of the buggy, was guilty of contributory negligence, is a question for the jury, though when he got into the buggy and started his horse the car, not seen by him, was standing at the crossing, with its front end 59 feet from where he must cross the track, and though, while he listened attentively without hearing anything, he did not look beyond the side curtains of his buggy so as to see the car till his horse was across the track.—(Scott et al. v. San Bernardino Valley Traction Co., 93 Pac. Rep., 677.)

Colorado.—Street Railways—Care Required by Operators—Negligence of Company—Same—Effect of Public's Right to Street.

It is the duty of persons operating a street car to exercise ordinary care and vigilance to avoid injuring the pedestrians, but what constitutes such care and vigilance must be ascertained from the circumstances of each case, for the question must be determined by what a man of ordinary prudence would have done under similar circumstances.

Where a car was something over half a block distant at the time it was signaled by plaintiff's intestate, and approaching on a slightly down grade at the rate of about eight miles an hour, and the gong was being sounded, when she stepped in front of it and was struck, defendant company was not negligent, nor liable for failure to avoid the injury, notwithstanding decedent's negligence, though it might have been had she not indicated her knowledge of the car's approach by signaling it.

Where decedent intruded herself in front of a street car while it was in motion and after she had signaled it to stop, the abstract question of the relative rights of pedestrians and street car companies to the use of the streets is not involved, for, both having rights upon streets, both are bound to exercise reasonable care in enjoying them, the one to avoid being injured, the other to avoid inflicting injuries, and the rights of the parties must be determined from the record by ascertaining whether they violated the law in respect to such duties.—(Liutz v. Denver City Tramway Co., 95 Pac. Rep., 600.)

Georgia.—Carriers—Street Cars—Negligence—Failure to Furnish Seat.

Whether a common carrier in not providing a seat for each and every passenger has fulfilled its legal duty of extraordinary diligence toward the passenger is a question of fact for the jury; and in a case where an injury results to a passenger, or is partly caused by failure to provide a seat, the fact that for a long period of time sufficient seats had not been provided, and the further fact that this was known to the defendant company, may be pleaded and proved as a circumstance of substantive negligence, as well as aggravation.—(Lyndon v. Georgia Ry. & Electric Co., 60 S. E. Rep., 278.)

Georgia.—Street Railroads—Injury to Pedestrian—Burden of Proof.

The verdict rendered in behalf of the plaintiff is not, for lack of any evidence to support it, contrary to law. When the plaintiff showed injury occasioned by the car of the defendant company, the burden of proof was shifted to the defendant, and it became incumbent upon it to show that the plaintiff consented to the injury or could have avoided it by the use of due care, or that the employees of the company exercised all ordinary and reasonable care and diligence, and the verdict of the jury that the defendant failed to carry successfully this burden is fully supported by the evidence.—(Augusta Ry. & Electric Co. v. Arthur, 60 S. E. Rep. 213.)

Indiana.—Carriers—Street Railways—Injury to Passenger—Contributory Negligence—Instructions—Instructions—Error Cured by Other Instructions.

In an action against a street railway for injuries to plaintiff through the negligent starting of a car which plaintiff was attempting to board, an instruction under which any act of plaintiff, whether negligent or not, would defeat his recovery, was erroneous.

In an action against a street railway for injuries to plaintiff through the negligent starting of a car which plaintiff was attempting to board, the error in an instruction, under which any act of plaintiff, whether negligent or not, would defeat his recovery, was not cured by a subsequent instruction that, if the evidence appeared to the jury to be evenly balanced on the question whether the injury was proximately caused by plaintiff's fault or that of defendant, the verdict should be for defendant, since plaintiff had the burden of proving that he was injured in the manner charged, and that the injury resulted proximately from the wrongful act or omission of defendant, this latter instruction still leaving the burden of proof as to plaintiff's contributory negligence in doubt.—(Abney v. Indiana Union Traction Co., 83 N. E. Rep. 387.)

Indiana.—Street Railways—Actions for Injuries at Crossings—Evidence—Sufficiency—Contributory Negligence Burden of Proof—Trial—Questions for Jury—Directing Verdict—Street Railroads—Questions for Jury—Contributory Negligence.

It is negligence to run a street car along streets of a city on a dark and stormy night at the rate of 15 miles an hour without a headlight, and without sounding a gong or whistle at street crossings.

Where the evidence shows that defendant street car company was negligent in running into plaintiff, the burden is upon defendant to show plaintiff's contributory negligence.

Where the undisputed evidence does not show a state of facts from which the one inference of contributory negligence may be reasonably drawn, it is error to give a peremptory instruction for defendant.

Whether plaintiff, who was struck by a street car, was negligent, held, under the evidence, for the jury.—(Nelson v. Chicago, L. S. & S. B. Ry. Co., 83 N. E. Rep. 1019.)

Iowa.—Carriers—Injuries to Passenger—Action—Nature and Form—Duty of Carrier—Question for Jury—Management of Conveyance—Sudden Jerks—Duty of Motorman—Duty of Conductor—Evidence—Sufficiency—Carriers—Injuries to Passengers—Action—Issues and Proof—Evidence—Declarations—Admissibility.

Whether an action for injuries to a passenger is in form for breach of contract, or for negligence, is immaterial; since there was no breach of contract unless there was fault constituting negligence.

A street car company owes a passenger very great care for his safety, and, if there is evidence of any negligence of its employees contributing to his injury, the case should go to the jury, unless there is conclusive evidence of his negligence.

Where a passenger, thrown from the platform step by the sudden starting of a street car, which had slowed down, had no intention of alighting there, and had not been misled into taking the position by any indication that the car was stopping to let him off, and the employees did not operate the car so as to injure a person in the aisle, and did not know his position on the step, the rule that it is negligence to suddenly, without warning, start a car which has slowed down or stopped, and from which the passenger is attempting to alight, does not apply.

The motorman of a street car is under no obligation to see that passengers do not put themselves in perilous positions.

The conductor of a street car, after signaling for a desired stop, has nothing further to do with the operation of passenger's perilous position in time to inform the motorman of the need of special care, and, while collecting fares, he may assume that the passenger will not put himself in a perilous position.

Evidence that a passenger was thrown from the step of a street car by a sudden starting after the car had slowed down, without evidence that he had been led to take the dangerous position by the employees operating the car, or that they knew his peril, or that the car was operated so as to injure a person in the aisle, is insufficient to show negligence.

In the absence of any claim that a street car was negligently operated because of the motorman's incompetency, evidence thereof is inadmissible.

In an action for injuries to a passenger, evidence of declarations by the agent of another corporation as to the motorman's incompetency is inadmissible.—(Heinze vs. Interurban Ry. Co., 114 N. W. Rep. 534.)

Kentucky.—Street Railroads—Injuries from Collision—Actions—Instructions—Care Required as to Persons Using Street—Damages—Excessive Damages—Personal Injuries.

In an action for personal injuries, caused by a collision between plaintiff's buggy and defendant's street car, instructions to find for plaintiff, unless the motorman, after he saw, or by the exercise of ordinary care could have seen, the danger of a collision, "used such means as were at his command" to avoid it, are erroneous, where it appeared that there were two ways of stopping the car—by reversing the current and by applying the brake—since the jury may have been misled to believe that he did not use both means

at his command, and that he was negligent in not doing so, while the law only requires that he use ordinary care in the exercise of the means at his command to avoid the danger, etc.

A street car company owes to those having a right to the common use of the streets with it only that degree of care that a person of ordinary prudence would exercise under like circumstances.

Plaintiff was thrown from a buggy in a collision with a street car. She was considerably bruised about the arm and hip, though no bones were broken. She suffered violent pains in the hip, leg, arm, back and head, and was confined to her bed for about two months, and at the time of the trial, a year or more after the injury, was still suffering severely as a result thereof. Held that $3,000 damages was excessive, in the absence of evidence that the injury was permanent.—(Lexington Ry. Co. v. Woodward, 106 S. W. Rep. 853.)

Maryland.—Carriers—Injury to Passenger—Setting Down Passengers—Instructions—Actions for Injuries—Instructions.

In an action by a passenger for injuries, an instruction that, if the jury found that the street car came to a full stop to allow passengers to alight, and thereupon plaintiff, using due care, attempted to get off the car, but while attempting so to do the car was started by a servant of the street car company, by reason of which the plaintiff was thrown to the ground and injured, the finding should be for the plaintiff, was properly given.

In an action against a street railroad for personal injuries to a passenger, an offered instruction that if plaintiff stepped to the footboard of the car while it was still in motion, and on that account was thrown to the street and injured, he could not recover, was properly modified by making it further necessary to his non-recovery that he failed to use ordinary care, since, as a matter of law, it is not always negligence to attempt to get off a car when it is in motion.—(United Rys. & Electric Co. of Baltimore v. Rosik, 68 Atl. Rep. 511.)

Maryland.—Street Railroads—Defective Track—Injuries to Travelers—Nature of Railroad's Liability—Res Ipsa Loquitur—Negligence—Knowledge of Condition.

Baltimore City Code 1906, section 24, requiring railroad companies to keep the streets covered by their tracks in thorough repair, etc., imposes on the railroad company that portion of the public duty which relates to keeping the parts of the streets mentioned in a safe condition, and the railway's liability for injuries caused by its failure to discharge that duty are the same as in like cases against the municipality.

That the wheels of the buggy in which plaintiff was riding when she was injured fell into the cable slot maintained in the street by defendant railway company was insufficient to raise a presumption of negligence on the part of the latter.

Where plaintiff was thrown from a buggy and injured by the wheels dropping into a cable slot maintained in the street by a street railway company, the latter was not liable for plaintiff's injuries in the absence of proof of notice of the defect, either actual or constructive, and negligent failure to repair the same.—(Miller v. United Rys. & Electric Co. of Baltimore, 69 Atl. Rep. 636.)

Missouri.—Carriers—Street Railroads—Injuries to Passengers — Evidence — Instructions — Appeal — Verdict — Conclusiveness—Credibility of Witnesses—Amount of Recovery—Approval of Trial Court.

The conductor in charge of a car called the name of a street. A passenger gave a signal for the car to stop. The car stopped before reaching its usual stopping place, but near to it, and the passenger attempted to alight, when the car suddenly started, causing injury to her. Held, that the passenger had the right to assume that the car had stopped for the purpose of letting her alight, and it was the duty of the conductor to learn whether any passengers were preparing to alight before starting the car.

An appellate court is not authorized to pass on the credibility of the witnesses.

Where the trial court did not think that the verdict in a personal injury action was excessive, and there was nothing to show that it abused its discretion, the court on appeal would not disturb the verdict.—(Hufford v. Metropolitan St. Ry. Co., 109 S. W. Rep., 1062.)

Missouri.—Street Railroads—Care Required at Crossings—Evidence—Weight—Testimony Opposing Facts and Laws—Street Railroads—Collision with Vehicle—Proximate Cause—Concurring Negligence of Another—Negligence—Contributory Negligence—Imputed Negligence—Negligence of Driver.

It is the duty of a motorman on approaching a crossing where he has reason to anticipate the presence of vehicles and pedestrians to keep a close lookout and give warning of the presence of the car.

Testimony entirely inconsistent with physical facts and laws within the knowledge of common experience will be disregarded and treated as though it had not been spoken; hence, where it appeared that a street car could not have been more than 100 feet away when a driver proceeded from a place of safety to the crossing where an accident occurred, his testimony that the rapid progress of the car raised such a cloud of dust as to obscure the headlight so that it could not be seen over a block away must be disregarded.

If a motorman was negligent in not ringing the bell or making an effort to reduce speed after a collision became imminent, negligence of the driver of the vehicle in which plaintiff was riding would not relieve the railway company from liability, on the ground that the negligent acts of its servant were the remote cause of plaintiff's injury.

Where plaintiff, a girl not over 16 years of age, was sitting in the rear of a vehicle, which her stepfather was driving, his negligence in driving into a dangerous position could not be imputed to plaintiff, her status being that of a mere passenger.—(Zalotuchin v. Metropolitan St. Ry. Co., 106 S. W. Rep., 548.)

New York.—Negligence—Contributory Negligence—Danger Incurred in Saving Life—Undue Risk—Instructions—Street Railroads—Personal Injuries—Danger Incurred in Saving Life—Contributory Negligence—Evidence.

In an action for the death of plaintiff's intestate, killed by one of defendant's trolley cars while endeavoring to cross its tracks and assist his brother across, an instruction that deceased was not necessarily guilty of contributory negligence in endangering his own life to save his brother was erroneous, as omitting the qualification that the action of deceased must have been compatible with a reasonable regard for his own safety.

Where deceased was killed by one of defendant's trolley cars while endeavoring to cross its tracks at a street crossing and to assist his brother across, if his own negligence contributed to placing himself and his brother in a dangerous situation, the fact that he then suddenly attempted to save his brother would not absolve him from contributory negligence.

In an action to recover for the death of plaintiff's intestate, who was killed by one of defendant's trolley cars while crossing its tracks at a street crossing and endeavoring to shove his brother across, evidence examined, and held not to justify a finding by the jury that deceased ran in front of the car to save his brother from danger.—(Miller v. Union R. Co. of New York City, 83 N. E. Rep., 583.)

Pennsylvania.—Carriers—Injury to Passenger—Evidence.

The electric controller of a summer car blew out, and, after the car had stopped, a passenger was found lying on the ground some 15 feet back from the rear end of the car. There was no evidence to show how she came there. Held, in an action by her to recover for injuries received, a nonsuit was properly entered.—(Green v. Pittsburg, M. & G. St. Ry. Co., 68 Atl. Rep., 675.)

Rhode Island.—Carriers—Street Cars—Duty of Carrier—Removal of Snow and Ice.—Injuries to Passengers—Negligence of Person Injured—Care Required by Passenger.

It would be unreasonable to require the immediate and continuous removal of all snow and ice from trains during passage, and a passenger cannot assume that the effects of a continuous storm of snow, sleet, or rain will be immediately and effectually removed from the exposed platform of a train between stations.

At the time plaintiff was injured a snowstorm had continued throughout the day, with some rain, and the temperature was below the freezing point. Before starting on the trip the conductor had removed the accumulated ice and snow from the street car steps; but during the trip a considerable mass of ice and snow was deposited on the step by incoming passengers, and plaintiff, in alighting from the car, slipped from the step and was injured. He testified that before stepping down he saw the ice and snow, and used due care in alighting. Held, that defendant was not negligent in permitting snow and ice to gather on the steps, as it would be unreasonable to require it to prevent the steps from becoming slippery by the ingress of passengers between stops.

The prevalence of storm and freezing weather imposes upon a passenger an extra degree of care to prevent injury in alighting from a car.—(Riley v. Rhode Island Co., 69 Atl. Rep., 338.)

CHARTERS, FRANCHISES AND ORDINANCES

Indiana.—Eminent Domain—Compensation—Persons Entitled.

Acts 1901, p. 463, c. 207, sec. 5, authorizes street railway companies to exercise the right of eminent domain, and provides that the company shall deposit with a designated officer a description of the rights and interests to be appropriated, and that such lands, rights and interests shall belong to the company, to use for the purpose specified by making or tendering payment. The section further provides that, if the parties cannot agree upon the compensation, notice shall be served by delivering a copy of the instrument of appropriation, or, if the owner be a nonresident of the county, that he may be served by publication, and that, upon the filing of the act of appropriation and delivery of such copy or publication, three appraisers shall be appointed on the application of either party, who shall return their assessment of damages. Held, that the filing of the instrument of appropriation with the designated officer was a seizure and appropriation of the land therein described, and constituted the final act of taking, upon which title passed, and all damages resulting from the taking thereupon vested in the then owner of the land as a personal claim.—(Ft. Wayne & S. W. Traction Co. v. Ft. Wayne & W. Ry. Co. et al., 83 N. E. Rep., 665.)

Maryland.—Street Railroads—Municipal Franchise Tax—Equivalent for Grant of Rights in Streets—Grant of Franchises—Power to Tax.

Acts 1882, p. 357, c. 229, provided that in lieu of the 12 per cent tax theretofore paid, certain street railway companies should pay the city of Baltimore for the use of the park fund a tax of 9 per cent on their gross receipts accruing from the passenger travel on the railways within the city limits. Acts 1888, p. 113, c. 98 (Annexation Act), provided that all streets, etc., in the annex, which shall have been legally condemned as streets under the provisions of the statutes relating to streets in Baltimore County, shall be held to be validly constituted streets of Baltimore city in all respects as if the same had been legally condemned as such by the Mayor and City Council of Baltimore. Act 1894, p. 837, c. 550, provided for an inspection of the books of the railway companies by the park commission, and that on default of any of the companies operating street railway lines within the present city limits in the payment of the park tax of 9 per cent of gross receipts for all street railway lines within the present city limits, a penalty of 30 per cent should be imposed. Held, that, the tax having been imposed as an equivalent for the grant of the privilege to use the streets for railway purposes, a street railway company was not liable to pay a tax on gross receipts derived from passenger traffic on lines within the city limits constructed on the company's private rights of way.

The street railway was liable for the tax on gross receipts derived from its lines on the public streets of the city, including those lines constructed under private grants on what became public streets of Baltimore County, and those constructed under grants from the Legislature and the county commissioners of Baltimore County before annexation.

A franchise to use a street or other highway for a street railway must emanate from the sovereign power of the State. It may be granted directly by the State, or by a municipal corporation, if authorized by the State, and may be by the State, without the consent of the municipal corporation, in the absence of some constitutional prohibition; and, if so granted, there is no objection to the municipality imposing a franchise tax, if authorized by its charter to do so, since the real consideration for such tax is the use of the streets, and not merely the right to use them, which may never be exercised.—(City of Baltimore v. United Railways & Electric Co. of Baltimore, 68 Atl. Rep., 557.)

New York.—Street Railroads—Rights in Streets—Consent of Local Authorities—Conditions—Statutes—Construction—Consent of Park Commissioners to Occupation of Park Approaches.

Railroad Law, Laws 1890, p. 1109, c. 565, sec. 93, provided that no consent of the local authorities in a city of 1,250,000 population to the occupation of a street for railroad purposes shall be valid, unless it provides for a sale of the franchise at public auction to the highest bidder. As amended by Laws 1901, p. 1229, c. 494, the section still provided in the first sentence thereof that the condition should be attached to the consent of the local authorities in cities of 1,250,000 inhabitants, but in the body of the amendment, one of the main features of which was the confirmation of consents and extension of consents theretofore given by local authorities to the construction of street railroads in cities of the first class, appeared the declaration that the provisions of the section as amended should apply to all cities of the first class. Held, that in view of the rule that effect should be given if possible to all provisions of a statute, and in view of the course of legislation, showing a legislative intent to constantly increase the limit of population of the cities which should be required to insist upon a public sale of street railway franchises as a condition of the consent of local authorities, the provision in the amended portion of the law that it should apply to all cities of the first class had reference only to the provision for confirmation of consents, etc., theretofore given by local authorities, and not to the entire law.

Buffalo City Charter Laws 1891, p. 205, c. 105, sec. 314, provides that the park commissioners shall have power to grant to a street railway company the right to construct and operate a railway, etc., through park approaches. Const. art. 3, sec. 18, provides that no law shall authorize the construction of a street railway, except upon condition that the consent of the local authorities having control of the streets be first obtained, etc. Railroad Law, Laws 1890, p. 1108, c. 565, sec. 91, as amended by Laws 1892, p. 1399, c. 675, provides that if in a city the exclusive control of a street, etc., to be used by a street railway is vested in authority other than the Common Council, the consent of such authority shall be obtained in addition to that of the Common Council. Held, that the validity of the consent of the park commissioners to the construction of a street railway through a park approach is not affected by the fact that it differs in its terms from the consent of the Common Council, especially where its terms are more rigorous.—(Kuhn v. Knight, Mayor of City of Buffalo et al., 83 N. E. Rep., 293.)

Oklahoma.—Mandamus—Performance of Public Service—Carriers—Control and Regulation—Preferences and Discriminations—Passes—Half-fare Tickets—Officers—Qualification—Oath—Carriers—Control and Regulation—Preferences and Regulations—Half-fare Tickets.

"When there is a grant and acceptance of a public franchise which involves the performance of a certain service, the person or corporation accepting such franchise can by mandamus be compelled to perform such service."

The provisions of section 13, article 9, of the Constitution, do not prohibit a municipal corporation operating a street railway from furnishing transportation free to its policemen and firemen and United States mail carriers, and half-rate tickets to school children, and free transportation to children under a certain age while traveling with a parent or guardian.

Municipalities are not prohibited by the provisions of section 13, article 9, of the Constitution, from granting franchises for street railways with conditions contained therein for the carrying of policemen, firemen, United States mail carriers and children under a certain age free, and for the furnishing of transportation to school children at a reduced fare, and when accepted by the grantee in the franchise, are valid.

Policemen, firemen and United States mail carriers are not officers contemplated or included by section 1, article 15, of the Constitution.

Street railways undertaking and contracting with municipalities by provisions contained in franchises granted by such municipalities, to carry policemen, firemen, United States mail carriers and children under a certain age free, and also to carry school children at half the regular rate, are not absolved therefrom by section 13, article 9, of the Constitution.—(Oklahoma City v. Oklahoma Ry. Co., 93 Pac. Rep., 48.)

Pennsylvania.—Estoppel—Acquiescence—Evidence of Consent.

Where a street railway company has been allowed to construct its lines without objection by abutting property owners, and expended large sums thereon, the operation of the line will not be enjoined by one who either gave his consent thereto or stood by and said nothing while the work was going on.—(Maust v. Pennsylvania & M. St. Ry. Co., 69 Atl. Rep., 80.)

Where an abutting landowner consented to the grading of a street railway and the laying of a track on a public highway, and made no objection to its construction, he could not thereafter maintain a bill to compel the line to be torn up and its operation enjoined.

In an action by an abutting landowner to compel a street railway line over a public highway to be torn up, evidence that complainant said to the general manager of defendant company, when laying out the route of the railroad, "I know where you want to go, and go ahead, and I will see you in a few days," is sufficient to justify a finding of consent.

News of Electric Railways

Cleveland Traction Situation

On Dec. 31, A. B. duPont, president of the Municipal Traction Company, and R. H. Bunning, chief engineer, severed their relations with the receivers of the company. Mr. duPont was retained several weeks at his original salary of $15,000 a year, but the salary was reduced recently to $6,000 a year and Mr. duPont was designated as superintendent of power houses and consulting engineer. Lawrence Crecilius will hereafter have charge of the power houses.

There has been considerable discussion recently of the probable disposition of the fare question, which will be based on the reports for November and December. The returns of December will afford data for the first full month of operation under the schedules fixed by the receivers. Tom L. Johnson was in the East last week in connection with the reorganization of the companies controlled by the estate of his brother, Albert Johnson, and could not discuss the question of fare with the receivers and Judge Tayler. The opinion prevails that Mr. Johnson, as Mayor, will oppose any change in the fare other than a charge of 1 cent for transfers. Mr. Johnson has said publicly that the service given now is in excess of traffic requirements, and it is expected that he will urge a reduction of the schedules to yield a return that will cover operation and fixed charges at the present fare. Every effort is being made to complete the December report by Jan. 10, as the receivers desire to prevent further deficits and secure data upon which to base the new rate of fare.

It is stated that attorneys for several of the creditors of the Municipal Traction Company will endeavor to have their claims classified under maintenance and operation, in order that they may be considered as preferred. Master Commissioner Belford began the hearing on these claims on Jan. 4, but on account of the contention of attorneys for the Cleveland Railway that they are not satisfied with the classification made by the expert accountants and that they will accept none of the claims until they have had an opportunity to examine them, Mr. Belford was compelled to adjourn the hearing until Jan. 8. Attorney John G. White, for the Cleveland Railway, claimed all the money now in the hands of the receivers and asked permission to examine all the claims. Attorney Harry J. Crawford and Henry J. Davies, secretary of the Cleveland Railway, will go over the list of claims together.

The order under which Master Commissioner Belford will work directs him to ascertain the assets and liabilities of the Municipal Traction Company; what portion of the assets were turned over by the Cleveland Railway; what debts were contracted prior to April 27, and whether contracted by any other company and assumed by the Municipal Traction Company; debts contracted since that date, with the amounts for maintenance and operation, the amounts for betterments, the amount expended in payment of mortgage indebtedness, the amount spent for permanent extensions. The commissioner will also account for the $293,050 guarantee fund and review the claims of the companies against each other. All claims must be filed with the master commissioner by Jan. 18.

The Municipal Traction Company has been granted an extension of time in which to file an answer to the receivership suit.

About 50 Brill fare boxes have been ordered for delivery to the Municipal Traction Company as soon as possible. One of the lines will be equipped with them and with pay-as-you-enter cars so that the receivers may satisfy themselves as to the saving that will be effected by them.

The Pay-As-You-Enter Car Corporation has brought suit through Kline, Tolles & Goff, against the receivers of the Municipal Traction Company in the United States Circuit Court, claiming that the company has infringed its patents in converting old cars into cars of the pay-as-you-enter type. The petition states that the receivers were notified on Nov. 12 that the cars infringed the patents owned by the Pay-As-You-Enter Car Corporation. The profits are asked on the operation of this class of cars from Nov. 12.

Public Service Commission Disapproves Purchase of River Tunnel by New York City

The Public Service Commission of the First District of New York at a special meeting on Jan. 5 rejected the offer made by the Interborough Rapid Transit Company to sell the Steinway tunnel under the East River between New York and Long Island City to the City of New York. The report of the committee of the whole, on which the commission based its resolution declining the offer, recites the action of the Legislature in passing, at the last session, the bill empowering the city to purchase the property, and calls attention to the fact that this was special legislation, inasmuch as it applied only to the Belmont tunnel and not to any other subway.

Following the offer of the Interborough Rapid Transit Company to sell the tunnel to the city a thorough examination of the property was made by Henry B. Seaman, the commission's chief engineer, who estimated that it would cost $310,000 to complete the line for operation. After giving the route and stating that the line is evidently intended for the operation of surface cars, the report continues:

"In many respects the Steinway tunnel is well located to constitute a valuable adjunct of a future comprehensive subway system. It occupies a level below the present subway in Forty-second Street, and could be extended at some future time across the city to the North River, and possibly south to the new Pennsylvania Railroad station, or to connect with the Hudson & Manhattan subway in Sixth Avenue. If a west side subway south of Forty-second Street were built many of the passengers from the north would proceed downtown by this route. The present east side subway in Fourth Avenue would then be freed from its present congested traffic, and could accommodate the passengers brought by the Steinway tunnel from Queens and the New York Central Railroad. It will pass under the proposed Lexington Avenue subway, and can be made to connect therewith. Practically all of the surface lines of the northwestern portion of Queens could be brought to Manhattan by this tunnel or made to connect therewith."

The legal status is then taken up and the history of the litigation given in detail, after which the terms proposed by the company are set forth. They are, in brief, that the company should transfer all its property rights in the tunnel and franchise, and that the city should pay therefor in city bonds at par "the actual cost to the Interborough" for construction, real estate, interest charges, etc., these approximating $7,239,476, the exact and final figure to be arrived at by an independent audit.

It was proposed that the city should enter into an operating contract with the New York & Queens County Railway for 25 years, the expenses of operation to be equally divided, a 5-cent fare to be charged to any point in Queens County and the city to receive as its share of the proceeds all "local" fares, which were to be estimated at twice the fares received at the two Long Island City stations. When these proceeds should have equaled the amount advanced for operating expenses by the city, interest on city bonds and all arrears, the surplus, if there was one, was to be divided equally.

Taking up this proposal, Mr. Weber, the commission's chief statistician, found at the outset that the company's books showed that nearly $8,600,000 had been expended, including a bonus for quick work by the contractor in an effort to complete the tunnel before the franchise expired, legal expenses, and similar items. Some of these items Mr. Weber questioned the advisability of including in the purchase price, notably "legal expenses for furthering legislation" and "payment for franchises to other than public authorities," but he took the two possible "costs," $7,240,000 and $8,600,000, and found that under the cost of $7,240,000 the annual expense to the city would be $427,500 and that under the cost of $8,600,000 the annual expense to the city would be $480,000, estimated as follows:

	On basis of $7,240,000 Cost	On basis of $8,600,000 Cost
A—Interest on bonds at 4 per cent	$289,600	$344,000
B—Interest on cost to complete tunnel ($310,000)	12,000	*
C—Interest on cost to rebuild station ($300,000)	12,000	12,000
D—Sinking fund of 1 per cent on the above amount	78,500	89,000
Total fixed charges	$392,500	$445,000
E—One-half operating cost, estimated at	35,000	35,000
Total annual expense to city	$427,500	$480,000

*This item is included in $8,600,000.

Mr. Weber concluded that the number of local fares would not be in excess of 1,500,000, or at most 2,000,000 in the first year. Taking 1,500,000 fares as the city's share of the proceeds of operation and the annual costs before mentioned, Mr. Weber gave the two possible deficits as $352,500 and $405,000, depending on what the actual cost of the property was.

Oklahoma Railway Increases Wages.—The Oklahoma Railway, Oklahoma City, Okla., has increased the wages of its motormen and conductors from 17, 18½ and 20 cents an hour to 18, 20 and 22 cents an hour, according as they have been in service one, two or three or more years.

Connection Completed Between Buffalo and Erie.—The Buffalo & Lake Erie Traction Company, Buffalo, N. Y., has completed the bridge over Chautauqua Creek at Westfield, thus making possible the operation of through cars between Buffalo and Erie. The bridge and approaches are 1436 ft. long and the span is 1100 ft. long.

Strike at Rome, Ga., Declared Off.—The strike of the employees of the Rome Railway & Light Company, Rome, Ga., which was begun in October, 1908, has been declared off. Former employees against whom there were no charges of misconduct have been reinstated by the company as far as vacancies would permit.

Conductor Killed by Breaking of Trolley Pole.—A peculiar accident occurred on one of the cars of the Northern Ohio Traction & Light Company at Cuyahoga Falls, Ohio, on Dec. 30, in which a conductor was killed. The pole of a car running at high speed left the wire and after bounding against several span wires broke, and one end was thrown through the vestibule window. It struck the conductor and fractured his skull and he died before reaching the hospital at Akron.

Rights of New York Railway to Sell Power.—The right of the Interborough Rapid Transit Company, New York, to deliver power to the New York City Interborough Railway without first obtaining permission from the Public Service Commission or the city authorities was upheld on Jan. 5 by the Court of Appeals of New York. The City of New York and the Public Service Commission sought to prevent such sale by injunction. The decision by the Court of Appeals confirms a ruling by the Appellate Division of the Supreme Court of New York State dated April 10, 1908.

Removal of Offices of Third Avenue Railroad.—The Third Avenue Railroad, New York, is renovating and extending its car house at 129th Street and Third Avenue, and will move its main offices to that point as soon as the changes are completed. The present car house at Sixty-fifth Street and Third Avenue will still be used for the storage of cars and as a repair shop and all of the main repairs of the company will be carried out there. J. S. McWhirter will retain offices at Sixty-fifth Street and Third Avenue, but F. W. Whitridge, receiver of the company, T. F. Mullaney, chief engineer of the company, and the officers of the accounting department will move to the 129th Street car house.

Chicago & Oak Park Elevated Railroad Ordinances.—After a discussion lasting several months it appears that the city authorities of Chicago and the Chicago & Oak Park Elevated Railroad may soon come to an agreement regarding track elevation and franchise limits. The city has asked Clarence A. Knight, president of the company, to sign a contract ordinance providing for the elevation of the road in Austin, in return for which the city will permit the company to build its proposed Humboldt Park extension and rearrange the stations along its right of way. The Mayor, however, does not agree to a 14-year extension of the franchise for the main line. President Knight is reported to have said that he will recommend to the directors that they agree to elevate the tracks through Austin at once.

Lynchburg Traction & Light Company's Employees' Benefit Association.—At the seventh annual meeting of the Lynchburg Traction & Light Company's Employees' Benefit Association, held recently, A. T. Powell, secretary and treasurer, reported that since the organization of the association seven years ago, $8.002.40 had been paid out in benefits and that during the past year 33 sick benefits had been paid, amounting to $642.14 exclusive of medical attendance. There are now 102 members and the assets are placed at $3,847.65. The following officers were elected at the meeting: R. D. Apperson, president; A. E. Anderson, vice-president; A. T. Powell, secretary-treasurer; Rev. J. L. Nichols, chaplain; Dr. J. W. Devine, physician; S. H. Cochran, D. C. Frost, R. L. Stabler, J. T. Thornhill, W. G. Loving and W. A. Paris, trustees.

Financial and Corporate

New York Stock and Money Markets

January 5, 1909.

The stock market to-day was weak and unsettled on account of the decision adverse to the Consolidated Gas Company, of New York, which was handed down yesterday by the United States Supreme Court. As soon as the decision was made known the stock broke almost 30 points and the net loss to-day amounted to 13. The feeling resulting in the decline in this stock has been reflected in all of the active issues, and losses have been the order of the day. The volume of sales has been well above the 1,000,000 mark for each of the two days. So far as other news is concerned, there is nothing to disturb the serenity of the trading. In fact, there are many encouraging features and the tone is generally buoyant. Recent monthly railroad reports have shown substantial gains over the corresponding months of the previous year, and this should have the effect of strengthening the entire list. Reports of improvement in conditions are arriving from managers of industrial corporations, although the improvement is more gradual than many had anticipated would be the case.

The bond market continues to be strong. The $30,000,000 issue of the St. Louis & San Francisco 5 per cent bonds, subscriptions for which were opened on Jan. 5, were so largely over-subscribed in advance that the subscription books were closed immediately after they were opened. These bonds were quoted on the curb, even before the subscription books were opened, at ¾ to 1 per cent advance on the subscription price. The report that the Pennsylvania Railroad is to put out an issue of $60,000,000 to $80,000,000 bonds has created wide interest.

The money market is practically where it has been for the last few weeks. The supply still seems plentiful, loans are only in normal demand and the rates remain cheap. Call money to-day was quoted at 2 to 2½ per cent, and 90-day paper at 3 to 3¼ per cent.

Other Markets

In the Boston market, the activity of Boston Elevated rights was the principal feature in tractions. Several thousand shares of these change hands daily at prices ranging from 3¼ to 3¾. There has also been some trading in Elevated stock, in Suburban, and in both issues of Massachusetts Electric.

Both Philadelphia Rapid Transit and Union Traction continue to be active in the Philadelphia trading. The former has been especially strong and active and has sold up in the neighborhood of 26. The rumors regarding a possible dividend on Brooklyn Rapid Transit stock and the excellent results recently attained in earnings by that company served greatly to strengthen Brooklyn Rapid Transit and caused considerable trading in the stock. Interborough-Metropolitan was also traded in to some extent in Philadelphia.

Little was done in traction issues in the Chicago market, even the various issues of the Chicago Railways being much duller than usual. A few shares of Subway stock changed hands at about 28.

In the Baltimore market, United Railway bonds continued to be sold. The 4s were quoted at 85½ to 85⅝ and the incomes at 52.

Quotations of various traction securities as compared with last week follow:

	Dec. 29.	Jan. 5.
American Railways Company, Philadelphia	45½	*45
Boston Elevated Railways	123½	126
Brooklyn Rapid Transit Company	67½	69⅛
Chicago City Railway	180	180
Cleveland Railway	—	—
Consolidated Traction Company of New Jersey	a76	—
Consolidated Traction Company of New Jersey, 5 per cent bonds	a104½	—
Detroit United Railway	*53¾	*53¾
Interborough-Metropolitan Company	18⅝	18¼
Interborough-Metropolitan Company (preferred)	47¼	48¼
Manhattan Railway	153	151⅜
Massachusetts Electric Companies (common)	11¾	12
Massachusetts Electric Companies (preferred)	58	59
Metropolitan West Side Elevated Railway, Chicago (common)	11	16
Metropolitan West Side Elevated Railway, Chicago (preferred)	50	50
Metropolitan Street Railway	50	42
North American Company	74⅞	74
Philadelphia Company, Pittsburg (common)	44	43¼
Philadelphia Company, Pittsburg (preferred)	44⅛	44
Philadelphia Rapid Transit Company	23½	24⅞
Philadelphia Traction Company	90⅞	90½
Public Service Corporation, 5 per cent collateral notes	a99½	—
Public Service Corporation certificates	a75½	—
Twin City Rapid Transit Company, Minneapolis (common)	96¼	97⅝
Union Traction Company, Philadelphia	50⅜	51¼

a Asked.
*Last sale.

Annual Report of Boston Elevated Railway

The annual report of the Boston Elevated Railway for the year ended Sept. 30, 1908, presented at the meeting of shareholders on Jan. 4, contains a discussion by President W. A. Bancroft in relation to the great capital improvements which the company has been obliged to make. An abstract of the statement of President Bancroft is given herewith:

"The sum of $200,000 was charged out of earnings and credited to the depreciation fund, but, as the value of worn-out equipment which was disposed of during the year offsets that amount, no actual addition was made to the depreciation fund.

"The Washington Street tunnel, which was opened on Nov. 30, 1908, has proved admirably adapted to the purpose for which it was intended, has diminished congestion, and very much increased the facilities of the company for carrying its passengers.

"Besides this thoroughfare, which will cost, with its approaches and equipment, not less than $9,000,000, and which has been leased to the company for the term of 25 years at an annual rental of 4½ per cent upon its cost, the company is committed to the completion of the elevated extension to Forest Hills, to the building of the Cambridge subway, to the construction of an elevated connection between the Park Street tunnel and the Cambridge Main Street subway, to the lease of the Park Street tunnel, to the building of the East Cambridge elevated extension, to the building of an extension to Malden and Everett, and to a lease of the Riverbank subway. The completion of these various undertakings, together with the Washington Street tunnel and the normal additions to the surface lines, will, within the next five years, impose on this company charges at least as heavy as the company ought to meet.

"Having regard to the existing conditions, not only to the demands of our patrons, but also to the congested conditions of traffic, and to the needs of our system, we believe that none of the undertakings above recited could have been avoided, but we believe, also, that we can, for the present, go no further in assuming additional burdens. Our free transfer system has grown up to the detriment of our revenue, so that we ought to get some relief from its abuses. We may count upon some reduction in operating expense and a progressive increase in revenue. But the present rate of wages we should not wish to reduce any more than we should wish to impair the present high standard of service. We believe that the public will recognize that our present facilities are, for the present, suitable, and will not jeopardize what is admittedly our efficient service. Efficient service can be supplied only when it is joined to reasonable prosperity on the part of the company. This fact is pointed out because, in the zeal for new subways and other thoroughfares, the means necessary to supply them are frequently overlooked.

"Concerning the capitalization of the properties owned and leased by this company, your directors wish you to know that the capital stock of the West End Street Railway on Sept. 30, 1908, was as follows: Preferred, $6,400,000; common, $11,120,150; total, $17,520,150.

"Of this capitalization the preferred stock was the amount authorized by the Legislature for the purchase of the horse railroads which made up the West End system, and was considered only the value of these properties. Of the common stock $7,150,000 was paid in in cash at par, and the balance was sold under orders of the Railroad Commissioners for cash at prices ranging from 40 to 80 per cent in excess of the par value, realizing a premium to the amount of $2,117,049.

"Of the $13,300,000 par value of the stock of the Boston Elevated Railway the first $10,000,000 was paid in in cash at par, and the balance was sold under orders of the Railroad Commissioners for cash at a price 55 per cent in excess of the par value, realizing a premium of $1,815,000 above the par value. The present capitalization of the two companies, therefore, represents an actual payment in cash of $3,932,049.13 above par value of the outstanding stock. The amount of this cash premium has been invested in the properties now owned by the companies, so there is not only no capital inflation of these properties, but much more has been paid in than is represented by the par value of the stocks. The dividends paid on the stocks and the interest paid on the bonds of the two companies make an average return to the capital invested of something less than 5.12 per cent per annum. It is not true, therefore, of these properties that 'excessive dividends are paid on watered stock.'

"Besides its ordinary taxes the company's contribution to the public during the last fiscal year amounted to at least $405,089.76, made up as follows:

Compensation tax for the use of streets under the act of 1897	$117,188.52
Interest at 4 per cent on $4,200,971, cost of paving laid in streets by company	168,038.84
Cost of maintaining street paving by company	66,645.45
Amount of subway rental devoted to sinking fund	45,716.95
Moving snow removed from sidewalks and roofs (estimated) not less than	7,500.00
Total extraordinary payments to the public	$405,089.76
Add taxes assessed on real estate	298,326.80
Add taxes assessed on capital stock	569,803.58
Total	$1,273,220.14
To the above may be added the balance of the subway rental.	159,805.00
Also the rental of the East Boston tunnel	51,685.09
Grand total, which is about 10.5 per cent of the gross revenue of the company for the year	$1,484,710.23

"The company has continued its liberal policy toward its employees in respect to their wages, as well as in other matters. Compensation for learners during the year amounted to $16,203. There was paid during the year the sum of $59,625 as a guaranteed minimum wage for new or extra men. There was also paid as increased compensation to long service men the sum of $68,781. There was paid in pensions, under the provisions recited in former reports, the sum of $12,523. There was also paid in 'satisfactory service' money, in sums of $15 to each of the employees deemed worthy thereof, the sum of $53,430. The aggregate sum of increased payments to employees, under the provisions adopted five years ago, amounted during the year to $210,562. The provisions of last year raising the rate of wages increase this amount by $135,670, making a total of $346,231."

The following report of the business during the year was presented:

Gross earnings from operation		$14,074,697
Operating expenses		9,454,386
Net earnings from operation of owned and leased lines		$4,620,311
Subway rental	$223,316	
Less amount collected from the Boston & Northern St. Ry.	17,794	
	$205,522	
Interest on funded debt of West End St. Ry.	668,280	
Dividend on preferred stock of West End St. Ry., 8 per cent	512,000	
Dividend on common stock of West End St. Ry., 7 per cent	758,841	
Dividend on stock of Somerville Horse R. R., 6 per cent	9,180	
Taxes on West End St. Ry.	574,112	
Interest and taxes on leased property of the Old Colony St. Ry.	40,537	
Interest on leased property of the Boston & Northern St. Ry.	746	
Total payments on account of leased railways		2,769,219
		$1,851,092
Interest on funded debt	$521,353	
Less interest accrued this year charged to construction account	173,216	
	$348,137	
Taxes, Boston Elevated Ry.	294,018	
Compensation tax under Act of 1897	117,189	
East Boston tunnel rental	51,685	
Depreciation fund	200,000	
		1,011,029
Balance		$840,063
Dividend No. 14, paid Feb. 15, 1908, 3 per cent	$399,000	
Dividend No. 15, paid Aug. 15, 1908, 3 per cent	399,000	
		798,000
Surplus for the year		$42,063

The gross earnings from operation of $14,074,697 compare with similar results of $13,952,966 in the previous year, and $13,527,185 in the year ended Sept. 30, 1906.

The number of revenue passengers carried was 273,132,584, an increase of 2,047,769, or 0.75 per cent.

The operating expenses were divided as follows: General expenses, $947,967; maintenance of roadway and buildings, $782,847; maintenance of equipment, $1,144,750; transportation expenses, $6,578,822.

The statistics of traffic compare as follows:

Year ending Sept. 30.	1906.	1907.	1908.
Round trips	5,474,872	5,606,616	5,571,459
Revenue miles, surface	42,337,873	44,027,731	43,818,640
Revenue miles, elevated	7,718,735	7,802,457	7,806,503
United States mail cars	224,178	231,381	232,746
Revenue miles total	50,280,786	52,061,569	.....
Total revenue passengers carried	262,267,240	271,084,815	273,132,584
Average receipts per passenger	$0.04998	$0.04997	$0.04989

Boston (Mass.) Elevated Railway.—The directors of the West End Street Railway have sent to the stockholders of the company copies of the correspondence that has passed between W. A. Bancroft, president of the Boston Elevated Railway, and Joseph B. Russell, president of the West End Street Railway. The directors of the West End Street Railway say they have no intention of consolidating until the Legislature has acted upon the amendment now before

it, providing that the dividend on the second preferred stock to be issued for the West End Street Railway common stock shall be at the rate of 8 per cent per annum after June 10, 1922, when the lease expires, instead of 7 per cent. President Bancroft in his reply says: "I am authorized by the directors of the Boston Elevated Railway to say that up to the present time they have taken no steps to effect a consolidation of the companies and that they will take no such steps unless the West End Street Railway will actively co-operate toward that end."

Chicago (Ill.) Railways.—As there are $18,500 of the underlying bonds of the Union Traction Company, Chicago, still outstanding out of a total of $25,412,500, the Chicago Railways have authorized the Harris Trust & Savings Bank, Chicago, depositary, to accept deposits up to Feb. 1, 1909, so that the holders of the securities still outstanding may receive the benefits of the reorganization plan.

Chicago (Ill.) Consolidated Traction Company.—The bondholders' committee of the Chicago Consolidated Traction Company has extended from Dec. 31, 1908, to Feb. 1, 1909, the time for the deposit of the following underlying bonds of the north division of the Chicago Consolidated Traction Company: Chicago Electric Transit Company; North Chicago Electric Railway; North Side Electric Street Railway; Chicago North Shore Street Railway, and Evanston Electric Railway. The Harris Trust & Savings Bank, Chicago, is depositary.

Compania de Tramvias de Mexico, S. A., Mexico, Mex.—F. S. Pearson, president of the Compania de Tramvias de Mexico, is reported to be negotiating for the purchase of the Chihuahua & Pacific Railroad and the property of the Sierra Madre Land & Lumber Company in behalf of the Canadian syndicate which controls the Compania de Tramvias de Mexico.

Gainesville (Ga.) Electric Railway.—The sale of the property of the Gainesville Electric Railway has been ordered for Feb. 20 by Judge William T. Newman in the United States Circuit at Atlanta, under foreclosure of a mortgage for which the Knickerbocker Trust Company New York, is trustee.

Lake Superior Corporation, Sault Ste. Marie, Mich.—Horatio G. Lloyd has announced that Robert Fleming, London and New York, was the purchaser of the securities of the Lake Superior Corporation from Philadelphia institutions. It is understood that Mr. Fleming represents English and Canadian capitalists, who, with Edward J. Berwind and his associates, now control the Lake Superior Corporation. These capitalists are also understood to have acquired all the other holidings of the Canadian Improvement Company, which include a large amount of stocks and bonds of the Lake Superior Corporation and subsidiary companies. The Lake Superior Corporation will be refinanced and new members will be elected to the directorate of the company to represent the new interests. The company owns directly or through control of the Ontario Lake Superior Company, the capital stock of the Lake Superior Power Company, International Transit Company and the Trans-St. Mary's Traction Company, which operates the electric railway at Sault Ste. Marie, Mich.

Mattoon City (Ill.) Railway.—W. T. Avey has been discharged as receiver of the Mattoon City Railway by the Coles County Circuit Court and the company will resume possession of its property with Marshall E. Sampsell, Chicago, as president.

Philadelphia, Coatsville & Lancaster Passenger Railway, Parkesburg, Pa.—The property of the Philadelphia, Coatesville & Lancaster Passenger Railway has been sold at foreclosure to a committee of bondholders for $126,000. Of the $600,000 bonds authorized, $380,000 had been issued.

Utica & Mohawk Valley Railway, Utica, N. Y.—The Public Service Commission of the Second District of New York has granted the receivers of the Hudson River Electric Power Company permission to lease to the Utica & Mohawk Valley Railway the steam power plant and property located at Utica, the substations at Little Falls, Frankfort and Oriskany and the high-tension transmission line from Utica to Clark Mills. The lease has been approved by the United States Circuit Court for the Northern District of New York. A contract was entered into on March 20, 1905, between the Hudson River Electric Power Company and the Hudson River Water Power Company and the Utica & Mohawk Valley Railway, whereby the Hudson River companies agreed to furnish electricity generated at the Utica plant for a term of 20 years to the Utica & Mohawk Valley Railway. The receivers have found that under the contract electrical energy has been delivered at a loss and cannot be delivered at the contract price without loss and the lease has been determined upon in the public interest.

Traffic and Transportation

Rules Governing Employees and Operation Asked by New York Commission

The following order has been adopted by the Public Service Commission of the Second District of New York, and has been served on the electric railway companies within its jurisdiction:

"Whereas, The reports of investigations of accidents upon street surface railways made to this commission during the year 1908 indicate that a very large proportion of all the accidents so investigated upon such roads during the past year have resulted from one of the following causes, namely:

"1. Failure on the part of the company to adopt a set of rules for the government of employees;

"2. Failure on the part of companies to adopt a proper running schedule;

"3. Defects in rules;

"4. Violation of rules by employees.

"Whereas, The methods employed in securing efficient and capable employees; the methods employed in maintaining such efficiency and capability of employees; the character of rules and schedules adopted by such companies seriously affect the foregoing causes of accidents; and to the end that it may properly discharge the duties imposed upon it by Section 47 of the Public Service Commissions Law, it is important that the commission have all attainable information in regard to each of the above items in the operation of all such roads; therefore,

"Ordered, That each and every operating street surface railway under the supervision of this commission be and it is hereby required and directed, pursuant to the provisions of Section 45 and Section 46 of the Public Service Commissions Law, to furnish and report to this commission on or before Feb. 1, 1909, the following papers and information, to wit:

"1. Five copies of all printed rules governing employees in the operation of its road;

"2. Five copies of the running schedule in effect on this date;

"3. One complete set of blanks used in the employment of motormen and conductors;

"4. A statement showing what instructions, either on the road or in the shop, are given applicants for the positions of motorman and conductor, and how much time, if any, must be spent by him in each case;

"5. A statement showing the methods employed, in addition to the use of blanks, in ascertaining the qualifications of applicants for the positions of motorman and conductor;

"6. In cases where the system includes city and suburban lines, whether promotions are made from the city to the suburban lines; if so, what examinations are motormen and conductors applicants for promotion required to pass;

"7. Does the company maintain a school of instruction for applicants for motormen and conductors; if so, give full description of equipment in school and methods employed in conduct of same;

"8. A statement showing what methods are employed by operating officials to keep informed of the efficiency and capability of motormen and conductors;

"9. What records, if any, are kept of the violations of rules by motormen and conductors;

"10. Any other information on the subjects of maintaining discipline of employees, disclosing accident situations, and suggestions which may in the opinion of the chief operating officer be of use to the commission in investigating the causes of accidents so far as they relate to defective rules or running schedules and lack of discipline of the employees."

Twin City Rapid Transit Company to Publish Its History

The Twin City Rapid Transit Company, Minneapolis, Minn., began the publication in the daily papers of Minneapolis on Jan. 5 of a series of 27 full-page articles covering the history of the company from its beginning to the present time. The announcement of the proposed articles was made in a full-page advertisement in the papers of Minneapolis, signed by C. G. Goodrich, vice-president. This announcement was addressed to the people of Minneapolis, and was as follows:

"After 35 years of labor in organizing and building up the present business and system of the Minneapolis Street Railway, the management has decided to publish in the daily papers a series of articles covering the history of the company from its beginning to the present date.

"The company's history is so closely identified with that of Minneapolis and its citizens since 1873, that it will un-

doubtedly bring back to many of the older inhabitants recollections of the past, and refresh their memories as to the growth of the city since that date.

"To those who have, in more recent years, come to make Minneapolis their home, this history will be interesting and instructive and will give them a better idea of the foundation and growth of the city of their adoption, as well as new information regarding the character of the men who laid that foundation and made possible the phenomenal growth and expansion of Minneapolis and its street railway system.

"These articles are published for the purpose of giving the public a clearer conception of what the company has accomplished during the past 35 years, the large amount of work involved in bringing the property to its present state of high efficiency, and the revenue which must be received if the property is to be kept sound financially and the company enabled to anticipate the demands of the future for extensions of the system and improvements of the service.

"It is believed that this history will prove sufficiently interesting and instructive to warrant the reader in following each article in succession until the entire series is complete, and thus obtain a full appreciation of the growth and development of the street railway system of the city."

Central Electric Traffic Association

A. L. Neereamer, chairman of the Central Electric Traffic Association, Indianapolis, Ind., addressed the following communication to the electric railways in Indiana which are members of the association, under date of Jan. 2, 1909:

"Referring to Bulletin 18, of Dec. 29, calling a meeting of the Indiana lines which are members of the Central Electric Traffic Association at the office of the association, for the purpose of considering matters regarding the Indiana Retail Merchants' Association Convention on Jan. 19 and 20, the lines represented adopted the following resolutions which are herewith submitted for your information.

"*Resolved*, That as a general proposition, no reduced rates will be made by the interurban lines for the Retail Merchants' Association Convention, but that each line reserves the right to meet any local condition which may arise, incident to this convention.

"*Resolved*, That the Indiana lines, so far as possible, be represented officially in Indianapolis during the time of the Retail Merchants' Association Convention to advertise their properties and become acquainted with the various merchants located upon interurban lines, thereby establishing friendly relations which would result in increasing business for each line during the coming year."

Additional Limited Service Between Ft. Wayne and Indianapolis.—The Ft. Wayne & Wabash Valley Traction Company will probably establish an additional limited service between Ft. Wayne and Indianapolis via Bluffton in February. Schedules and rates of fare have not been decided upon. The present limited service between Ft. Wayne and Indianapolis will be continued.

Indiana Company Abolishes Indianapolis Freight Office.—The Indianapolis, Crawfordsville & Western Traction Company, Indianapolis, Ind., has abolished its Indianapolis office which has been in charge of J. W. Mettlin, general freight agent, and all traffic will hereafter be handled under the supervision of the Crawfordsville office.

More Pay-As-You-Enter Cars in New York.—The Third Avenue Railroad, New York, is drilling its employees in the operation of pay-as-you-enter cars, preparatory to installing 135 of these cars in regular service on Jan. 10. The new cars were described in the ELECTRIC RAILWAY JOURNAL of Nov. 21, 1908, p. 1411. The car bodies are 28 ft. long and the total weight of car and trucks fully equipped is 37,000 lb. The company expects within a few days to distribute to the employees a special book of instructions regarding the new cars. The patrons of the company have been appraised of the change in operation by the following notice posted in the cars on Jan. 1: "On Jan. 10. 1909, new pay-as-you-enter cars will be run on the Third Avenue line. Each car will have a fare box on the rear platform. Passengers are requested to have their nickels ready, but the conductors will furnish change, if necessary. Conductors will not be allowed to handle the fares. Each passenger will put the fare in the box, but will hand transfer tickets to the conductors. Passengers desiring transfers must ask for them at the time they put their nickels in the box. Conductors are not allowed to issue them afterward. Passengers are not allowed to enter the car from the front platform, but leave it from either the front or rear platform."

Personal Mention

Mr. L. J. Perry has resigned as vice-president of the Vallejo, Benicia & Napa Valley Railroad, Napa, Cal.

Mr. Robert W. Pomeroy has been elected a director of the International Railway, Buffalo, N. Y., to succeed Mr. Henry J. Pierce, resigned.

Mr. W. B. Parsons and Col. Millard Hunsicker have been elected directors of the London United Underground Railways Company, London, Eng.

Mr. John F. Dryden, president of the Prudential Insurance Company, Newark, N. J., has been elected a director of the Public Service Corporation of New Jersey, to succeed E. F. C. Young, deceased.

Mr. John Wheeler has been appointed superintendent of the Western New York & Pennsylvania Traction Company, Olean, N. Y., to succeed Mr. J. W. Barnes, resigned. Mr. Wheeler was formerly assistant superintendent of the company.

Mr. E. L. Kasemeier has been appointed auditor of receipts of the Ohio Electric Railway. The office of the auditor of receipts will be located at Springfield, Ohio. The auditor's office and the other general offices will remain in Cincinnati.

Mr. E. R. Lilienthal has been elected president of the Northern Electric Railway, Chico, Cal., to succeed Henry A. Butters, deceased. Mr. Lilienthal was formerly vice-president of the company. No successor has yet been chosen to succeed him in that office.

Mr. Frank I. Hardy has been appointed superintendent of the Fort Wayne & Wabash Valley Traction Company to succeed Mr. Robert T. Gunn, who resigned some time ago to become general manager of the Eastern Wisconsin Railway & Light Company, Fond du Lac, Wis.

Mr. George W. Lang has been appointed assistant superintendent of the Ottawa (Ont.) Electric Railway. Mr. Lang entered the employ of the company in 1892 as a conductor, and after four years of service was appointed inspector, in which capacity he served on various divisions of the road.

Mr. Theodore P. Shonts, who has been president of the Interborough-Metropolitan Company, New York, for the last two years, and chairman of the executive committee of the Interborough Rapid Transit Company, New York, for some time, has also been elected president of the Interborough Rapid Transit Company and the Rapid Transit Construction Company to succeed Mr. E. P. Bryan, who resigned last October.

Mr. C. L. Addison has been elected president of the New York & Long Island Traction Company and the Long Island Electric Railway, Hempstead, N. Y., vice Mr. F. L. Fuller, resigned; Mr. William O. Wood has been elected a director of both companies, vice Mr. F. L. Fuller, resigned, and vice-president, vice Mr. C. L. Addison, resigned, and Mr. Alfred A. Gardner has been appointed counsel of both companies, vice Mr. Van Vechten Veeder, resigned.

Mr. Remi Remont has resigned as secretary and treasurer of the Interstate Railways Company and the United Power & Transportation Company, Philadelphia, Pa., and Mr. T. W. Grookett has been elected treasurer of the companies. Mr. William A. Rosen has been elected assistant treasurer of both companies, and Mr. John W. Goodwin has been elected secretary of both companies. The office of vice-president of each company will not be filled until after the respective annual elections have been held.

Mr. F. A. Persons has been appointed superintendent of the Concord, Maynard & Hudson Street Railway, Maynard, Mass., to succeed Mr. John W. Ogden, resigned, who has been appointed an inspector of the Railroad Commission of Massachusetts. Mr. Persons has been engaged in electric railway work about six years. He was formerly with the Connecticut Valley Street Railway, Greenfield, Mass. He has been in the employ of the Concord, Maynard & Hudson Street Railway about four years, and has served in the mechanical, accounting and operating departments of the company in various capacities.

Mr. George F. Faber, general superintendent of the Western Ohio Railway, Lima, Ohio, has resigned from that company. Mr. Faber was formerly superintendent of the Elgin & Belvidere Electric Railway, Elgin, Ill., and at one time was superintendent of the Central Market Street Railway, Columbus, Ohio. The duties heretofore performed by Mr. Faber as general superintendent will be divided between Mr. Ernest Riddle, special agent, who will hereafter have the title of superintendent of operation, and Mr. Malcolm Baxter, master mechanic, who will hereafter have the title of superintendent of motive power.

Mr. Walter J. Jones, consulting engineer for the Interstate Railways Company, Philadelphia, who was associated for three years with Dr. F. A. C. Perrine, who died recently, will continue the consulting engineering practice of Dr. Perrine from New York. After serving four years in the pattern shop and 3½ years in the drafting room of the Dickson Manufacturing Company, Scranton, Pa., Mr. Jones engaged for five years in equipping street railways and in installing power plants in a number of States. Subsequently he was connected in turn with the Suburban Electric Light Company, Scranton, Pa., the Bergen County Gas & Electric Company, Hoboken, N. J., the Stanley Electric & Manufacturing Company and the American Construction Company, New Orleans.

Mr. A. T. Hoyle, acting superintendent of the Glens Falls division of the Hudson Valley Railway, Glens Falls, N. Y., has been formally appointed superintendent of that division of the company. Mr. Hoyle began his railroad career about 20 years ago in the train service of the Delaware & Hudson Company, serving on both the Pennsylvania and Susquehanna divisions of the company and finally becoming conductor and yardmaster. On March 1, 1901, he resigned from the Delaware & Hudson Company to become train dispatcher on the Hudson Valley Railway, and on May 1, 1902, was appointed chief dispatcher, which position he held until Aug. 1, 1908, when he was appointed acting superintendent of the Glens Falls division of the company.

Mr. Romie W. Wilson has been appointed superintendent of construction for the Manchester Traction Light & Power Company, Manchester, N. H., to succeed George N. Burpee, deceased. Mr. Wilson is a native of Champlain, Clinton County, New York, and was born in 1872. In 1895 he entered the employ of the Manchester Electric Light & Power Company as an arc light trimmer, on the commercial circuit, and was kept on this work for 19 months, after which he was on inside wiring for 2½ years. Subsequently he served about two years in outside construction, after which he was appointed general foreman of outside work. Mr. Wilson entered the service of the Manchester Traction, Light & Power Company when that company took over the Manchester Electric Light & Power Company.

Mr. H. D. Murdock, who has been mechanical and electrical engineer of the Indianapolis & Louisville Traction Company, Louisville, Ky., was recently appointed superintendent of the company. The office of mechanical and electrical engineer has been abolished. Mr. Murdock has been identified with electrical work since 1892, when he became connected with the construction department of the Westinghouse Electric & Manufacturing Company. After more than 13 years' experience with this company in constructing and equipping plants, he resigned to become superintendent of the Fifty-second Street shop of the Brooklyn Rapid Transit Company. He remained with the Brooklyn Rapid Transit Company about two years and then accepted the position of mechanical and electrical engineer of the Indianapolis & Louisville Traction Company, which operates its lines with 1200-volt direct current.

Mr. J. W. Mettlin has resigned as general freight agent of the Indianapolis, Crawfordsville & Western Traction Company, Indianapolis, Ind. Mr. Mettlin began his railroad career when a mere boy during the construction of the Lake Erie & Western Railway, and upon the completion of the road entered the train service of the company. Soon afterward he entered the train service and yard department of the Toledo, St. Louis & Western Railway and three years later became a clerk in the yard department of this company, rising finally to the position of traveling auditor. Subsequently, he served as traveling auditor for the Peoria, Decatur & Evansville Railway, the Louisville, Evansville & St. Louis Railroad and the Lake Erie & Western Railway. He was then appointed traveling auditor and special accountant for the Southern Indiana Railway. Leaving this company after two years' service he became traveling auditor of the Kansas City & Southern Railway. He has been associated with the Indianapolis, Crawfordsville & Western Traction Company as general freight agent for the last two years.

Mr. W. A. Gibbs, district manager of the central and eastern divisions of the Ohio Electric Railway, whose jurisdiction was recently extended over the Dayton and Richmond and Dayton and Union City lines, succeeding Mr. E. J. J. Sloat, resigned, is a New Englander by birth and is a graduate electrical engineer. He was appointed manager of the Zanesville Light & Power Company, Zanesville, Ohio, in 1905, and when Mr. J. R. Harrigan resigned as manager of the Columbus, Buckeye Lake & Newark Traction Company, soon after the property was acquired by the Schoepf interests in 1906, Mr. Gibbs was appointed to that position. When the properties of the Schoepf interests in Ohio were consolidated in 1907 as the Ohio Electric Railway, Mr. Gibbs was made district manager, with jurisdiction over the Buckeye Lake & Newark line, which became the eastern division, and the lines of the central division, which were formerly under the jurisdiction of Mr. J. L. Adams as general manager. Mr. Gibbs is preparing to move his headquarters to Springfield, where he will be nearer the center of the lines under his management.

Mr. Chas. G. Lohman has resigned as general traffic manager of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., and the duties which he has relinquished have been divided among the other officers of the company. Mr. Lohman, who was formerly general superintendent of the Chicago, South Bend & Northern Indiana Railway, was appointed general traffic manager of the company in October, 1908. Mr. Lohman has been identified with electric railroading for some 10 years. In 1899 he entered the employ of the Indianapolis (Ind.) Street Railway and served successively as inspector and division superintendent of that company, and subsequently as division superintendent of the Indianapolis Traction & Terminal Company, which succeeded the Indianapolis Street Railway. In 1905 he resigned from the Indianapolis Traction & Terminal Company to become superintendent of transportation of the Indiana Railway Company, at South Bend, Ind., and remained with this company until 1907, when he was appointed general superintendent of the Chicago, South Bend & Northern Indiana Railway. Mr. Lohman has not announced his plans for the future.

Mr. John G. Honecker, whose resignation as vice-president and general manager of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., after serving for 26 years with the Johnson interests was announced in the Electric Railway Journal of Jan. 2, 1909, will continue to reside in Trenton, but will devote the balance of the winter to his interests at Reading, Pa., in the manufacture of gasoline engines for motor boats. Later, he will engage in construction work. Mr. Honecker entered the employ of Mr. Tom L. Johnson and the late Albert L. Johnson, when they were connected with the Brooklyn Street Railway, Cleveland, Ohio, in 1882. Mr. Honecker was then only 15 years old. In 1889 he resigned as paymaster and assistant secretary of the Brooklyn Street Railway to go to Denver, Col., to benefit his health, and while in Denver he worked on outside construction for the General Electric Company. Mr. Honecker went from Denver to Brooklyn as superintendent of the Marcy Avenue and Canarsie divisions of the Nassau Electric Railroad. When the Brooklyn Rapid Transit Company took over the Nassau Electric Railroad he was retained, but subsequently resigned to become connected with the Johnson interests in New York. In 1899 Mr. Honecker visited England and reported on the street railways in that country to the Johnsons. Upon his return from England, Mr. Honecker became connected with the Lehigh Valley Transit Company, Allentown, Pa., in which Mr. Tom L. Johnson and his brother were interested. In 1901 Mr. Honecker went to Trenton with the late Albert L. Johnson and helped to complete the Trenton, Lawrenceville & Princeton Railroad to Stony Brook. He returned to the Lehigh Valley Transit Company later and reconstructed the line between Philadelphia and Allentown so that the running time was reduced from four hours to three hours. In 1904 Mr. Honecker was elected vice-president and general manager of the New Jersey & Pennsylvania Traction Company, Trenton, N. J.; he completed the Trenton, Newhope & Lambertville Street Railway, and reconstructed other lines, and the New Jersey & Pennsylvania Traction Company has recently built a large addition to its power house at Yardley, Pa., under his supervision. Mr. Honecker's popularity with the employees is attested by the recent presentation to him of a handsome diamond-studded watch charm, suitably engraved.

OBITUARY

Anson R. Flower, who was interested in a number of electric railway and lighting properties, died at his home in Watertown, N. Y., on Jan. 3, aged 66 years. Mr. Flower was born at Theresa, N. Y., on June 20, 1843, and was educated in the high school at Watertown. He came to New York in 1897 and engaged in the banking business with his brother, Mr. Roswell P. Flower, under the firm name of Flower & Company. After the death of Mr. Roswell P. Flower in 1899, Anson R. Flower became a special partner in the firm, devoting only part of his time to its interests. He was a director of the Brooklyn Rapid Transit Company; Nassau Electric Railroad, Brooklyn; Brooklyn Heights Railroad and the People's Gas, Light & Coke Company.

Construction News

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

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

RECENT INCORPORATIONS

Phoenix, Tempe & Mesa Railway, Phoenix, Ariz.—Incorporated for the purpose of building and operating an electric railway between the cities named in the title. Board of directors: S. J. Tribolet, L. M. Hoghe, Ike Diamond, Andrew Nielson, Harry J. Bennett, M. L. Vieux and George Hageman. [E. R. J., Dec. 19, '08.]

***Victoria & Barclay Sound Railway, Victoria, B. C.**—Application will soon be made for a charter for this company for the construction of a line from Victoria by way of Otter Point and San Juan to a point on Barclay Sound, near Sarita River. W. H. Langley is solicitor for the company.

***Clinton, Danville & Peoria Railroad, Chicago, Ill.**—This company has been incorporated to construct a 20-mile line from Fithian to the State line east of Georgetown. Principal office, Chicago. Capital stock, $200,000. Incorporators: R. K. Hammond, J. K. Dering, W. S. Bogle, Henry Hafer, J. F. Hitt, Glenn W. Traer and Johnson E. Ford, all of Chicago.

***People's Railway, Woodstock, Ont.**—This company is applying for a charter to construct a road from Woodstock to Arthur by way of New Hamburgh, Berlin, Fergus and Elora. Bonding powers to the extent of $20,000 a mile are asked.

Mercer County Street Railway, Greenville, Pa.—Application has been made to the State Department for a charter for this company to build an electric railway from Greenville to Mercer and Sharon. The company will succeed the Mercer Construction Company which holds the present charter. Incorporators: James M. Campbell, Frank F. Filer, L. W. Orr, Mercer, and S. D. Downs, Greenville. [S. R. J., March 7, '08.]

***Regina (Sask.) Interurban Tramway.**—This company has been incorporated to construct an electric railway from Regina to Long Lake and from that point a circular line running round Regina. Surveys are now being made, and it is expected that work will commence in the spring. Capital stock, $350,000. Incorporators: J. L. R. Parsons, Regina; R. R. Barber, Georgetown, Ont.; C. J. Harris, Brantford, Ont.; W. M. Logan, J. F. Frame, Regina; J. H. Houser, Toronto, Ont.

Otter Creek Electric Railway, Wallingford, Vt.—This company has been chartered to build an electric railway from Rutland to Bennington, traversing the towns of Wallingford, Danby, Clarendon, Dorset, Manchester, Sunderland, Shaftsbury, Arlington and into Bennington, a distance of about 50 miles. Capital stock, $50,000. Incorporators: J. H. Senter, Montpelier; H. B. Barden, L. S. Whitney, S. C. Saunders and J. S. Jones, Wallingford. [E. R. J., Dec. 5, '08.]

FRANCHISES

Pensacola, Fla.—John E. Stillman, Henry M. Yonge and R. B. Simpson have applied to the City Council for a franchise to build an electric railway, beginning at the intersection of Sixteenth Avenue and Cervantes Street to the city limits. [E. R. J., Jan. 2, '09.]

Pittsfield, Mass.—The Board of Aldermen has granted to the Pittsfield Street Railway a franchise to double track its lines from Park Street to Pontoosuc Lake.

***Shangville, Mont.**—An ordinance has been passed by the Board of Aldermen granting W. A. Clark a 99-year franchise for the construction and operation of an electric railway in Shangville. The road will occupy the site now used by the Northern Pacific, as the main line, and along Hix Avenue and past the City Hall, Weston.

Brantford, Ont.—The City Council has passed a by-law allowing the Brantford Street Railway an extension of time in which to fulfil its former agreement with the city, its franchise, granted a year ago, to be sustained on condition that the agreements stated in the previous by-law and somewhat amended be carried out. The company is to give the city, within two months, a bond for $25,000 as a guarantee that the agreement will be adhered to.

***Welland, Ont.**—It is reported that C. H. Burgar, Welland, is endeavoring to secure a franchise for an electric railway to run from the Grand Trunk to the Michigan Central with branches from the Michigan Central to Air Line and from Air Line to Port Colbourne, Ont.

Philadelphia, Pa.—Mayor Reyburn, on Dec. 29, signed the Delaware Tunnel Railway Company's ordinance authorizing the construction of two passenger and freight railway tubes under the Delaware River. [E. R. J., Jan. 2, '09.]

St. Lambert, Que.—The Town Council of St. Lambert has passed the by-law granting a franchise to the Montreal & Southern Counties Railway through St. Lambert across the Victoria Bridge and into the city of Montreal, making its terminus at the foot of McGill Street. The by-law will be submitted to the citizens of the town, who will be asked to vote on it on Jan. 14. [E. R. J., Nov. 21, '08.]

Chehalis, Wash.—The Chehalis City Council has passed the ordinance granting an electric railway franchise to W. J. Patterson, Theodore Hoss and A. Welch for a 35-year period. The same parties have already secured a franchise at Centralia.

***Weston, W. Va.**—The County Court has granted a franchise to Dr. George I. Keener for a term of 50 years for the construction and operation of an electric railroad from Weston to Bendale. Work must commence within six months and the road must be completed within a year.

Edgerton, Wis.—An application has been made to the City Council by the Cincinnati Construction Company for a franchise to construct and operate an electric street railway upon certain streets of Edgerton. Work is to be started within 18 months and the line is to be in operation not later than three years from the date of passage of the ordinance.

TRACK AND ROADWAY

Little Rock & Hot Springs Electric Railway, Little Rock, Ark.—Louis Garrett, general manager of this company, is said to have announced that bids for the construction of the road will probably be advertised for within a few days. The length of the road will be 51 miles. Its terminals will be in Little Rock and Hot Springs, traffic arrangements with local traction lines having been made. There will be an hourly service between the two cities. The company will do both a passenger and freight business. The overhead trolley system will be installed on the entire line. [E. R. J., Nov. 14, '08.]

Warren-Bisbee Railway, Bisbee, Ariz.—It is officially stated that this company will construct about 3 miles of additional track during this year.

Redlands & Yucaipe Electric Railway, Redlands, Cal.—W. D. Larrabee writes that this company has completed about 1 mile of track, but work has been suspended for the winter months. Construction is to be resumed early in the spring. The line will connect Redlands, Yucaipe City and Oak Glen, and will be 22 miles in length. The motive power will be electricity. Capital stock, $1,000,000; issued, $400,000. Bonds, authorized, $400,000. Officers: J. M. Neeland, Los Angeles, president; C. S. Chestnut, Redlands, vice-president; C. D. Myers, Redlands, secretary; W. D. Larrabee, Redlands, general manager and chief engineer. [S. R. J., May 23, '08.]

Waterbury & Milldale Tramway, Waterbury, Conn.—The ELECTRIC RAILWAY JOURNAL is advised that this company contemplates beginning construction of its projected line between Waterbury and Milldale this spring. The road will be about 8 miles in length and will be operated by electricity, the overhead trolley being used. The company has already secured a contract for lighting the town of Wolcott, Conn. Office: 95 Bank Street, Waterbury. Officers: Charles H. Clark, Milldale, president; John H. Cassidy, Waterbury, secretary; Edwin S. Todd, Milldale, treasurer. [S. R. J., May 23, '08.]

Electric Power Company, Jacksonville, Fla.—D. G. Zeigler writes that arrangements are now being made for the awarding of contracts for the building of this electric railway. It is expected that work will be started about Feb. 1. The total system when completed will be 250 miles in length, and it will connect the following cities: Jacksonville, Fernandina, Waycross, Valdosta, Live Oak, Lake City, White Springs, Gainesville, Newberry, etc. It will be an electrically operated line, power being generated at a station which the company will build on the Suwanee River, about 3 miles from White Springs. The repair shops will also be located near the site of the power plant. About 120 cars will be purchased and placed in service upon the completion of the road. In addition, Mr. Zeigler states that the company contemplates furnishing power for lighting, heating and cold storage in the territory traversed by the road. Headquarters, Jacksonville. Capital stock authorized, $3,000,000; issued, $1,000,000. Arrangements are now being made for the disposal of $750,000 in bonds. Officers: W. B. Owen, president; J. L. Lynn, vice-president; J. H. Philips, secretary and treasurer; D. G. Zeigler, general manager, purchasing agent and chief engineer, all of Jacksonville. [E. R. J., Oct. 31, '08.]

Chicago & Southern Traction Company, Chicago, Ill.—The directors of this company have authorized the extension of the company's lines from Kankakee to Lafayette.

Illinois Inland Traction Company, Chicago, Ill.—This company has completed the survey and secured the franchises and rights-of-way for building its railway from Crete, Ill., to Momence, Ill., a distance of 20 miles. This line will pass through Goodenow, Beecher, Solitt, Grant Park and Momence. At Crete the line will connect with the Kankakee branch of the Chicago & Southern Traction Company's lines, and will serve as a feeder for this railway. Construction work will begin early in 1909, but it is not expected the line will be in operation before some time in 1910. W. H. Conrad, vice-president of the Chicago & Southern Traction Company, is one of the promoters of this new line. Headquarters, 731 First National Bank Building, Chicago.

Albia Interurban Railway, Albia, Ia.—This company has completed the construction of its line from Albia to Hiteman, which gives it, including the line built last year to Hocking, 10 miles of interurban road north and south of Albia. The Engineering, Construction & Securities Company, Chicago, had full charge of the engineering and construction work. It is also proposed to extend the line to Buxton early next spring, 9 miles due north from Albia.

Iowa Railroad, Eldora, Ia.—Andrew Stevenson writes that this company contemplates awarding all contracts between January and April, this year, for the construction and equipment of its proposed interurban railway. It is planned to begin work about May 1. The following cities will be connected by this road: Waterloo, Cedar Falls, Grundy Center, Eldora, Hubbard, Radcliffe, Story City, Ames, Des Moines, Boone, Berry, Conrad and Marshalltown. The system will have about 127 miles of standard gage single track. The motive power will be electricity. The power plant and repair shops will be located at Eldora, Ia. It is the intention of the company to furnish power for lighting to towns along the route of the projected road. Capital stock, authorized, $100,000. Headquarters: 153 La Salle Street, Chicago, Ill. Officers: Henry S. Osborne, 1402 Ashland Avenue, Chicago, Ill., president; Andrew Stevenson, Chicago, first vice-president, general manager and purchasing agent; James F. Hardin, Eldora, second vice-president and treasurer; L. W. Harris, Eldora, secretary; George W. Scott, 1301 Security Building, Chicago, electrical and chief engineer. [E. R. J., Oct. 10, '08.]

Manhattan City & Interurban Railway Company, Manhattan, Kan.—The Electric Railway Journal is advised that this company has completed its line for a distance of about 2 miles. It will be standard gage and will be operated by electricity, the overhead trolley being used. Power for the operation of the road will be received from the company's power station, which is now in course of erection. Headquarters: 109 North Fourth Street. Officers: W. R. West, Minneapolis, Minn., president; Joseph T. West, Manhattan, Kan., secretary, treasurer and general manager; F. C. Harris, Manhattan, chief engineer. [E. R. J., Oct. 3, '08.]

Kentucky & Ohio River Interurban Railroad, Paducah, Ky.—According to an official report, it is the intention of this company to begin the construction of its projected line between Paducah, Ky., and Cairo, Ill., this spring. It is to be a standard-gage electric road, 34 miles long, and it is planned to equip it with the overhead trolley. Eight cars will be operated upon the completion of the system. The power station and repair shops will be built at Paducah, Ky. Capital stock, authorized, $250,000; issued, $14,000. Bonds, authorized, $1,000,000. Office: 226½ Broadway, Paducah. Officers: L. B. Whitesides, Franklin, Ind., president; John J. Freundlich, Paducah, vice-president and general manager; C. H. Clark, Indianapolis, Ind., secretary; F. N. Whitesides, Franklin, Ind., treasurer; F. V. Whitesides, Paducah, electrical engineer; J. E. Jolliffe, Paducah, chief engineer. [E. R. J., Sept. 19, '08.]

Bangor Railway & Electric Company, Bangor, Maine.—It is stated that this company is making plans to replace the old track on the Hammond Street line with new next season. The 30-lb. rail will be replaced with the 70-lb. standard rail. The new work will be done from the junction of Hammond and Union Streets nearly to the end of the line, which is a distance of about a mile.

Western Massachusetts Street Railway, Westfield, Mass.—It is stated that this company has under consideration a plan to build a line from East Lee to Huntington over a new survey just completed, which goes south of the old line and nearer Otis Center; also the Great Barrington and Canaan road and a spur track from Great Barrington to Egremont.

Kansas City, St. Joseph & Excelsior Springs Railway, Kansas City, Mo.—Announcement is made that this company contemplates beginning the construction of its projected line early this spring. The road will connect Kansas City, St. Joseph, Excelsior Springs and Liberty, Mo., and will be 110 miles in length. It is the intention of the company to adopt the overhead trolley system. Office: 309 Keith & Perry Building, Kansas City, Mo. Officers: J. J. Heim, president; James F. Halpin, vice-president; Wm. J. Knapp, secretary and treasurer; J. G. Hedrich, chief engineer, all of Kansas City, Mo. [E. R. J., Dec. 12, '08.]

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—This company has completed and opened its line as far as Erie, Pa.

Canandaigua & Southern Electric Railroad, Canandaigua, N. Y.—George H. Switzer, president of this company, writes that it has not as yet been definitely determined when construction will be started on this new line. The road will have a total of 40 miles of standard gage track, connecting Canandaigua, Centerfield, South Bloomfield, Vincent, Bristol, Bristol Center, Bristol Springs, Naples, North Cohocton and Atlanta. It will be a single-phase line, and the company has decided to install the overhead trolley system. Power from Niagara Falls will be used for operating the proposed system. Capital stock, authorized and issued, $1,000,000. Bonds, $2,000,000. Officers: George H. Switzer, Bath, president, general manager and chief engineer; E. G. Hayes, Canandaigua, vice-president; H. C. Hatch, Atlanta, secretary; D. H. Maxfield, Naples, treasurer; E. D. Hamlin, 20 Court Street, Brooklyn, attorney. [S. R. J., Dec. 21, '07.]

Troy, Rensselaer & Pittsfield Railroad, Troy, N. Y.—This company, incorporated to build an electric road, 35 miles long, from Troy, has filed its report with the Public Service Commission for the year ending June 30. It shows that the company has surveyed 2½ miles of road and expended $48,147 for the year, making a total expenditure so far of $65,700, of which $51,942 went for track and road construction and $13,000 for organization. The company has a capital of $350,000, of which $35,000 has been issued.

Whitehall & Granville Railroad, Whitehall, N. Y.—The Vermont Senate has passed a bill amending the charter of this company and allowing it to construct a road into Vermont. The proposed road may be built through Poultney to Granville, or direct from Whitehall to Granville and terminating at West Pawlet, Vt.

Cleveland, Brooklyn & Elyria Railway, Cleveland, Ohio.—It is officially announced that this company is planning to begin construction on its proposed line this spring. The projected railway will connect the following cities: Cleveland, Elyria, Barberton, Orrville, Millersburg, Coshocton and Zanesville. The motive power will be electricity, and it has also decided to adopt the overhead trolley system. In addition to generating current for the operation of its road, the company also expects to furnish power for lighting to cities along the route. Capital stock, authorized, $100,000; issued, $90,000. Headquarters: 319 Citizens' Building, Cleveland, Ohio. Officers: J. J. Breitinger, Cleveland, president; W. E. Brooks, Elyria, vice-president; J. H. Knisely, Jr., Toledo, secretary; B. E. Ottman, Cleveland, treasurer. [E. R. J., July 11, '08.]

***Windsor, Ohio.**—S. Stoughton, Windsor, advises the Electric Railway Journal that the Painesville & Youngstown Railroad is only a project, which will be submitted to the public this month, when some of the promoters will hold a meeting at Painesville. A company will be formed and a charter applied for.

Brantford (Ont.) Street Railway.—It is reported that this company will remodel its entire system and will also build a line from Brantford to Dover within a few months.

Fort William, Ont.—The city is asking the Provincial Legislature to sanction a debenture by-law for $170,000 for the extension of the street railway system.

Toronto & York Radial Railway, Toronto, Ont.—This company has recently completed an extension to its system from Jackson's Point to Sutton, a distance of 1¼ miles.

Coos Bay Railway & Terminal Company, Marshfield, Ore.—It is announced that the work of building the electric railway on Coos Bay will begin this spring. All that is now desired by the company before starting on a $500,000 expenditure is a franchise to run cars through Marshfield. Franchises for North Bend and the intervening district have already been secured and some work at North Bend has been done. The road, according to the company's plans, is to extend from North Bend to Marshfield and then on to Millington, and from North Bend across Pony Inlet to Empire, and on down the coast to Sunset Bay, which is being made a summer resort. The company has advertised for bids for the construction of a tunnel 430 ft. long in North Bend to go under Montana Avenue. The power house for the line is located at Porter, half way between North Bend and Marshfield, and is large enough to supply light for both cities, as well as running the road. The plant

is now about completed, and is designed to meet the demands of a city of 30,000 people. Six boilers and a Westinghouse power plant have been installed in the new building. [E. R. J., Sept. 5, '08.]

Rogue River & Oregon Southern Railway, Grant's Pass, Ore.—G. A. Collins writes that the work of constructing this road, which is to link Grant's Pass and Kirby, Ore., has not yet commenced, but it is the intention of the company to begin work about April 1. The motive power will be electricity and the overhead trolley system will be installed. Capital stock, $1,000,000. Officers: H. B. Buddenborg, 511 Marion Street, Seattle, Wash., president; G. A. Collins, Grant's Pass, vice-president, general manager and chief engineer; O. S. Blanchard, Denver, Col., secretary. [E. R. J., Oct. 31, '08.]

United Railways, Portland, Ore.—It is announced that beginning Feb. 1, regular passenger and freight trains will be operated by this company over its new line between Portland and Holbrook, a distance of 16 miles. A portion of the equipment to be used in this service has been ordered and will arrive within a few weeks. The line between Portland and Linnton has been completed, grading and bridges between Linnton and Holbrook are completed, and the steel is being laid for that portion of the line. It is said that work will begin on freight terminals and sheds and the car shops of the new company at the North Portland terminals within a few days. The line is complete between Portland and Linnton, which includes 3 miles of standard gage track within the city limits, including the track on Front Street and on Fourth Street, and the 6 miles of track from the city limits to Linnton. On the section between Linnton and Holbrook the grading has been completed, the bridges and culverts are in and the company is laying steel. Beyond Holbrook the line is nearly completed to Summit, 2 miles farther west, where a 9000-ft. tunnel is being driven. The tunnel work is largely through rock. The roadbed is being ballasted with crushed rock; there is no grade over 1½ per cent and no curve over 4 per cent.

Waynesburg & Monongahela Electric Railway, Waynesburg, Pa.—W. J. Sheldon writes that contracts for the construction of the first section of this projected road, from Millsboro to South Brownsville via Millsboro, a distance of 20 miles, will be let this month. At the same time orders will also be placed for the necessary equipment for operating the first complete section of the system. Construction will begin immediately after the awarding of these contracts. The line when completed will be about 95 miles in length, and it will extend through the following cities: Waynesburg, Washington, Jefferson, Clarksville, Mariana, Millsboro, Fredericksburg, Mount Morris, Carmichaels, Rice's Landing, Greensboro and South Brownsville. The track will be broad gage and the overhead trolley will be installed. The power plant will be built at Waynesburg, and the repair shops at East Waynesburg. A subsidiary company will be organized for furnishing power for lighting and heating. Headquarters, People's National Bank Building, Waynesburg. Capital stock authorized, $84,000, to be increased to $3,000,000; issued, $28,000. In conclusion, Mr. Sheldon states that this company expects to purchase and operate the Sabraton Railway, which operates a line between Morgantown and Sabraton, 3 miles; to take over and construct the Uniontown, Brownsville & West Side Railway, now being built from Bridgeport through Brownsville and Uniontown, and also the Brownsville, Masontown & Smithfield Street Railway, Masontown, Pa. W. J. Sheldon, 507 North Park Avenue, McKeesport, Pa.

Lakeview Traction Company, Memphis, Tenn.—This company on Dec. 24 began the construction of an interurban electric railway between Memphis and Lakeview, Miss. The entire 12 miles of the line between Memphis and Lakeview have been graded, with the exception of a few short stretches, which will be finished within a few days.

Nashville (Tenn.) Interurban Railway.—The last spike in this road, extending from Nashville to Franklin, Tenn., was driven on Dec. 24, just 75 days from the driving of the first spike at the Nashville end by Mayor Brown of Nashville. The road will be about 19 miles in length.

Fort Worth, Tex.—Stuart Harrison, who is at the head of the Fort Worth & Mineral Wells Interurban Railway, is reported to have said that C. B. Duffy, accompanied by Judge A. G. Mosely, St. Louis, and Luke Cates, Tennessee, will arrive in Fort Worth within a few days with a view to forming a company for the proposed line. [E. R. J., Sept. 19, '08.]

Northern Texas Traction Company, Fort Worth, Tex.—Work is being rapidly pushed on the extension of this company's lines to Washington and Fostepeco Heights and adjacent communities, which was begun this week. Both this and the construction of the bridge over Marine Creek are now under headway, and it is said that the cars will be running over the new tracks within a few weeks. The extension is 2 miles long, and will connect with the stock yards line at its present terminus, Main and Twenty-fifth Streets.

Ogden (Utah) Rapid Transit Company.—It is stated that during this year the Ogden Rapid Transit Company will make a number of improvements and extensions to its system. Among the most important will be the building of an extension through Ogden Canyon, and on to Huntsville and Eden Valley. Another is the extension of the line which has but recently been electrified to the Utah Hot Springs, 10 miles due north of the city—and on to Brigham City. Right of way and franchises have all been secured for this extension. Another city extension which is planned is the building of a line into the First Ward, extending it on Wall or Lincoln Avenues, from Twenty-fifth to Thirty-first Street, and connecting on the latter street by a loop with the Washington Avenue line. Another extension will be the building of a line down Seventeenth Street, on which work is already started.

Thunder Creek Transportation & Smelting Company, Tacoma, Wash.—H. J. Fuller writes that up to the present time no contracts have been awarded for the construction of this line. It is the intention of the company to award contracts soon, as it is planned to begin work early this spring. The line will be 22 miles in length and will connect a number of mines, smelters and townsites in Washington. It will be an electric road and will be equipped with the overhead trolley system. Power will be furnished along the route for mining purposes. Capital stock, authorized, $1,000,000. Headquarters: Bankers' Trust Building, Tacoma, Wash. Officers: A. M. Richards, president; G. Senior, vice-president; W. W. Shenk, secretary and treasurer; Fuller & Manley, chief engineers, all of Tacoma. [E. R. J., Sept. 26, '08.]

SHOPS AND BUILDINGS

Kansas City Railway & Light Company, Kansas City, Mo.—Plans are being completed for the erection of a new car house to include nine tracks, each 100 ft. long. It is expected that this structure will be erected in the spring.

Forty-second Street, Manhattanville & St. Nicholas Railway, New York, N. Y.—Plans have been filed for a new four-story car depot to be built by direction of Receiver Frederick W. Whitridge, on the site of the old car house of this company in Manhattan Street, east of Twelfth Avenue. It will have a frontage of 114 ft. and a depth of 181 ft. and will be of brick with stone trimmings. The new building will cost $58,000.

Portland (Ore.) Railway, Light & Power Company.—This company has recently opened a new freight station. The station and offices occupy a building 50 ft. x 216 ft., the eastern end containing the offices in a space 48 ft. x 50 ft. The new building is located on East Clay and Water Streets. With the adjacent yards and sidings the company owns about a mile of waterfront at this point. Wide spaces on the sides of the new station provide trackage for about 30 cars, and arrangements are made for unloading cars on one side and for loading on the other.

POWER HOUSES AND SUBSTATIONS

New Hampshire Electric Railways, Haverhill, Mass.—This company is said to have under consideration the erection of a new power plant. The place selected is stated as being located on Pelham Street, Methuen, Mass.

Cincinnati (Ohio) Traction Company.—This company is said to have completed plans for a new power station on the north side of Heck Street, between Foster and St. Andrews Streets. The structure will be of brick, steel and concrete, and it is estimated that when completed it will cost $33,000.

Puget Sound Electric Railway, Tacoma, Wash.—This company expects to place in operation within a few weeks a new substation in Puyallup. The station, now being erected near the Northern Pacific Railroad tracks in the eastern part of the city, when completed, will represent an outlay of from $35,000 to $40,000. The machinery cost about $25,000 and the brick building with the concrete foundations cost approximately $10,000. The station will have a capacity of about 700 hp.

Seattle (Wash.) Electric Company.—Announcement is made that during this year the Seattle Electric Company will erect a new power station, terminal and car shops on property at East Jefferson Street and Thirteenth Avenue, Seattle.

Manufactures & Supplies

ROLLING STOCK

Union Electric Company, Dubuque, Ia., will soon ask bids for two or more closed cars, for delivery in September.

British Columbia Electric Railway Company, Ltd., Vancouver, B. C., is reported to be in the market for six sets of trucks.

Mason City & Clear Lake Railway, Mason City, Ia., will soon send out specifications for two 60-ft. cars for interurban service.

Sioux City, Crystal Lake & Homer Electric Railway, Sioux City, Ia., will probably place an order shortly for two or three new cars.

San Francisco, Oakland & San José Consolidated Railway, Oakland, Cal., is having five new cars built in the shops of the Oakland Traction Company.

Lake Erie, Bowling Green & Napoleon Railway, Bowling Green, Ohio, is preparing to ask bids on a 50-ft. double-truck combination passenger and baggage car.

Morgantown Interstate Railroad, Morgantown, W. Va., expects to order three or four interurban cars early this year. The cars will be double truck, length over all, 40 ft.

Edmonton (Alberta) Radial Railway.—The Preston Car & Coach Company, Preston, Ontario, has been awarded the contract to build the six new double-truck cars referred to in the Electric Railway Journal of Nov. 28, 1908. With the motors the cars will cost $5,400 each.

Rochester, Syracuse & Eastern Railroad, Syracuse, N. Y., is preparing specifications for two new cars, which will be operated between Rochester and Auburn. The Beebe Syndicate, which owns the Rochester, Syracuse & Eastern, will also purchase another private car. It will be used on the various lines the syndicate controls by the officials when making inspection trips.

Third Avenue Railroad, New York City, which has issued specifications for 200 convertible cars, with pay-as-you-enter features, as referred to in the Electric Railway Journal of Dec. 19, 1908, and Jan. 2, 1909, announces that the contract will be let Jan. 11. It is understood that the specifications were changed after they were first drawn and this has occasioned some delay. The contract for the motors was placed two weeks ago.

Illinois Traction System, Danville, Ill., is sending out specifications for 10 of the 25 box cars which it was announced in the Electric Railway Journal of Dec. 19, 1908, the company would purchase. These 10 cars are to have end doors, and are to be lined throughout. They are to be provided with metal body bolsters, metal truck bolsters and brake beams. The cars are to be equipped with Tower couplers, Westinghouse H. D. 812 air brakes with F-36 triple valves. The cars are to have outside metal roofs. The extreme height of the cars is not to exceed 15 ft. over brake staffs.

Kansas City, Olathe, Ottawa & Iola Railway, Kansas City, Mo., advises that its initial order for car equipment for its line will consist of eight passenger cars and three 800-kw electric locomotives. The passenger cars are to be equipped with 125-volt a.c. motors and train control. The locomotives are to have a tractive power sufficient for hauling 700-ton trains at 30 m.p.h. They are to be equipped with pony trucks and both pantograph and trolley wheel current collectors. The announcement that this company would soon be in the market for new cars was made in the Electric Railway Journal of Dec. 12, 1908.

Chicago & Alton and the **Toledo, St. Louis & Western Railroads,** after making thorough tests, have placed orders with the Strang Gas-Electric Car Company of New York, for four motor cars for passenger service. It is stated that the manufacturer of the Strang car also has received an order from the Interborough Rapid Transit Company, New York City, for a gas-electric car, which will be equipped with fire apparatus and so designed that it may be used for pulling subway trains to a place of safety in case of fire or other accident. There are being built for use throughout the country 27 gas-electric cars similar in general design to the special car "Irene," which has been described in the Electric Railway Journal.

TRADE NOTES

Walker Trolley Company, Cleveland, Ohio, has recently been incorporated with a capital stock of $30,000 by F. G. Walker, A. H. Fraunfelder, D. P. Thompson, Benjamin Parmley and Parmley W. Herrick.

Quincy-Manchester-Sargent Company, New York City, announces that beginning with Jan. 1, 1909, the company's department of track devices will be operated under the familiar name, "The Q & C Company."

Bates Machine Company, Joliet, Ill., has recently installed for the Keokuk Electric Railway & Power Company, Keokuk, Ia., a compound 18-in. x 30-in. x 36-in. Corliss engine, direct-connected to a Crocker-Wheeler 400-kw, 600-volt railway generator.

Stuart-Howland Company, Boston, Mass., reports that its business is much improved and that more new orders are coming in than for months past. Business in commutators is especially brisk. The company recently received an order for 850 bracket arms.

F. Bissell Company, Toledo, Ohio, dealer in wholesale electrical supplies and machinery, announces than on Jan. 1, Walter S. Bissell, who had been associated with the company for a number of years as traveling salesman, was elected treasurer. Mr. Bissell brings to the position a thorough knowledge of the electrical business and an extended acquaintance among the trade.

W. E. Davis, vice-president of the Cleveland Construction Company, Cleveland, Ohio, has begun an inspection of several important California projects. These proposed undertakings include water-power plants, transmission systems and electric railways. It is stated that if the inspection shows the properties to be feasible the Cleveland Construction Company will establish an office in San Francisco where it may be in close touch with the work.

Scherzer Rolling Lift Bridge Company, Chicago, Ill., has received cable advices from Rangoon, Burma, that the new Scherzer rolling lift bridge across the Ngawun River is completed and opened for railroad traffic. This, the largest bridge constructed in Burma, has a movable span 220 ft. long, the total length of bridge being 820 ft. The bridge is constructed on the main line of the Burma Railways extension connecting Rangoon with Kyngin. The government authorities required the large movable span to expedite the railroad traffic and the heavy traffic on the river. The bridge was designed by the Scherzer Rolling Lift Bridge Company and manufactured in England at the works of Spencer & Company, Melksham, Wilts.

Industrial Instrument Company, Foxboro, Mass., which has been formed under Connecticut laws has a capitalization of $2,000,000, and will act as a holding company for the securities of several instrument and steam gage manufacturers. The incorporators include B. B. Bristol, E. H. Bristol, and W. E. Goodyear, all of Waterbury, Conn. These men have been for many years connected with the Bristol Company. The new holding company has acquired the entire capital stock of the Standard Gauge Manufacturing Company, recently of Syracuse, N. Y., and of the Standard Electric Time Company, of Waterbury, Conn. It is the purpose of this company to manufacture gages for all kinds of steam machinery. A branch office will be established at 50 Church Street, New York City.

ADVERTISING LITERATURE

General Electric Company, Schenectady, N. Y.—The January number of the *General Electric Review* contains a paper on "Foreign Transportation Problems," by E. F. Colyer, and an article on "Electric Drive in Railroad Shops," by John Liston.

Corrugated Bar Company, St. Louis, Mo.—The December number of the house organ of this company, which is called "Design Methods for Reinforced Concrete Construction," discusses reservoirs. The next bulletin will treat of conduits and sewers.

Goldschmidt Thermit Company, 90 West Street, New York City.—The pamphlet of this company issued for the fourth quarter of 1908, called "Reactions," discusses a number of improvements in foundry practice. The varied uses of thermit are described.

Pathé Frères, New York City.—The weekly Bulletin of this company contains notices of a number of new films, the principal of which is entitled "Two Very Unlucky Thieves." The company offers a number of new subjects in every bulletin that it issues.

Ohio Brass Company, Mansfield, Ohio.—This company has issued its monthly bulletin for January which contains information concerning conical strain insulators, new adjustable cross-overs, rail-bond test bars, and some echoes from the Atlantic City convention.

National Electric Lamp Association, Cleveland, Ohio.—The engineering department of this association has issued Bulletin No. 8, which is devoted to miniature incandescent lamps with carbon filaments. It contains a list of the regular types of miniature and candelabra lamps.

Stone & Webster, Boston, Mass.—Stone & Webster issue a reprint from their "Public Service Journal" showing the capitalization and earning power of the Stone & Webster street railway companies. The article was prepared by A. S. Michener, who is comptroller for Stone & Webster.