



### The Increase in Accident Claims

One of the most serious dangers which confronts street railway companies is the rapidly increasing sums which are being assessed the companies in one form or another for the use of streets. This not only takes the form of taxes and other fees paid directly to the city and State authorities, but the large and growing item of damages to persons and property imposed by the courts. To this latter should of course be added the expenses of maintaining a well-organized claim department for investigating alleged injuries and legal department for defending those claims for which the company is not or does not consider itself liable. We predict that there is hardly a street railway company in this country with which the annual expenditure for the use of the streets in the form of taxes and damage claims is not nearly, if not more than, double what it was ten years ago; and while the introduction of electric power has introduced many economies in railway operation, the increased cost of this particular department threatens largely to extinguish the benefits (so far as the railway companies are concerned) conferred by the improved motive power, unless something is done to reduce the expansion of this evil. We have previously considered the subject of the increase during the last ten years of the taxes paid by street railway companies, and it is our intention at this time more particularly to call attention to the growing expenditures in the accident claim departments of railway companies which merit equally serious attention.

It may be said that the operation of the heavier electric cars running at high speeds on streets has introduced greater dangers. This we are not ready to admit; but even if it were so, and granting that a modern electric car is harder to stop than a slow-going horse car, this is no reason why the railway company should assume all the additional danger involved. The electric car occupies a legitimate place in modern methods of city transportation, it is as indispensable as the steam train, compared with the old post coach, and if people do not want to get run over they should keep out of the way. In other words, provided the company does not exceed the speed allowed by the city ordinances, and provided, also, that it uses all reasonable precautions on its cars against accident, it has performed its part of the contract. The extra risk of accident from running electric cars, if there is any, over the old horse cars, is the price paid by the community for the enjoyment of rapid transit, more comfortable cars, and all of the other advantages which go with an improved motive power. The theory that the railway company must take all the additional risk of running modern electric cars over that of running horse cars is as absurd an interpretation of the law of negligence as that a man need take no more care in avoiding accident while crossing a crowded portion of Broadway than in walking 100 ft. in the Maine woods, or that horse cars in turn should travel at the pace of wheelbarrows under penalty of paying for resulting damage. Nevertheless, the courts seem to proceed on the theory that all the extra caution required in running the higher-speed cars devolves on the companies and none on the public, otherwise we should find the accident damages about the same per car mile as with horse cars, instead of considerably in excess of that rate, as is usually the case. As an actual matter of fact, the companies are really running their cars with a much greater modicum of precaution than were the horse cars, because the motormen have an unobstructed view ahead, and are admittedly of a much higher grade intellectually than their predecessors who held the reins.

### Bogus Claims

Another important reason for the increase in the expenditures of the claim departments of many of the companies of the country, is due, we believe, to the settlement, either in or out of court, of claims which are either entirely bogus in character or else of such a slight nature as to by no means warrant the payments made. For this the railway companies are not usually to

blame. We know of many instances where the claim adjuster has been morally certain that the demands made upon the railway company were by no means justified, but has feared to bring the case into court on account of the prejudice of the average jury against corporations in general and especially street railway corporations. For various reasons, which it is not the purpose here to discuss, a feeling has been created that a consolidated company comprising most, if not all, the railways of the city is far richer and more responsible to the public than its original constituent companies ever were and that it should be made to pay in proportion to its supposed affluence, regardless of all other considerations. As a result, it is often considered better policy to compromise for a small sum even when there was no legal liability. These facts have, of course, been the means of subjecting railway companies to assessments from all kinds of bogus claims. The situation has now become so acute that it is the manifest duty of the courts, or of the Legislatures of the several States, if the courts do not have the power, to insist either that stricter proof of the liability of railway companies in damage claims should be required, or in some other way to effect a relief from an injustice which is intolerable.

In the meantime it is a satisfaction to record the detection, through the claim department of the Metropolitan Street Railway Company, of New York, of what seems to be an organized band of conspirators whose purpose it was to secure payment for fictitious damages from street railway companies, and which had already been successful in doing this in at least one other case. The accident referred to took place Oct. 29, 1900, in Manhattan, but the facts were only brought to light in the trial which occurred during the latter part of January this year. They were briefly as follows: The plaintiff, a married woman and a resident of Brooklyn, claimed that on the evening of the day in question she attempted to board an open car, but before she had gained the running board the car was started. This threw her violently to the ground and caused serious internal injuries for which she claimed damages. The testimony was corroborated by a sister who was with her and by two passengers on the car who testified that they had seen the accident but had not previously known the defendant. Two doctors who had attended the patient stated that the woman was suffering from injuries evidently the result of a contusion. It seemed a very clear case against the company, except that the conductor testified that the car was standing still when the woman tumbled over backwards. The motorman did not see her get on the car and could not say whether the car had started when he heard the shout of the passengers. Investigation before the case came to trial, however, showed that the woman had a precisely similar accident less than two months before on another road in Brooklyn, and that this latter company had paid her \$120 and had taken a release before any suit was commenced. Other testimony was presented that the two supposedly disinterested witnesses who saw the accident were really acquaintances of the plaintiff and her husband, and one of them had had an accident case with another road. The credit for running this case down is due largely to J. G. Benning, a representative of the Metropolitan Street Railway Company, and James W. Ridgway, of Brooklyn, the counsel for the company in this case.

In this connection it may not be amiss to refer to the handsome testimonial recently received by Mr. H. A. Robinson, solicitor for the Metropolitan Street Railway Company, at the hands of the Bar Association, of New York, which comprises all of the leading lawyers of the city. About a year ago charges of unprofessional conduct against Mr. Robinson were presented before this body by certain lawyers who had opposed him on trials. These charges, which were based on claims that Mr. Robinson was responsible for a system of settling cases behind the plaintiff's attorney's backs, were very carefully examined by a special committee of the Bar Association appointed for the purpose, and as a result Mr. Robinson was completely exonerated.

### The Brooklyn Bridge Problem

A careful discussion of the Brooklyn Bridge problem appeared in our March 1 issue, so that an early return to the matter might seem rather unnecessary. But reference to this very important subject is again compelled by official utterances, which have far exceeded in impracticability the schemes of some of the most irrational amateur engineers whose daily contributions to the press have furnished material for amusement, if not for thought. We must call attention to the visionary conceptions of Bridge Commissioner Lindenthal, as brought out in his latest plan of relief and printed elsewhere in this issue, and to his entirely uncalled for and cowardly attack on the management of the traction company which is at present operating under the most difficult conditions in the world in a remarkably satisfactory manner. We are happy to see, however, that Controller Grout and the other members of the Board of Estimate and Appropriation, as well as the press and people of New York city, appreciated the absurdities of Mr. Lindenthal's suggestions and immediately expressed their disapproval. Furthermore, we understand that a petition addressed to Mayor Low requesting the adoption of the plan advocated in these columns last week and becoming known as the "Martin Plan" is being circulated among the residents of Brooklyn. The Lindenthal scheme, involving an expenditure of \$14,500,000, enough for another bridge or an extra tunnel or two, includes an elevated connection between the existing Brooklyn Bridge and the new ones, via the present structure, reinforced, on Park Row and the Bowery, an immense terminal for bridge, elevated, surface and subway cars at City Hall, better bridge buildings in Brooklyn, the extension of what Mr. Lindenthal calls the "Navy Yard Bridge," "Ravenswood Bridge" connections, and above all, the use on the three suspension bridges of moving sidewalks or platforms.

To many people unfamiliar with the situation and topography, some of this may not be very clear; but all can understand the proposed resort to moving platforms, such as were in use at the Chicago Exposition in 1893 and the Paris Exposition in 1900. Mr. Lindenthal is quite enthusiastic on the subject and we are ready to admit that the platforms have several noteworthy features of merit when applied to such conditions. We would only stop to point out that instead of getting direct cars home, "from start to finish," great numbers of people would still have to take cars when they stepped off the moving platforms, and here is the old chronic trouble again. Mr. Lindenthal says that while the present carrying capacity of the Bridge service is 36,000 passengers an hour, 16,000 of whom draw seats, the future maximum capacity of the three bridges, according to his plan, would be 110,000 each per hour, of whom at least 80,000 will have seats. Possibly true, but they will mostly have to get fresh seats at the Brooklyn end, every night, "and there the row begins." What the rush for the trolley cars each night shows is that the Brooklynites want to stay in one vehicle all the way, without change, seat or no seat—just to get home as quickly as possible. The dangers of carrying crowds and other transportation difficulties of the moving platform are too evident to require comment.

Incidentally, Mr. Lindenthal gets abusive in regard to the Brooklyn Rapid Transit management. While these officials are quite capable of defending themselves we cannot refrain from characterizing his remarks as indecent and wholly unwarranted. He ventures to remark:

The Brooklyn Rapid Transit Company has an absolute monopoly of passenger transportation in Brooklyn. As its management shall be good or bad, so it will affect the physical welfare of every dweller in that borough. It affects also the transportation over the Bridge, which has become the property of that company to all intents and purposes. That company should provide itself with the very best talent for conducting its business. If it does so it will be able to give comfortable transportation to all passengers in that borough, besides earning great profits for itself. I have no hesitation in saying that if that company had wise and competent management such a thing as a crush at the Bridge would be a rarity, and probably would never be heard of. The jurisdiction of the Bridge Commissioner does not extend further than the Bridge. He cannot regulate the transportation of the Brooklyn Rapid Transit Company.

We would like to contradict all this. It is not for us to defend the sins of omission or commission of the old Brooklyn trolley régime, but it is our concern when the patient and anxious men who are straining every nerve to get good results are thus attacked. The Brooklyn Rapid Transit officials are dealing with a congestion of traffic that is not of their creation, but it may be questioned whether so serious a problem could be grappled with more earnestly and bravely. It will be noted that all the Lindenthal plans deal with bridges still to be finished. Meantime the Brooklyn Rapid Transit has to do its best to handle the enormous tide of travel that swamps its system twice in every twenty-four hours and will do so with increasing severity for at least another two years.

### The Proposed Metropolitan Lease in New York

Two weeks ago we published the complete plan proposed by the directors of the Metropolitan Street Railway Company of New York to lease the company to the Interurban Street Railway Company on a basis of 7 per cent guaranteed dividends, which plan is to be voted upon by the stockholders of the company at a special meeting called for March 20. We also published a statement showing the number of lines in Manhattan to be equipped with the underground conduit system, the earnings of these lines at present, and the gross per mile of track of the lines owned by the company north of Manhattan Island, where the greatest growth of the city will undoubtedly occur during the next ten years. The plan, as outlined in the proposal, has received some criticism in Wall Street and in several of the daily papers. So far as we have analyzed these objections, they seem to be of two kinds: one is that the Metropolitan Securities Company has promised too much to the Metropolitan Street Railway Company, and that consequently it will have difficulty in paying dividends on its own stock; the other is that the Securities Company has promised too little to the Metropolitan Street Railway Company, and that consequently its earnings will be inflated with the surplus over 7 per cent to the detriment of the present stockholders of the Metropolitan Street Railway Company. If these two classes of critics would come together they might be able to understand that the objections neutralize each other, and that while both are partly right, both are also decidedly wrong.

The situation in New York is simply this: To obtain the best financial results from the property of the Metropolitan Street Railway Company, and to carry out to its logical conclusion the broad and far-seeing policy of improvement initiated by the management, additional capital and wider powers of action are absolutely necessary. The former might be secured by the issue of another kind of obligation, but the returns on such additional investment, though certain, will not be immediately available, and it is doubtful whether some stockholders of the present company would care about making such additional investment under the circumstances. The company has therefore made a proposal to its stockholders, which is briefly as follows: "About \$30,000,000 are required to bring the Metropolitan Street Railway system to its maximum efficiency, and the strongest financial interests in the country are ready to put this money into the system. If you believe with them and with us that this will be a profitable investment, you have the privilege of subscribing to this stock at par to the extent of 45 per cent of your present holdings. If, however, you are doubtful as to the wisdom of this investment, there are plenty of other people who have sufficient faith in it to underwrite the issue and who will guarantee by their investment 7 per cent on the Metropolitan Street Railway stock, the dividend which has been paid since 1899."

There are two ways to raise additional capital in any enterprise, one by issuing underlying securities and the other by issuing overlying securities. With the former, the stockholders are obliged to take all the loss if the new investment does not prove profitable; with the latter plan, which is that adopted in this instance, only those stockholders who so elect need enter the new company. This proposition is certainly broad enough and fair enough to satisfy the most sanguine as well as the most timid among the present stockholders.

**Interurban Electric Railways in Michigan**

The lower part of Michigan will soon rival if it will not surpass any part of the State of Ohio in the number and extent of mileage of interurban electric railways. For a long time, Cleveland was the center of interurban electric railway operation, and the first long lines of this character which were built in the country extended from that city. Other cities in Ohio, like Dayton and Toledo, soon became noted for their extensive electric railway projects, and now Detroit, which is joined to Toledo and Cleveland by a continuous line of electric railway, has become a most important railway center. This is well shown in the accompanying map of Michigan, which is a reproduction of one recently prepared by the Railroad Commission of Michigan and which shows the interurban lines in Michigan at the close of last year. For convenience of reference, those lines which are considered as city systems have been omitted.

The most extensive interurban railway system in the State is of course that centering around Detroit, most of which has been consolidated under the management of the Detroit United Railway Company. This includes the Detroit & Pontiac Railway, the Detroit, Rochester, Romeo & Lake Orion Railway and the Detroit & Northwestern Railway. Another extensive system is that called the Rapid Railway system, which covers more than 100 miles of track, reaching from Detroit to Port Huron, and still another is the Detroit, Ypsilanti, Ann Arbor & Jackson Railway which extends north half way across the State, where it connects with the Michigan Traction Company, extending to Kalamazoo. The next largest system of roads to these two are those extending from Grand Rapids, the capital of the State. These roads include the Grand Rapids, Grand Haven & Muskegon Railway, extending toward the northwest, and the Grand Rapids, Holland & Lake Michigan Railway to the southwest. Toledo, as stated, is joined with Detroit by an electric line and also has an important system extending west in the Toledo, Adrian & Jackson Railway and the Toledo & Western Railway. Lansing is connected with St. Johns by the Lansing, St. Johns & St. Louis Railway described in the STREET RAILWAY JOURNAL for Feb. 15, while Saginaw has two important systems, the Bay City Consolidated and the Saginaw Valley Traction Company.

A number of important extensions are under way. The Hawks-Angus syndicate, which owns the Detroit, Ypsilanti, Ann Arbor & Jackson Railway and the Grand Rapids, Grand Haven & Muskegon Railway, proposes the connection of these two lines by way of Lansing. It is also stated that Saginaw will be connected with St. Johns, making a through line from Saginaw to Lansing. The Detroit & Chicago Traction Company, which is planning an electric railway connection between Detroit and Chicago and which is being promoted by the Boland-Flynn syndicate, connects with the lines of the Michigan Traction Company, and will reach Chicago, it is planned, through Niles and Michigan City. A road is also proposed connecting Flint with Saginaw, and bears the title of the Flint, Saginaw & Bay City Company. The Southern Michigan Traction Company is also making surveys for a line from Kalamazoo to Grand Rapids. These are only a few of the many projects which are attracting wide interest throughout the State.

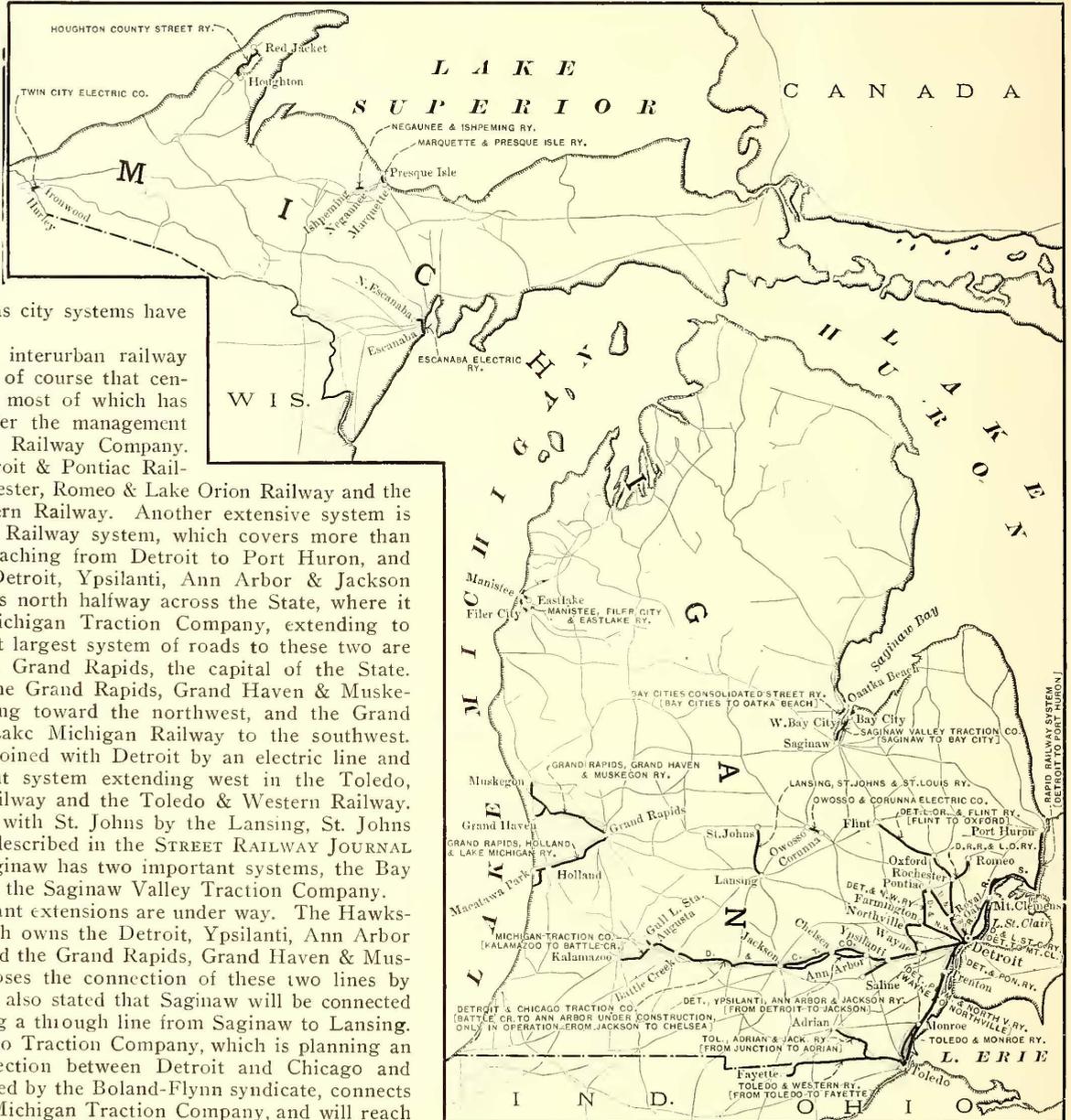
**A New Canadian Trolley Line**

The Levis County Railway Company, which is to operate a 9-mile line on the south shore of the St. Lawrence River immediately opposite Quebec, Canada, expects to begin construction work as soon as possible, and hopes to have its road running by early summer. No contracts for this road have as yet been let, but the general manager, G. U. G. Holman, announces that he will soon be in a position to receive proposals for cars, overhead material, special track work, etc. The rolling stock of the road will probably consist of ten open and ten closed single-truck cars about 30 ft. over all, with 6-ft. wheel bases and bodies 8 ft. wide. The closed cars will be vestibuled at each end. While the 70-lb. rail which is to be laid will be obtained from England, on account of the high tariff on American rails, the special work for the construction as well as all the overhead material will probably be bought in the United States. Wooden poles will be used with brackets. The cars will

be equipped with two motors each, which, with the controllers, etc., will be the only electrical equipment required by the new road, as it will purchase all of its power from the Canadian Electric Light Company, which controls the water-power generating plant at Chaudière Falls.

**The San Francisco Consolidation**

The plan for the purchase of the Market Street Railway and other lines in San Francisco is being underwritten by a syndicate headed by Brown Brothers & Company. The United Railroads,



MAP OF MICHIGAN, SHOWING INTERURBAN ELECTRIC RAILWAYS

upon acquisition of the stock and rights of the constituent companies, and upon the payment of \$1,600,000 in cash, to be used for betterments and improvements, will issue \$20,000,000 each in preferred and common stock and 4 per cent bonds. A portion of the above issue is reserved for minority stocks not yet acquired. The above two classes of stocks will be owned by a New Jersey corporation called the United Railways Investment Company, of San Francisco, the incorporation of which company has already been noted, and this latter company is perfecting the plan for the purchase of the several companies making up the system.

It contracts to purchase the shares of the constituent companies, and its obligation for the same will be paid by the delivery of the 4 per cent bonds of the United Railroads of San Francisco, which is the name of the California company. The Investment Company will issue \$15,000,000 of 5 per cent cumulative preferred stock and \$5,000,000 common. It is the stocks of the Investment Company and the bonds of the United Railroads of San Francisco that the syndicate will underwrite. The system comprises 229 miles of road, the combined earnings of which in 1901 were \$5,125,282 gross and \$2,083,155 net.

**Chart of the Organization of the International Traction Company**

Through the courtesy of the officers of the International Traction Company the accompanying chart is presented of the organization of that corporation. This chart is made up on the same general scheme as that of other companies which have been published in previous issues of this paper, such as that of the Twin

Engineering Company, increasing this amount by £845,000, and making the total capitalization £3,455,000.

The British Electric Traction Company is interested in a large number of English street railways, among which may be mentioned: Birmingham & Midland, Birmingham General Omnibus, Brighton & Shoreham, Cork Electric, Devonport, Dudley-Wolverhampton, Dudley, Leamington & Warwick, Metropolitan, Oldham, Ashton & Hyde Electric; Peterborough, Swansea and Potteries. Mr. Davies, while in New York City, will make his headquarters

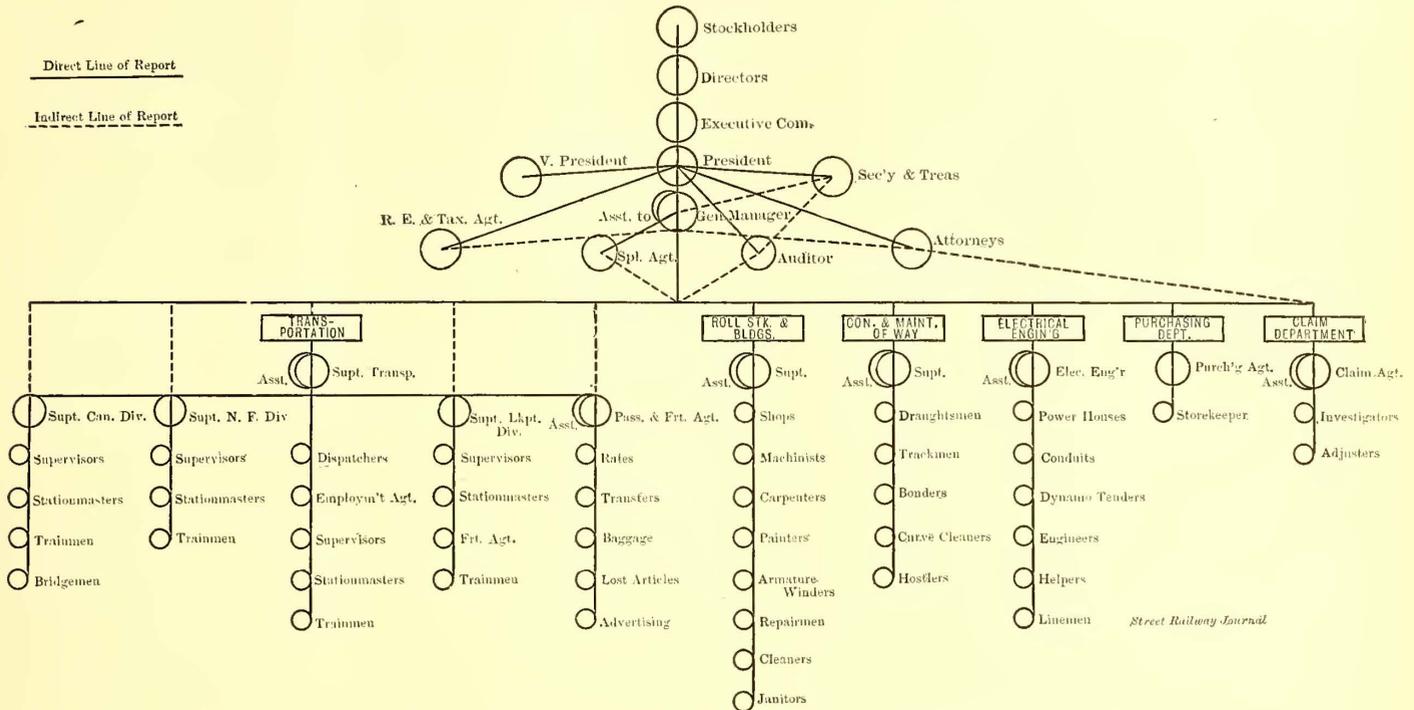


DIAGRAM SHOWING ORGANIZATION OF THE INTERNATIONAL TRACTION COMPANY

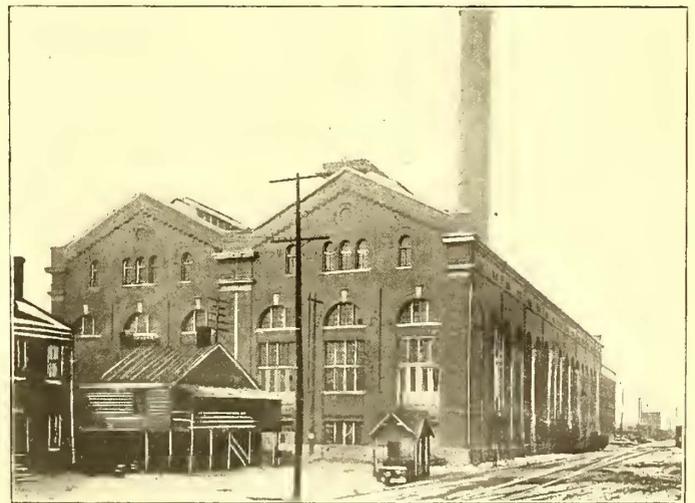
City Rapid Transit Company in the last issue. The plan of organization, however, is considerably different, as will be seen from a study of the chart.

The department of transportation, as will be seen, is divided into five departments, the respective heads of four of which are the superintendents of the three divisions and the passenger and freight agent, who has charge of rates, transfers, baggage, lost articles, etc. The fifth division, including despatchers, employment agent, supervisors, etc., has no single head, but, like the other four divisions, reports directly to the assistant superintendent of transportation and indirectly to the general manager. The other five operating divisions of the company, viz., that of "rolling stock and buildings," "construction and maintenance of way," "electrical engineering," "purchasing department" and "claim department" report through their respective heads to the general manager, who has an assistant and also a special outside representative called a special agent. The work of the secretary and treasurer, auditor, attorneys, tax agent, etc., come directly under the supervision of the president, although the latter two officers also report on the work of their department to the general manager.

at Room 605, 120 Liberty Street, where he will probably remain for a few days. It is his intention to afterward make a rapid tour of the Eastern half of the country, in order that he may visit such applicants as find it inconvenient to see him at his New York office.

**Large Power Station in St. Louis**

The immense power station of the St. Louis Transit Company, which is located on North Second Street, is nearly ready for operation. The station extends from Malinckrodt Street to Salis-



NEW POWER STATION AT ST. LOUIS

**In Search of American Railway Operators**

The British Electric Traction Company, Limited, of London, England, has sent to the United States, as its representative, P. W. Davies, inspecting secretary, in order to secure from this country capable men for the operation of the numerous small systems which it controls in the British Isles. Mr. Davies is desirous of entering into communication not only with men who are capable of taking positions as superintendents or managers of the roads with which he is connected, but he intends to take back to England with him men who can make good inspectors for his road, a class which may be obtained from the rank and file of the motormen and conductors. The British Electric Traction Company, of which Sir Charles Rivers Wilson, chairman of the Grand Trunk Railway, is chairman of the board of directors, and Emile Garcke is managing director, has capital liabilities of £2,600,000, with power to issue a further £400,000 in debenture bonds. There is £600,000 outstanding in 5 per cent debentures, £900,000 in £10, 6 per cent preferred shares, and the remainder in £10 shares of common stock. The company has recently assumed control of the Electrical

bury Street, and occupies a space 302 ft. long by 140 ft. 8 ins. wide, giving two rooms 297 ft. x 66 ft. inside. The engine room will contain two cross-compound Fulton-Corliss engines, each 36 ins. and 70 ins. x 60 ins. stroke, and each directly connected to a General Electric generator of 2250 kw and two other engines of the same type, with cylinder dimensions 28 ins. and 54 ins. x 60 ins. stroke, each directly connected to a 40-pole 1200 kw General Elec-

tric alternator. Each engine will operate at 75 r. p. m. The managers are now awaiting only the receipt of certain electrical machinery, when the station will be in operation.

### New England Street Railway Club Meeting

The regular meeting of the New England Street Railway Club was held at Wesleyan Hall, Boston, on Feb. 27, with President E. C. Spring in the chair. After the usual routine business had been transacted, the evening was devoted to an address on "Four-Motor Equipments and the Possibilities of Alternating Currents for Street Railway Service," by Albert H. Armstrong, consulting engineer of the railway department of the General Electric Company, Schenectady. Mr. Armstrong spoke in part as follows:

Mr. President, Members and Friends—In dealing with the suburban phase of the street railway problem the best starting point is to follow the work of the street railway motor over its line, whether it be in the public highways or private right of way, and to examine carefully the various conditions it has to meet in operation. In general a railway motor is sold under a certain horse-power rating which is largely commercial. For instance, the well-known "G. E.-67" is rated at 38 hp, and is good for that power under certain conditions, that is, it will rise in temperature 75 degs. C. after a one-hour run at that load, but the amount of work that it will do in actual service may bear little relation to the hour rating. The selection of a motor for a certain piece of work is often the cause of a good deal of misunderstanding, and I hope that my remarks will clear up matters somewhat.

In street railway traffic with city work at eight to twelve stops per mile, the maximum speed of the equipment is rarely reached, and it is evident that the motor is called upon to perform work of a very intermittent character in the numerous accelerations, coastings, braking and standing experiences to which it is subjected. In fact, it seldom performs any steady work. In order to analyze the work of a motor we must know the number of stops, car weight, schedule speed (upon which depends largely the rate of acceleration), and the alignment and grade, although this last is of relatively less importance in city service of the usual character.

It is commonly understood that a railway motor should run at from 20 per cent to 25 per cent of its commercial rating, e. g., a 50-hp motor should run at an average of 10 hp to 12 hp during the entire day. This does not mean that the stationary output of such a motor could be continuously 12 hp, but it does mean that the average power throughout the day can be 12 hp, including all the cycles of operation that the motor passes through. Careful study of the service, number of stops, etc., is always essential, and the effect of each series of current impulses must be determined before a motor can be guaranteed to safely perform any particular service.

The limitations of a railway motor are its commutation and heating, these being the two determinate factors. The commutation is concerned with the current impulses in acceleration, while the heating depends, in a way, upon the average of the current impulses in a definite time. In deciding between a two or a four-motor equipment great care must be taken to arrange an acceleration suitable for the type employed. If the schedule speed is high in proportion to the number of stops, the profile irregular or the grades heavy, it is advisable to equip each axle with a motor. A single-truck car with one motor labors under the same disadvantages as a double-truck car with two motors. Higher acceleration may invariably be obtained with a four-motor equipment, because of the greater percentage of weight on the drivers. Personally I believe in equipping every axle in city work. With a steam locomotive the power must be concentrated on a single structure, and considerably more dead weight hauled than in the case of electric motors, which can be subdivided into small units. Early equipments naturally followed steam railway practice, using one motor on a single truck, but as the nature of the motor and the railway problem became better understood the motive power became more subdivided, until all axles were equipped.

The four-motor equipment has many advantages to commend it. The road can be kept in operation under all conditions of weather. With a two-motor equipment we can only secure about 60 per cent of the car weight for purposes of acceleration, and during heavy storms, on streets covered with slimy mud, the coefficient of adhesion often falls as low as 10 per cent, which means a tractive effort of 200 lbs. per ton as a maximum. Such an equipment can scarcely climb an 8 per cent or 9 per cent grade, and if stopped on the grade cannot start again without going to the bottom. A two-motor equipment is of far less use in pushing a disabled car back into the car house than a four-motor outfit.

Continuous operation is of paramount importance in suburban

work. It is often asked by opponents of such lines: "If you take a car for a certain place, is there any assurance that you will get there to-day or to-morrow?" The many years of experience behind the steam roads make them generally considered far more reliable, hence four-motor equipments are most essential in maintaining continuity of service. The suburban street railway is appreciating difficulties already met by the steam railway men before good service could be reached.

As we approach suburban service, new features present themselves, and the "street railway motor" is better termed the "electric railway motor." In city running power is on usually from 25 per cent to 30 per cent of the time. The suburban equipment must be able to reach at least twenty-five miles per hour maximum speed in order to handle the traffic. In city work the equipment may be able to reach a maximum speed of twenty miles per hour, as far as the motors are concerned, but numerous stops frequently reduce this maximum to 12 miles or 13 miles per hour, and thus reduce the proportion of time that current is on. In suburban or interurban work the current is on usually from 50 per cent to 75 per cent of the time. The restrictions and varying requirements of city and suburban service are evidenced in the fact that the suburban traffic means maximum speeds anywhere from 25 miles to 60 miles, or even to 70 miles per hour, with one stop in 3 miles, 4 miles or 5 miles, and the city traffic for the same equipment requires on the outskirts at least one or two stops per mile, with 450 volts available, sharp curves and grades all out of proportion to motors geared for high speeds, while 600 volts may easily be obtained in the suburban regions.

The success of suburban roads is largely due to the taking of a passenger near his own door, carrying him near his office or other destination at a schedule speed nearly as high as the steam road furnishes, while it traverses city streets, open highways and a private right of way perhaps as well. The rivalry for suburban business can have but one ending, for the steam locomotive cannot compete with the electric motor for this class of work. Probably the highest speed suburban road in the world is to be built between Fifty-Second Street, Chicago, Wheaton, Aurora and Elgin. The motor cars will weigh about 35 tons, operate at maximum speeds of 65 miles to 68 miles per hour, and are to be equipped with four 125-hp motors each and train control. A schedule speed of 40 miles per hour, including all stops, is to be made, and the road parallels two or three existing steam lines. There is no doubt but better service will be given by the electric road, and it has the further advantage of connecting with the Chicago elevated lines. Roads like this introduce new problems of current distribution and generation not met in city systems. The average city road operates cars at from 550 volts to 600 volts, and as long as the distances of the loads are short from the power station, and a reasonable amount of feeder copper sufficient, this voltage is high enough for the work. As suburban traffic grows, and as the lines branch out to neighboring towns, heavier equipment, greater speeds and longer distances make 550 volts too low a pressure for the problems encountered, and the current cannot be carried far enough without prohibitive drop unless a prodigious copper outlay is involved, with two exceptions, the booster and the storage battery. I believe that every well-regulated system should contain boosters, in order that certain feeders, which carry a heavy load but a few times a year, can have their voltage properly raised at such times. In such cases it would hardly pay to install copper enough to give proper service to a badly loaded branch but a few times a year, or to put in alternating current transmission, with a consequent idle rotary or motor generator, and heavy fixed charges on investment. A series booster in the power station can carry these infrequent loads very well, and can be used at other times by connecting to other feeders which are heavily taxed as the system grows.

The storage battery on the line is useful when the voltage fluctuates considerably, being high when the load is light, and low when it is heavy. By carefully noting the fluctuations, and properly proportioning the number of battery cells to the voltage range and average, we can install a battery at or near the end of the line and obtain a reasonably good voltage, fairly constant, and somewhat lower than the power station. The battery charges during time of light load and discharges during heavy periods giving the power station a far more constant load, as well. The limitations of the battery lie in the difficulty, if not impossibility, of increasing its size to any material extent as the system grows. A rapidly expanding system has little use for a storage battery.

As the service increases, neither booster nor battery and only prohibitive copper outlay can handle it by direct-current methods of distribution or transmission. We must therefore use an alternating system, and for suburban traffic the usual type is a three-phase alternating station generating current at from 15,000 volts to 20,000 volts, with rotary converter-sub-stations located at the ob-

jective points with reducing transformers changing three-phase alternating current to 600 volts direct current through the windings of the rotaries. Such sub-stations require attendants, and should be installed only where the volume of business and extension of the local feeder system warrant the heavy fixed charges and maintenance accounts. Even for city work, like that in New York, Buffalo, St. Louis and others, a single three-phase alternating station, operating at high potential, has advantages far beyond a number of direct-current stations well placed and operating at 600 volts. High potential distributing systems depend much on the locality. In city service like that in Buffalo underground cables operating at 20,000 volts are in successful use, and many suburban lines are being installed at higher voltages, 40,000 volts being in actual service to-day with 60,000 volts to 70,000 volts transmissions under construction. As the distance covered increases as the square of the potential, it is evident why the adoption of the alternating systems has been so largely responsible for so many consolidations. A generating station, well placed as to water supply can transmit power at 13,000 volts to sub-stations 25 miles away readily and successfully, and can thus cover a territory whose area is 1063 square miles, excluding the local feeders.

The ordinary suburban proposition implies cars of 20 tons to 25 tons weight, speeds of 45 miles to 50 miles per hour, and an average speed, including stops, of 20 miles to 22 miles per hour. The Chicago-Elgin road referred to has a generating station operating at 26,000 volts, and thus covers a possible transmission area of an 80-mile diameter circle, or 5026 sq. miles. It is probable that two or more cars will be operated per train.

Another phase of the suburban problem is the headway possible between cars at such high speeds. In steam railroad practice on roads like the New York Central, intervals like four minutes or five minutes are required at high speeds, and the rapid transit subway trains in New York will have about this interval in express service. Such work is possible only on the basis of reliable automatic signals, and such will doubtless be free from being obscured by smoke and steam in the New York subway. On suburban lines the interval is less frequent, being, in the majority of cases, thirty minutes in summer and thirty minutes to sixty minutes in winter. The Schenectady & Albany line operates 25-ton to 28-ton cars at 45 miles per hour maximum speed on the public highway, and the present fifteen-minute interval is soon to be reduced to seven and a half minutes. Double-headers will also probably be run. Some reliable system of train signals must be used or a delay of two minutes or three minutes becomes extremely dangerous.

The installation of suburban railway lines has usually been in the more thickly settled districts outlying cities. Such lines have the remarkable power of creating travel not existing before, and often pay where parallel steam lines are operated at a financial loss.

Another class of service where the prospects, perhaps, justify electrical equipment, is found in branch lines of steam roads where traffic is heavy, or in high-speed interurban roads connecting important centers.

In a recent trip I found a number of Western railroads, and some Eastern ones as well, operating over grades of 2 per cent from 10 miles to 20 miles long. The B. & O. has, I believe, in the Allegheny Mountains, a 2.2 per cent grade 18 miles or 20 miles long. With such roads a steam locomotive hauling 1200 tons to 1500 tons on a level cannot surmount the grades, and the train has to be split up, with the addition of a helper locomotive on each section, until the end of the grade is reached. This involves the maintenance of a large number of engines as helpers, entailing considerable loss of time in splitting up and expense in maintenance. It is proposed to apply electricity to this service, and the outlook is encouraging. For, from the nature of the route, we usually find the line following a divide in the mountains along which runs a stream of considerable power. Of the roads I investigated water-power from 2000 hp to 20,000 hp was found almost alongside of the track. The power station loads in such cases would be fairly good, as a 1000-ton freight train with a 1000-hp electric helper climbing a 2 per cent grade at 8 miles per hour could frequently be one of four to six per day in one direction, the load of each one lasting, say, three hours. On such systems we find that the direct-current motor is seriously handicapped by the short distance of power transmission possible without alternating currents; 600-volt apparatus is about the limit, although probably 1000-volt apparatus could be designed and operated in special cases. Even this voltage is much too low. Then, too, rotary sub-stations every few miles are expensive to install and maintain, with heavy fixed charges and expensive third-rail construction to be considered also. Recent tests made with induction motors show that it possesses favorable characteristics for certain classes of railway work. Primarily the induction motor consists of a field of sheet-iron laminations provided with a winding similar to the armature of a direct-current railway motor, connected to a three-phase alternating circuit. A simple induction motor armature

would be a cylindrical "chunk" of iron, but to increase the efficiency it is laminated, and wound by bars or coils, requiring no commutator, and it may or may not need collector rings, according to the method of control. It is simple to manufacture, and, of course, does entirely away with commutation difficulties. We can wind induction motors for any potential that we can secure sufficient insulating space upon, which, of course, means much higher potential than in direct-current work. We are considering the use of 3000 volts on mountain roads as trolley potential, and also on branch lines equipped for induction-motor service, either by direct feed or by step-down transformers. No change in the character of the three-phase current itself is needed in using the induction motor. The apparatus employed in such a transmission would usually be a water-power generating station supplying current at high potential to a transmission line feeding step-down transformers at 3000 volts, either on the car or in stations along the line, with a locomotive equipped with three-phase induction motors operating at 3000 volts. The only attendance required is at the generating station, and this is a minimum, if the plant is hydraulic. Casual inspection once a day of the transformers is all that is necessary, and this can often be done by construction gangs along the line. The motors themselves operate at practically constant speed on level, ascending grade or down hill, returning power to the line on the descent. These two features of constant speed and returning energy to the line are of no small importance. It is possible that in the future roads of this mountain type and certain branch steam lines will be equipped with alternating motors instead of direct current. The feeder investment is low with the alternating system, and the transmission at high voltage most economical. Certain disadvantages tell seriously against the induction motor for railway work. The system is not interchangeable with any other now in operation in cities; is practically limited to private rights of way; necessitates changing cars at the city line, or equipping the city system with alternating current, a most impracticable plan at present, two overhead wires, and less efficiency of acceleration, together with low average power factor. Such a system is not adapted to city work, and is not seriously considered for heavy suburban traffic at present. The installation of induction motors might be seriously considered on an air line between New York and Philadelphia over private right of way between termini not connected with either city system, but in the Chicago-Elgin road it was found impossible to compete with direct-current motors at the schedule speed required, with even but one stop in 3 miles, quite aside from commercial considerations.

Mr. Armstrong closed by inviting full discussion and questions, and in reply to an inquiry gave the following range of power consumption for different classes of service in watt-hours per ton mile: City, 80 to 120; elevated, as in Chicago, 70 to 90; suburban, or long distance, 40 to 50; all at the switchboard. He approved unquestionably of four-motor equipments for heavy city work, despite the fact that four motors required slightly more power than two, other things being equal, on account of the greater dead weight and slightly reduced efficiency. He thought that careless work by the motorman might readily swallow up any difference in the two equipments' power consumption.

Mr. William Pestell, superintendent of motive power of the Worcester Consolidated Street Railway Company, gave the results of a test made on his road on four cars run all day, as follows:

Twenty-five-foot box cars, two G. E.-58 motors, 2300 watt-hours per car mile; 25-ft. box cars, four G. E.-52 motors, 2500 watt-hours per car mile. Tests made with four G. E.-58 motors showed a lower power consumption than with four G. E.-52 motors. The G. E.-58 gearing was higher than the G. E.-52.

The meeting closed at 9.30 p. m. Before adjourning the announcement was made that at the next meeting Professor A. E. Dolbear, of Tufts College, would probably give an address on "Wireless Telegraphy."

### Engines for the Underground

The Allis-Chalmers Company has contracted to furnish six additional engines of a maximum of 12,000 horse-power each, to be completed as soon as possible, for the New York subway. These engines are to be duplicates of engines now under contract, and will complete the power necessary to drive the machinery of the underground road, when completed. The full amount of the contract is \$1,305,000, the price of each engine being \$108,750, making the cost of the six engines now ordered amount to \$652,500.

The contract for the first six engines carried with it an option to increase the number to eight within two months from the signing of the contract at the same price, and to increase the order to the full complement of twelve. The six engines that are already contracted for are to be completed for delivery in eighteen months from last October.

## Report of the Sao Paulo Tramway, Light & Power Company, Limited

The annual report of the Sao Paulo Tramway, Light & Power Company, of Sao Paulo, Brazil, submitted at the second annual meeting, held in this city Jan. 16, 1902, shows that the whole of the capital stock of the company has been issued, namely, \$6,000,000 in 60,000 shares, of \$100 each. The authorized issue of first mortgage bonds is \$6,000,000, bearing interest at the rate of 5 per cent per annum. Of these bonds \$4,125,000 have been sold, and the balance, \$1,875,000, has been pledged as security for loans.

Work upon the company's plant at Parnahyba was commenced Sept. 16, 1899, and was completed and put in operation Sept. 23, 1901. The plant installed is sufficient to generate 6,000 hp, and provision has been made whereby a further supply of 10,000 hp can be obtained simply by the addition of the necessary pipe line, turbines and dynamos.

Construction of the company's electric railway was started July 4, 1899, and sufficient of the system was completed to begin operations with eight cars on May 7, 1900. At the present time there are in operation thirty-three motor cars, the earnings of which average \$44 per car per day, or 34 cents per car mile, the track mileage in operation being 35 miles. During the conversion of the recently acquired mule railway to an electric system, the company is continuing to operate it by mules. There are in operation at the present time forty-four cars, the earnings of which average \$17 per car per day, the track mileage in operation being about 22 miles. The city is divided into three zones, of 3 km (2 miles) each, for the purpose of charge of fares for passengers and freight. The passenger fare to be charged is 200 reis (5 cents) within each zone.

There have been secured up to the date of our last returns contracts for 15,000 incandescent lights, of which 11,000 are in service. Contracts have been secured for 500 arc lights, of which there are in service at the present time 372 lights. Rates secured for lights are: Incandescent, 800 reis (20 cents) per kw-hour, and arc, 50 milreis (\$12.50) per month for light supplied from sunset to midnight. Contracts have been closed for stationary motors aggregating 1300 hp, of which there are connected services using about 400 hp. The rates secured for power for 10-hour service per day vary from \$60 to \$160 per year. The lowest rate the company has made is for 500 hp, being \$85 per hp per year for a service of twenty-four hours per day.

Record of earnings for the past six months in Brazilian currency are as follows:

	GROSS INCOME REIS	OPERATING EXP REIS	NET INCOME REIS
OPERATING BY STEAM			
July.....	292,431,210	232,537,972	59,893,238
August.....	302,700,690	227,620,471	75,080,219
OPERATING BY WATER POWER			
September.....	342,693,830	196,013,512	146,680,318
October.....	329,903,300	186,903,778	142,999,522
November.....	348,304,600	179,882,732	168,421,868
December*.....	350,000,000	180,000,000	170,000,000
	1,966,033,630	1,202,958,465	763,075,165

\* December month estimated.

The rate of exchange varies from time to time. Calculating a milreis (100 reis) at 25 cents the totals of the above figures would, in Canadian currency, be as follows:

Gross Income .....	\$491,508
Operating Expenses .....	300,739
Net Income .....	\$190,769

The following shows the distribution of income and operating expenses for the month of November:

	GROSS INCOME REIS	OPER. EXP REIS	NET INCOME REIS	OPER. EXP., %
New Electric Tramway.....	180,264,200	52,465,590	127,798,610	29.1
Old Mule Line.....	93,693,000	89,435,030	4,257,970	94.4
New Electric Light and Power.....	42,936,020	10,112,650	32,823,370	23.5
Agua e Luz				
Old Lighting Co....	12,127,700	15,343,882		126.5
St. Amaro Steam Line	19,278,680	12,525,580	6,753,100	64.9
	348,304,600	179,882,732	171,633,050	

Deficit Agua e Luz (Old Light Co.)..... 3,216,182

Total net income..... 168,421,868

In explanation of the deficit of the Agua e Luz (the old lighting company), it may be said, that since the inauguration of the company's light and power service many customers of the Agua e

Luz Company have transferred their contracts to this company, thus causing the deficit mentioned. The Agua e Luz Company will shortly be transferred to this company, when its operating expenses will cease. Also, the net earnings of the light and power department will be materially increased when all of the business of the Agua e Luz has been transferred to this company.

Had the mule lines been converted to electric, and the Agua e Luz transferred to this company, all operating from water power, the statement of November would, expressed in Canadian currency, be as follows:

	GROSS INCOME	OPER. EXP.	NET INCOME
Tramway.....	\$68,490.55	\$17,432.93	\$51,057.62
Light and Power ..	13,765.95	3,240.67	10,525.28
Steam Railway.....	4,819.67	3,131.39	1,688.28
	\$87,076.17	\$23,804.99	\$63,271.18

Taking this as an average, the returns from twelve months' operation would be as follows:

Gross Income .....	\$1,044,914.04
Operating Expenses .....	285,659.88
Net Income .....	\$759,254.16

## Annual Report of the Chicago City Railway

The annual meeting of the stockholders of the Chicago City Railway Company took place Feb. 17, 1902. The following report was made of the earnings and expenses for the year:

### EARNINGS

	1901.	1900.
Passenger receipts .....	\$5,856,386	\$5,506,314
Receipts from other sources.....	43,884	36,866
Total gross earnings.....	\$5,900,271	\$5,543,280

### EXPENSES

Operating expenses, taxes, reserves for replacements and renewals and damages .....	\$3,869,173	\$3,655,002
Depreciation .....	180,000	*
Interest on bonded indebtedness.....	103,938	207,877

Total expenses .....	\$4,153,111	\$3,862,879
Net income .....	1,747,159	1,680,301
Dividends .....	1,620,000	1,575,000
Surplus for year .....	\$127,159.47	\$21,858.43

(12 per cent on \$13,500,000 for six months of 1901, and 9 per cent on \$18,000,000 for six months of 1901.)

\* In 1900 depreciation was not included in the operating expenses. The increase in dividends was due to the issue of \$4,500,000 new stock in July, when the old bond issue was retired. The same transaction accounts, of course, for the decrease in the bond interest charges. The percentage of operating expenses, taxes and reserves to gross earnings was 65.58, or a decrease of 0.36 per cent. The passenger receipts averaged \$16,044.89 per day, an increase of \$959.10. The following figures on the operation of the property are of interest:

### MILES OF SINGLE TRACK

Electric (82.95 per cent of total; increase in 1901 of 4.9430 miles) .....	178,1460
Cable (16.18 per cent of total).....	34,7587
Horse (0.87 per cent of total) .....	1,8663
Total .....	214,7710

### CAR-MILES RUN

Electric (54.59 per cent of total).....	16,727,540	Increase.
Cable (45.07 per cent of total).....	13,809,620	1,025,160
Horse (0.34 per cent of total).....	106,090	384,600
Total .....	30,643,250	1,410,890

### PASSENGERS CARRIED

Fare passengers .....	117,863,990	Increase.
Transfer passengers .....	49,415,733	7,020,788
Fare and transfer passengers.....	167,279,723	3,297,729
		10,318,517

Percentage of transfer to fare passengers, 41.93 per cent. Percentage of transfer to fare and transfer passengers, 29.54 per cent.

One change was made in the board of directors, Lawrence A. Young, son-in-law of the late Henry Wheeler, who was president

of the company, being elected in place of Otto Young. The other members of the board are S. W. Allerton, Arthur Orr, Joseph Leiter, D. G. Hamilton, George T. Smith and W. B. Walker.

President D. G. Hamilton in his report made some references to the future needs of the company which show the attitude of the management toward the settlement of franchise renewals which has been such a hot question in Chicago for some time. His remarks in part were as follows:

"In anticipation of the change in motive power and the installation of a large electrical power plant land has been purchased, thirty miles of underground electric duct conduits for feed wire completed, and a like number of miles of such conduit is in progress of construction. To improve the present service 125 large electric cars have been purchased and are now being installed, and negotiations for 150 more are in progress; a new car house is nearly completed, extensive additions are being made to present boiler plants and additional generating machinery provided for, a large storage battery of 1000 horse-power has been erected to turn current into the lines at the place and time of greatest need.

"The business for the year shows a substantial increase in gross earnings. Although resulting in a large increase in operating expenses, every effort has been made by the management to furnish the public with the best, most reliable, and frequent service possible under existing conditions (as evidenced in part of the increase in car miles run). The want of terminal facilities on the Clark Street line and the breakages of the overtaxed Wabash Avenue and State Street cables from Twenty-Second Street to the northern termini have prevented a strictly reliable and satisfactory service.

"These two cable sections, carrying the traffic of four trunk lines, are supplied with the best cables that can be purchased, which are replaced at intervals more frequent than usual. Additional cars are needed in the territories supplied by these trunk lines, but the impossibility of operating them by cable north of Eighteenth Street prevents this improvement in the service.

"Electric motor power is the only practical method by which to operate the electric cars of Indiana and Archer avenues on these sections, and the much-needed additional cars to carry satisfactorily the traffic offered cannot be handled thereon until such power is installed.

Eight miles of old track have been replaced with heavy rails, capable of carrying the heaviest cars and traffic. Four and nine-tenths miles of additional tracks have been built on the new extensions, and seven additional miles are in course of construction. Large expenditures have been made in reconstruction and maintenance of the property, and its physical condition is good.

The entire bonded indebtedness of the company, maturing July 1, 1901, was paid at maturity. To best subserve the wants of the public is the policy of this company. There is needed, in order to successfully carry out this policy, replacement of a large part of the equipment, change of motive power, proper terminal facilities in the business district, reasonable grants, with such conditions as will warrant the expenditure of the several millions required and make the investment safe.

**Annual Meeting at Baltimore**

At the annual meeting of the United Railways & Electric Company, of Baltimore, held Feb. 26, Gen. John M. Hood was elected president of the company, to succeed George R. Webb, and the board of directors was increased from 9 to 11. Not only was the number of directors increased, but several retirements are noted, those retiring being Col. Walter S. Franklin and W. Graham Bowdoin. The new board of directors is composed of E. L. Bartlett, H. Crawford Black, Alexander Brown, John M. Hood, George C. Jenkins, Seymour Mandelbaum, Wesley M. Oler, Henry A. Parr, John B. Ramsay, George R. Webb and Francis E. Waters. The new members are Mr. Black, Mr. Brown, General Hood and General Waters. Mr. Brown is the head of the banking house of Alexander Brown & Sons, and returns to the board after an interval of about eight months, during part of which time he was abroad. General Hood is president of the Western Maryland Railroad, and Mr. Black and General Waters are interested in many commercial enterprises in Maryland. An important change in the officers was made, the position of treasurer being merged with that of secretary. B. C. Keck, who held the position of treasurer, has retired from the company. A complete list of the officers follows: Gen. John M. Hood, president; George R. Webb, vice-president; William A. House, secretary, vice-president and general manager; H. C. McJilton, secretary and treasurer; N. E. Stubbs, auditor. The operating report submitted at the meeting shows:

	1901.	1900.
Gross earnings.....	\$4,718,295.60	\$4,431,743.00
Operating expenses.....	2,193,175.18	2,059,559.00
Net earnings.....	\$2,525,120.42	\$2,372,184.00
Fixed charges (interest and all taxes)	2,493,001.77	2,327,980.00
Surplus.....	\$32,118.65	\$44,204.00

Last year 132,106,412 passengers were carried, of which 35,342,534 rode on free transfers.

**Progress on the Rapid Transit Tunnel in New York**

John B. McDonald, the New York subway contractor, stated in a recent interview that his company had just about completed half the construction on the subway at a cost of \$13,750,000, and that the remainder of the excavating will be completed in thirteen months. From the first of the present month the sub-contractors will do work costing upward of \$1,000,000 a month. At this rate all the excavating will be done by April 1, 1903.

While the tunnel work was nominally begun two years ago, as a matter of fact there was little headway made until the following August. The original computation showed that the tunnel contract involved the removal of 1,750,000 cubic yards of earth and 1,125,000 cubic yards of rock. The figures in Assistant Chief Engineer Rice's department show that 63 per cent of the earth and 40 per cent of the rock excavating have been done. The progress of the work is dependent largely on the rock cutting, and if there is any considerable delay in completing the subway it will be on account of not taking out the rock fast enough. There are remaining to be removed 647,000 cubic yards of earth and 675,000 cubic yards of stone. Sixty-five thousand tons of steel were contracted for, and 32,500 tons have been delivered. Of the 500,000 yards of concrete contracted for, 125,000 yards have been furnished.

More than \$2,250,000 has been spent in removing, changing and repairing sewers and changing sewer pipes. So far 70 per cent of this kind of work has been done.

The Brooklyn extension will be the next big thing to engage the attention of the engineers. Messrs. Boardman and Shepard, counsel to the commission, are getting the contract in shape to advertise, and it is expected that the contract will be let by early summer. The Brooklyn extension and the power house, at Fifty-ninth Street, North River, the machinery in which will cost about \$2,000,000, are not included in Mr. McDonald's contract.

A condensed summary of the work already done in the construction of the subway will be found in the following table:

SUMMARY OF WORK DONE.	
	Cubic Yards.
Total amount of earth to be removed.....	1,750,000
Earth removed up to Feb. 28.....	1,102,500
Remaining to be removed.....	647,500
	Cubic Yards.
Total amount of stone to be removed.....	1,125,000
Stone removed up to Feb. 28.....	450,000
Stone to be removed.....	675,000
Amount to be expended in sewer removal.....	\$2,250,000
Amount already expended.....	1,575,000
Amount yet to be expended.....	\$675,000
Total amount of contract.....	\$35,000,000
Amount received on March 1 by contractor.....	13,750,000
Amount yet to be paid.....	\$21,250,000
	Tons.
Steel contracted for.....	65,000
Steel delivered.....	32,500
To be delivered.....	32,500
	Cubic Yards.
Concrete contracted for.....	500,000
Concrete furnished.....	125,000
To be delivered.....	375,000

## Railway Legislation for Boston, Mass.

The committee on metropolitan affairs of Boston are now considering several important subway bills providing for one or more underground routes through the business section of the city, approximately along the line of Washington Street. Of the two bills receiving serious consideration, one was presented by the Associated Board of Trade, and the other by ex-Mayor Nathan Mathews. The Boston Elevated has introduced no bill whatever, and if the policy of the company can be predicted from the course which it adopted last year it is likely that the company will do little more than present its views upon the bills already before the committee with a statement of general principles applicable to the situation. Such an action places the committee in the freest and most advantageous position for the drafting of a bill, should they think it desirable to recommend any legislation.

The Associated Board of Trade bill is substantially the same as the one introduced by that organization a year ago, which was set aside by the committee and the Legislature of last year. It provides that a subway containing two or more tracks shall be built under or near Washington Street, between Broadway and Causeway Street, by the Transit Commissioners for and at the expense of the city of Boston, and that it shall be leased to some railway company, the Boston Elevated Company being given the preference, for a period of twenty years from its completion, at a rental of 4 $\frac{1}{2}$ % per cent of the cost of construction. The subway may be built for use by either surface or elevated cars, and if leased by the Elevated Company it may be connected with the elevated structure in any convenient manner. If leased by the Elevated Railway Company, to be used by its elevated trains, the Railroad Commissioners may order the removal of the elevated trains from the existing subway. The Transit Commissioners may order the removal of all surface tracks from Washington Street, between Broadway and Adams Square. In case the Elevated Company shall not agree to lease the new subway it may be leased on the same terms to any persons or corporation furnishing a bond of one million dollars to secure the payment of rental to the city. Such persons or company shall be given the right to use the tracks of any other street railway company in the city, upon terms agreed upon by them and the existing company, or such as may be determined by the Railroad Commissioners. The act shall not take effect unless approved by a majority voting at the next city election.

The Elevated Railway Company last year placed itself on record by the argument of its counsel, in opposition to many of the terms proposed in this bill, on the grounds that the rental would be excessive, the tenure too short, the removal of surface tracks from Washington Street contrary to public interests and convenience, and the granting of the use of existing tracks would be unconstitutional.

The bill introduced by ex-Mayor Mathews contains several new features, and is already the center of interest and object of discussion. Its main features provide that a deep tunnel shall be built under the route above described, to connect the northerly and southerly sections of the elevated system, to be owned by the Elevated Railway Company. In addition, a subway of lesser depth, similar to that described in the Board of Trade bill, shall be built in 1910 for the use of surface cars and leased to the Elevated Railway Company upon such terms as the company and the Transit Commissioners may agree upon, or, in the event of a disagreement, upon such terms as the Railroad Commissioners may determine. This subway is to be paid for and owned by the city of Boston.

In the event of the failure of the Elevated Railway Company to make a lease of the subway, it may be leased to any other persons or corporations giving to the city a bond of not less than a million dollars, such persons or corporations given the right to use existing surface tracks. Upon the completion of the deep tunnel the elevated road shall remove its elevated cars from the present subway and shall use it exclusively for surface cars. Upon the completion of the new subway the surface tracks shall be removed from Washington Street, between Adams Square and Broadway. This act shall take effect upon its acceptance by a majority of the voters of Boston voting upon the question, and upon its further acceptance by the Elevated Railway Company within thirty days thereafter.

What the attitude of the company will be upon the latter bill is not as yet known. It is evident that some of the provisions will not be acceptable to the company, while certain other of its provisions will doubtless prove attractive. The most that can be said at the present time is that it affords a possible basis for a compromise bill that may prove more acceptable to all interested parties than have any of the plans that have been previously pro-

posed. Another bill of considerable importance has just passed through its various stages without opposition, and is at this writing before the Governor for his signature. This bill provides that the East Boston tunnel, now in process of construction, and the Cambridge Street subway, which is authorized and is to be constructed within a few years, may be connected underground with each other and with the existing subway and with any other subways that may hereafter be authorized.

## The Pennsylvania Railroad Tunnel

The report of the Pennsylvania Railroad Company for the year ending Dec. 31, 1901, was made public Mar. 3. To electric railway engineers perhaps the most interesting part of the report will be the one referring to the tunnel under the Hudson River, which was described in this paper for Dec. 21, 1901.

In this regard the report says:

"The board have long felt that your interest, as well as the convenience of the public, require the extension of your line into New York and the establishment of a centrally located passenger station in that city, through which the inconvenience and delays of the transfer by ferry will be avoided. The great cost of a bridge excluded that plan, unless all the railroad companies whose lines terminate on the west bank of the North River would join in the undertaking.

"The alternative was the construction of a tunnel line; but the difficulties incident to the operation by steam of a tunnel, at the depth and with the gradients required by the topographical conditions, seemed to make that method almost impracticable. Meanwhile, however, the successful operation of a number of tunnels in different parts of the world by electric power indicated that a satisfactory solution of the problem might be found in the construction of a line, to be operated by electricity, under the North River to a terminal station in New York, and thence under the East River to a connection with the Long Island Railroad.

"Preliminary investigations having favored its adoption, it was thought best to proceed at once to acquire ground for a station upon the location selected. This has been done, and the greater part of the necessary property purchased at a reasonable price. The importance and cost of this work, however, and the fact that novel engineering questions were involved, made it the duty of your board, before proceeding further, to have the plans for construction, and in fact the whole subject, thoroughly studied by competent engineers. For this purpose a commission was created, consisting of five civil engineers eminent in the profession, namely: Colonel Charles W. Raymond, United States Army, chairman; Mr. Gustav Lindenthal, Mr. William H. Brown, chief engineer Pennsylvania Railroad Company; Mr. Charles M. Jacobs, and Mr. Alfred Noble.

"This commission will supervise the preparation of all plans, and will have general control of the undertaking. The two members last named will have direct charge of the work, which has been divided into two sections the North River section having been assigned to Mr. Jacobs, and the East River section to Mr. Noble. The study of the project has already progressed far enough to establish its entire practicability. The commission will have, in fact, a choice between several feasible plans. The cost of the work will be large, but your board are satisfied that the expenditure will be fully justified by the results obtained."

## Boston Transit Commission Bids

The Boston Transit Commission has rejected all the bids for building section C of the East Boston Tunnel from Atlantic Avenue, up State Street to India Street, including the station excavation, and the building supports along the route. The bids ranged from \$415,120 to \$481,640. The lowest bid was submitted by the Shailer & Dumfee Company of Boston, who offered to complete the work by Oct. 1, 1903. Each bid was divided into two sections, one including and one excluding the station work and the support for buildings. Excluding the latter, the Shailer & Dumfee Company would have built the section for \$269,120 and complete it before the other contractors. The other bids were: Jones & Meehan, \$475,555 inclusive, and \$297,555 exclusive; the Metropolitan Contracting Company, \$432,347 and \$283,845; Patrick McGovern, of Boston, \$481,640 and \$306,640. The lowest bidders represent the interest behind the Boston Tunnel Construction Company, which is now building the section under the harbor. This work has now reached its extreme depth level in the harbor and has entered a slightly rising grade which will be maintained as far as the Boston side of the water

Section C is 740 feet long. The commission is now considering whether to invite the contractors to make new offers or to take direct charge of the work itself, as was done with one of the sections of the Tremont Street Subway. The Transit Commission has already brought the construction shield and hydraulic jacks and has furnished the steel for building foundations along State Street. An order for air compressors and boilers is soon to be placed, which will complete the plant. The present specifications provided for sinking the shaft at the Chatham Row end of the new section, as under a system of direct day labor under the immediate supervision of the commission part of this machinery can be used to push the work in both directions. The commission is still considering the plans for the remainder of State Street. It is uncertain yet as to whether or not the tunnel shall pass over or under the Washington Street Subway. The tracks will connect with the subway, but by elevators for passenger service, and until this matter is decided no work can be done west of Chatham Row where the grade begins.

### Bridge Commissioner's Proposed Plan of Relief

Bridge Commissioner Lindenthal, of New York, made public on March 3 the details of a plan devised by him to provide adequate facilities for interborough passenger traffic between Manhattan and Brooklyn. Among the features of the plan is one providing for the erection of a sixteen-story office building for the use of all city departments on the site of the Staats Zeitung Building. Movable stairways and many other contrivances are advocated for the handling of the crowds which gather at the New York terminal of the Bridge. The plans also contemplate an elevated railroad connection between the existing Brooklyn Bridge and the new bridge in the old Williamsburg section, by way of the existing elevated route along Park Row and the Bowery.

The following are the provisions of the plan as stated by the Commissioner:

It provides for a commodious terminus for the Manhattan Elevated Railroad of double the capacity of the existing City Hall Station, which will obviate the disgraceful crowding at that station.

For the extension of the Navy Yard Bridge, by means of a two-track elevated railroad along Canal Street to the west side of the Borough of Manhattan.

It will provide for a loop, under roof, of the Fourth Avenue surface cars, whose loop is now on the street near the old Hall of Records.

It will permit of a direct connection from the City Hall Station of the Manhattan Elevated Railroad by way of Second Avenue and the new bridge to Ravenswood, which is now in course of construction at Fifty-Ninth Street.

It will provide for a ready and unobstructed access from the underground station near the Bridge entrance to the Bridge station.

It provides for use at the three suspension bridges of moving platforms as a means of transporting the largest possible number of passengers during rush hours.

For the removal of the hideous Bridge buildings both in Manhattan and in Brooklyn, and the replacing of the same with serviceable and useful structures possessing architectural merit.

The present capacity of the Bridge trains in rush hours is about 260 cars per hour. In the new bridge station the practicable maximum will be about 720 loaded elevated cars for each bridge, or 1,440 cars for both bridges.

Cars going in the direction of the Williamsburg Bridge will stop at Canal Street and at Grand Street, as well as on Delancey Street at the entrance to the Williamsburg Bridge; those coming from the Williamsburg Bridge which are to go over the Brooklyn Bridge will stop at Grand Street, then at Canal Street, and later at the Bridge Station. Congestion of traffic at any point will be improbable.

Commissioner Lindenthal proposes to acquire the entire block fronting on Tryon Row and City Hall Park, as well as the triangle between North William Street and Park Row. He proposes to leave the Bridge tracks as well as those of the Manhattan Elevated Railroad at their present elevations, hence the Bridge tracks will be 12 ft. higher than the tracks of the elevated railroad. This, the Commissioner says, is necessary in order to lessen the heavy grade to the Brooklyn Bridge.

The train platforms in the new bridge station are to be so changed as to separate incoming and outgoing passengers. From this station the trains will run over the Williamsburg and Brooklyn Bridges in both directions, trains being despatched during rush hours every thirty seconds in each direction.

Referring to the movable platform plan, Commissioner Lindenthal says:

No better means has yet been devised for the transport of passengers in large numbers, and without a moment's waste of time from start to finish of the trip, which can equal the movable platform. The capacity of this device is practically unlimited, depending entirely on its speed and width. A seat on a moving train is accessible the instant a person arrives at the station. The most trying of all discomforts, that of waiting in a crowd, is therefore disposed of.

The cars will run in a train forming a continuous circle, traveling at a

speed of ten miles per hour from the west end of the New York Station to the east end of the Brooklyn Station. After leaving the shelter of the stations, the cars will run in a housing of light metal and glass, which may be heated in winter and is open in summer.

At each terminal there will be an oval loop, and access to the cars will be gained by three multiple speed platforms, each 3 ft. wide, traveling inside the loops. The speeds at which these platforms will travel will be 2½, 5 and 7½ miles per hour, respectively.

Outgoing and incoming passengers will be kept separate. Outgoing passengers will be landed by staircases on a stationary platform. They will step from it upon the 2½-mile platform, thence on the 5-mile and 7½-mile platforms, and finally on to the 10-mile cars, the seats of which will be placed ten inches from the edge, as was done at Chicago.

Incoming passengers will reverse these operations. When a passenger wishes to get off the cars he walks across the multiple speed platforms, thereby stopping himself instead of the car.

The average time to get on or off the cars, at Chicago, was three seconds per platform. At the Bridge terminals the proposed loops will be long enough to allow passengers sixty seconds, or fifteen seconds for each platform. At Chicago three-fourths of the daily passengers were strangers—at the bridges the same people, practically, will use the cars the year round.

During the rush hours the movable platforms can be set in motion on the three bridges. They will land passengers in Brooklyn at convenient stations at the end of the Bridge, where the trolley cars would be in waiting on the tracks underneath.

Commissioner Lindenthal, referring to increased capacity, according to his plan writes:

Present maximum capacity over the Brooklyn Bridge is 36,000 passengers per hour, of which number about 16,000 have seats. The future maximum capacity of each of the three bridges is 110,000 passengers per hour, and at least 80,000 will have seats. Three bridges, carrying 330,000 passengers per hour, of which number at least 240,000 per hour may have seats.

In addition to these facilities there will be the two-track tunnel from Whitehall Street, Manhattan, to Atlantic Avenue, Brooklyn, carrying 45,000 per hour.

Therefore the future carrying capacity to Brooklyn over the three bridges and of the Whitehall tunnel will together reach 375,000 passengers per hour, or over ten times the present carrying capacity of the Brooklyn Bridge. With such capacity congestion of traffic will not occur for generations to come.

The Commissioner says of the construction of the City Office Building:

The full plan contemplates the erection of a municipal office building over the City Hall Bridge Station. Facing down Park Row, with a frontage on Centre Street and Park Row, this building will be one of the imposing architectural features of this portion of the city. It may be made sixteen stories high. It will cover 135,000 sq. ft. of ground, and will furnish ample office space for all the departments of the City Government. A broad stairway—60 ft wide—will lead from the first floor level down into City Hall Park.

The present unsightly Bridge terminal will be removed in order to give the space necessary for the Municipal Building, which, while it will be not necessarily expensive, will be eminently useful and economical, since it will save to the city about \$360,000 now annually paid for office rental in various buildings.

Of the estimated cost of \$14,500,000, \$8,500,000 is to be spent on property and the construction of terminals and elevated structures as planned.

Commissioner Lindenthal criticises the management of the Brooklyn Rapid Transit corporation and says:

It must be pointed out that there is no congestion of traffic in the morning rush hours at the Manhattan end. The passengers leave the station as rapidly as they arrive. There is no congestion at any time in the non-rush hours. The only congestion existing, and the one which is frightfully bad and scandalous, is for an hour and a half in the evening, namely, from 5 to 6:30 o'clock. It is brought about, as everybody knows, by the insistence of the Brooklyn Rapid Transit Company on loading cars for seventeen lines at the Manhattan end of the Bridge on the small space of 100 ft. x 60 ft. It is attempting to carry the passengers during evening rush hours on a system which, in all parts of the world and on all railroads, requires large terminal stations and separate platforms and tracks for the accommodation of the necessary number of cars or trains to be loaded under that particular system.

They could rectify the conditions a great deal by giving better accommodations to passengers from their ferry terminals. There is proof on hand that they do not do so, and they seem to be incompetent to deal with the situation. It cannot be permanently relieved until the new East River Bridge is finished, but, in the meantime, and as a temporary expedient, the Brooklyn Rapid Transit Company could in various ways relieve the crowding, if it were run by competent men. If it does not choose to ameliorate the disgraceful conditions during the afternoon rush hours, then the revoking of the existing contract becomes a necessity.

The congestion is not alone at the Manhattan end of the Brooklyn Bridge. It is, if possible, still worse at the Brooklyn end, and up Fulton Street, and where car touches car, and where every few minutes there is a deadlock.

The Brooklyn Rapid Transit Company has an absolute monopoly of passenger transportation in Brooklyn. As its management shall be good or bad, so it will affect the physical welfare of every dweller in that borough. It affects also the transportation over the Bridge, which has become the property of that company to all intents and purposes. That company should provide itself with the very best talent for conducting its business. If it does so it will be able to give comfortable transportation to all passengers in that borough, besides earning great profits for itself.

I have no hesitation in saying that if that company had wise and competent management such a thing as a crush at the Bridge would be a rarity, and probably would never be heard of. The jurisdiction of the Bridge Commissioner does not extend further than the Bridge. He cannot regulate the transportation of the Brooklyn Rapid Transit Company.

## The Storm and Street Railway Traffic

The storm of the past week, while not unprecedented in general severity, extended over a wider area than any of late years, and has been especially disastrous to street railway companies. Practically every section east of the Mississippi has been a sufferer, New York, New Jersey and Pennsylvania experiencing very disastrous floods. Not only have the suburban lines suffered severely, but the companies in the larger cities have also been compelled to suspend operations on lines serving the business sections. The main streets of Rochester, N. Y., are under water, and street car traffic has been suspended. The United Traction Company, of Albany, has been compelled to suspend traffic on several of its lines because of the rise of the Hudson River. From all parts of New Jersey come tales of the suspension of traffic. From Harrisburg, Lancaster, Columbia, Reading, York, Wilkesbarre, Williamsport and other Pennsylvania cities reports indicate that the city and suburban lines have suspended operations or that the lines are kept open only with great difficulty.

## Trial Cars on the Lake Shore Electric Railway

In preparing the fast through service between Cleveland and Toledo, the Lake Shore Electric Railway Company is making a series of experiments at its Fremont shops with a view to determining the most desirable combination of motors for this traffic. On the Lorain-Cleveland division of the road, which is built on private right of way and has been in operation for some years, the car equipment consists of four G. E.-57 (50 hp) motors, and with these a country schedule of from 35 to 40 miles an hour is constantly maintained and a speed of over 60 miles an hour has been frequently attained for a few miles. It was believed, however, that for the through run of 118 miles something heavier than this would be required in order to stand the wear and tear of constant high-speed operation. With this end in view three leading manufacturers—the General Electric Company, the Westinghouse Electric & Manufacturing Company and the Lorain Steel Company—were asked to equip cars with their largest equipments, to be used in regular traffic for some months in order to make a thorough study of the matter.

The first of these cars has just been completed and will shortly be placed in operation, a trial test having been made a few days ago. This car is a 51-ft. Barney & Smith body equipped with Barney & Smith M. C. B. trucks, on which are mounted four G. E.-66 (125 hp) motors, similar to those to be used on the New York elevated. The control is the General Electric Type M. control, which is to be experimented with, with a view later of two or three cars in a train. For the present, however, the cars will be used singly. The wheels used are 36 ins. in diameter, with 6-in. axle, 1½-in. flange, ¼ in. thick, and 2¾-in. thread.

The recent test was the first time the car had been out of the shop. The run was over the Toledo-Norwalk division, which at present is not as adaptable for high speed as the Lorain-Cleveland division, since it is only partially ballasted and work of lowering grades and straightening curves is going in many places. The car left Norwalk at 2.40, arriving at Fremont at 3.50. It left Fremont at 3.59 and reached Toledo at 4.56; the total distance of 62 miles, from Norwalk to Toledo city limits, was covered in two hours and sixteen minutes. Deducting twenty-five minutes consumed in stops necessary to prevent interference with the schedule of the regular cars, the actual running time was one hour and fifty-one minutes. The fastest time between the two cities was between Clyde and Fremont, eight miles, in nine minutes. However, in two or three places between Fremont and Toledo where the track conditions were favorable, the car turned a mile a minute.

In view of the facts that the Cleveland-Norwalk section of the road is on entirely private right of way and will be rock and gravel ballasted, and that it is the intention to have the limited cars stop only in the centers of the nine largest towns, it is believed that the test over the Norwalk-Toledo division running that it will be possible to bring the Cleveland-Toledo running time down to four hours for limited cars. The General Electric Company claims that on good roadbed the car in question will cover 65 miles an hour making stops, and that its maximum speed is 90 miles an hour.

Cars of the same type are being fitted with four 100-hp Westinghouse motors and four 100-hp steel motors. Others are being fitted with four 75-hp motors of the different makes; one of these equipped with four 75-hp Westinghouse motors has just been placed in the regular service between Norwalk and Toledo.

## The Everett-Moore Situation

The bankers' committee in charge of the Everett-Moore affairs has given a twenty-day option on the property of the Toledo Railways & Light Company. The members of the committee claim that they do not know the names of the persons to whom the option has been given, but say they have a guarantee that the parties are thoroughly reliable. The price mentioned in the option is understood to have been \$30 per share. The last sale of this stock was \$28 per share. The Toledo property includes all of the street railways of Toledo, as well as the electric light plant and contract for city lighting. The Toledo Railways & Light Company is one of the most desirable properties controlled by the syndicate. Its operating expenses, compared with receipts, are smaller than those of any other syndicate property, the figures for last month being 50.62 per cent. The statement for January was as follows: Gross earnings, \$114,114; expenses and taxes, \$57,767; net earnings, \$56,347; fixed charges, \$37,828; surplus for stock, \$18,519. The receipts for January show a gain over January, 1901, of \$12,981. The capital stock of the company is \$12,000,000.

A plan for financing and completely reorganizing the Lake Shore Electric Railway Company is being considered by the bankers' committee. It is stated that the capital stock will probably be reduced and the bonded indebtedness correspondingly decreased. The plan carries with it much detail, and according to Chairman Newcomb it will be six weeks before matters will be all straightened out and the receiver discharged.

The time has expired for the smaller stockholders of the Cleveland Electric Railway Company to dispose of their holdings to the Andrews-Stanley syndicate at \$80 per share. The certificates were to have been deposited with the Savings & Trust Company. None were deposited, however, as the news of the sale of the property has caused somewhat of a boom in the stock and it is selling at several points better than \$80.

The deal whereby the Canton-Massillon Railway and the Canton-Akron Railway revert to Tucker, Anthony & Company, of Boston, has been fully completed. Stockholders of the two companies met in Canton a few days ago and reorganized. The officers and directors of the Canton-Massillon Railway are as follows: Philip Saltonstall, of Boston, president; Chauncey Eldredge, of Boston, general manager and treasurer; Charles A. Kolp, of Canton, secretary. The above, with J. C. Welty, A. M. Snyder, J. R. Nutt and William A. Lynch, are directors. The Canton-Akron Company elected Charles A. Kolp, of Canton, president; A. M. Snyder, of Cleveland, secretary. The above, with W. H. Hoover and J. Smith, Jr., are directors. The fact that Messrs. Nutt and Snyder, both closely identified with the Everett-Moore syndicate, are prominent in the reorganized companies, is taken to indicate that the Cleveland people have retained an interest in the propositions and may eventually regain control. It is stated that the work of completing the Canton-Akron line will be pushed as rapidly as possible, and that it will be placed in operation about May 1.

It is understood that Cleveland people who are interested in the Northern Ohio Traction Company have made a proposition to the bankers' committee for the purchase of the Everett-Moore interests in the company. The Northern Ohio Traction Company has always been considered the most desirable interurban property controlled by the syndicate, and it would bring a high price. The system includes all the lines of Akron, suburban lines to Ravenna, Kent, Barberton, Cuyahoga Falls, Bedford and Cleveland, and electric lighting plants and franchises in Akron and Barberton. It includes 96 miles of single track. The latest report of the company shows \$3,000,000 in authorized bonds, and \$3,000,000 outstanding. The gross earnings for 1901 were \$607,011 as compared with \$513,725 for the year before. The increase of gross earnings for January over January, 1901, shows a gain of \$2,656.

An announcement will probably be made by the bankers' committee this week that it will be able to offer for sale the controlling interest in the Detroit United Railways. The situation is due to the fact that the committee has made a new proposition to the stockholders of the company. In the first proposition the committee asked that the stock be turned in to the Guardian Trust Company to be sold at a figure not less than \$70 per share. Very little stock was attracted at this figure, and last week the committee offered \$75 per share as the minimum figure, with the result that a large number of certificates have been deposited. The committee must have about 13,000 shares in addition to the Everett-Moore holdings to gain control of the property, it is understood.

The Hong Kong Electric Tramway Company, Ltd., registered in London, is the title of a company that proposes to construct electric railway lines in Hong Kong or elsewhere in Asia.

### Electric Railway Bills in Ohio

Bills relating to electric railways continue to flow into the Ohio Legislature. Another bill providing for terminals in cities has been introduced. It provides that the presidents of two or more electric railways running into the same city may incorporate a company for the purpose of purchasing depot grounds, erecting union depot, constructing a terminal electric railroad to connect the tracks of the separate railroads; that the terminal company may obtain from the Legislature rights of way for the construction of connective tracks along, across or over the streets, and such company may have the right to appropriate land for tracks and depot; that the constituent companies shall be liable for the portion of terminal company stock for which it subscribes; that the board of directors of the terminal company is to consist of representatives of the constituent companies; that the terminal company shall have power to borrow money without reference to the amount of its stock and may mortgage its franchises, property and revenue to secure the principal and interest of its bonds; that all railroad laws shall apply to such terminal companies, including the right of eminent domain, but that no other statute relating to the organization of corporations or acquisition of franchises shall apply, this providing, it is claimed, for perpetual franchises.

The Jones crowded-car bill, providing against the overcrowding of cars in cities, has been presented. It has been amended so as to provide that where passengers are compelled to stand they shall be obliged to pay only half fare.

The Cole excise tax bill has been passed by the House. The measure increases the amount of excise tax paid by public service corporations from one-half of 1 per cent to 1 per cent of the gross receipts. The operation of the excise law is extended to telephone, telegraph, express, interurban and suburban railroads, and union depot companies. The bill as passed also applies, as does the law to be amended, to electric light, gas, natural gas, pipe lines, water works, street railroad, railroad and messenger and signal companies. The bill will add about \$750,000 annually to the Ohio revenues.

The Senate has passed the Longworth bill providing for a penalty of from \$50 to \$100 fine, or from one to three years' imprisonment for stealing electric current by tapping wires or by any other means.

The House committee on municipal affairs has practically killed the Bracken municipal ownership bill, which was introduced for Mayor Tom L. Johnson, of Cleveland. The committee recommended indefinite postponement of all municipal ownership bills. The proposed bill provides that where the people, by a two-thirds vote, decide to build or acquire a street railroad, they may do so under certain restrictions as to the amount of bonds which may be issued for the purpose. Mr. Bracken proposed to amend his bill before it passed the committee by providing that where a city does own its street railroads the employees shall be under a complete non-partisan civil service merit system.

### The First Electric Road in Indian Territory

The Indian Territory Traction Company, of South McAllister, Indian Territory, will probably be the first electric line to be put in operation in that Territory. This company contemplates building several interurban lines connecting nine prosperous coal mining towns situated in the Indian Territory coal belt and short distances from each other. Surveys are now under way—about 16 miles of road are contemplated. South McAllister, the largest town and headquarters of the road, has a population of about six thousand. Immediately north of it, about one mile, is McAllister, with a population of 4,000. East of South McAllister, about two and one-half miles, comes Krebs, with 4,000 population, and east and south, a short distance, are Dow and Batch with 5,000 population, Buck and Cherryvale with 5,000 population, Halleyville and Hartshorn with 8,000 population. Halleyville is a division point on the Choctaw, Oklahoma & Gulf Railroad.

The president of the company is Lew P. Bryan, president of the City National Bank of South McAllister and a large coal operator. The vice-president is Lawrence P. Boyle, 804 Tacoma Building, Chicago, to whom, for the present, communications regarding furnishing of supplies and other matters should be addressed. The secretary is M. M. Lindley, and the treasurer, A. U. Thomas, a banker of South McAllister. The chairman of the executive committee is Donald Grant, of Donald, Grant & Company, of Fairbault, Minn., large railroad contractors. The survey, which is now under way, is being made by City Engineer Smith, of South McAllister.

### The Philadelphia Consolidation

The terms for the lease of the Union Traction Company, of Philadelphia, to John M. Mack and his associates were made public on March 1, and on Monday, March 3, the directors voted on the proposition and decided to recommend the lease to the stockholders. A meeting of the latter has been called for May 5 to ratify the plan. The official announcement issued after the meeting of March 3 follows:

"At the meeting of the directors this afternoon the sub-committee, recently appointed, reported with a favorable recommendation the proposition received from John M. Mack to lease the property and franchises of the Union Traction Company for a period of 999 years, from July 1, 1902, to a new traction motor company about to be incorporated with a capital of \$30,000,000, which company is also to acquire the rapid transit franchises recently granted, the terms of the lease being a rental of \$1.50 per share per annum for the first two years; \$2 per share per annum for the next two years; \$2.50 per share per annum for the next two years, and \$3 per year thereafter.

"There is to be reserved to the stockholders of the Union Traction Company the right to take one share of stock of the new company for each four shares of stock of the Union Company. The board decided unanimously to recommend the acceptance of the proposition to the stockholders and a special meeting of the stockholders to act on the question was called for May 5, 1902.

"This meeting also passed upon the question of funding the floating debt of the company, which will amount to about \$1,500,000."

As has been previously noted, Mr. Mack and his associates secured from the City Councils the right to operate cars on all streets not occupied by the tracks of the Union Traction Company, which company controls all of the lines in the city. They also obtained franchises authorizing the construction of a subway and an elevated railroad in Market Street, one of the two principal business thoroughfares of the city, and to lay tracks in Broad Street.

### Condemnation of Bridges at Indianapolis

As before noted in these columns, a bridge over the White River, on West Washington Street, Indianapolis, went down under the weight of a work car of the Indianapolis Street Railway Jan. 16. As a result of this accident an investigation and report was ordered upon the other bridges in the city, and T. L. Condron, engineer of the Pittsburgh Testing Laboratory, was ordered to make the report. This report has resulted in the discontinuance of ordinary street car traffic over the Western Michigan Street, River Avenue and Morris Street bridges. Cars are, however, allowed to pass over not loaded, only one car being allowed on the bridge at a time. As Indianapolis cars are "single-enders," intended to be run only one direction, and have controllers on only one end, it seemed very desirable not to close the bridges against all passage of street cars, so passengers alight at one end of the bridge and walk across after the car has passed over. Temporary timber trestles will probably be put in to strengthen the bridges so that ordinary traffic can be resumed until new bridges are built. The unsafe condition of the bridges has, of course, resulted in great inconvenience to the public and added greatly to the difficulties of street railway operation.

### An Indianapolis-Cincinnati Interurban

One of the most promising interurban projects in Southern Indiana is the Indiana & Ohio Traction Company, which is organized to build a line from Indianapolis to Cincinnati via Rushville and Brookville. The plan is to build through a strip of country which is not traversed by steam roads, owing to the more level routes each side of it, but which nevertheless is covered with prosperous farms owned by well-to-do farmers, all of whom are anxious for the road and will give it liberal support. The president of the company is Mr. George M. Shirk, of Brookville, Ind.; vice-president, Alfred A. Beard; secretary and treasurer, John T. Shirk. In addition to the foregoing, A. M. Tucker and John Moorhead are directors. The line, as surveyed, is 103 miles from Indianapolis to Cincinnati, which is shorter than any of the steam railroad routes.

## The Three-Cent and the Local Lines at Cleveland

The fight between the existing lines in Cleveland and Mayor Tom L. Johnson's proposed three-cent fare lines, which are promoted by John B. Hoefgen, is now on in earnest. Moves are being made by both parties with such rapidity that the situation quite eclipses the Everett-Moore situation so far as general public interest is concerned. Both the city of Cleveland and John B. Hoefgen have brought suit against the Cleveland City Railway, the Cleveland Electric Railway, George Mulhern, Edward Briggs and others to restrain them from using improper methods in blocking the three-cent fare lines. It is claimed that the existing companies have induced many property owners along various streets to withdraw their consents to the new lines; this being effected by the use of money, it is claimed. Judge Phillips granted sweeping temporary injunctions in both cases. Despite the protests of residents, the City Council committee has voted favorably on Mayor Johnson's proposal to change the names of Hanover, Willit and Fulton streets to Rhodes Avenue, the idea being to make it possible for the new company to secure the majority of consents. On the strength of this decision, property owners on the streets mentioned have brought suit to enjoin the City Council from making the change.

## Deed of Trust by the American Car Co.

A chattel deed of trust for \$379,114.66 was filed Feb. 19 by the American Car Company to William B. Thompson and Henry B. Denker, trustees for the Boatmen's Bank and other creditors. The company transferred all property, real and personal, to the trustees.

William B. Thompson is an attorney, who, as trustee of the Brownell Car Works, managed them successfully for five years. Mr. Denker is a practical car manufacturer, and was formerly manager of the St. Charles Car Works, at St. Charles, Mo., until their absorption by the American Car & Foundry Company. Mr. Denker is to take charge of the plant, and Mr. Thompson, the other trustee, will look after the finances of the institution, in the interest of the creditors. The reason assigned for the financial difficulties of the company is simply lack of capital. The company was put to a severe strain during the year of the panic and subsequent years, but the greatest hindrance is said to have been the proposed formation of a consolidation of all street car manufacturing companies in the country, which has been in contemplation, but hanging fire, for two years or more. Although having a magnificent plant, it is said that the company was unable to interest fresh capital on account of the rumors of consolidation that were constantly in circulation and competition was keen. The plant is located on Old Manchester Road on the main line of the Oak Hill branch of the Missouri Pacific Railroad, and also on the 'Frisco Railroad, having excellent shipping facilities. It has been a close corporation, in which there were only about half a dozen stockholders. The company was incorporated with a capital of \$100,000, and it is not insolvent. Its books have been recently examined by Jones, Cæsar & Company, who found the assets to be over \$500,000, and the liabilities between \$300,000 and \$400,000. The property, it is estimated, without any overvaluation, ought to be worth \$120,000 over and above liabilities. William Sutton is president of the company, Emil Alexander, secretary, and these two, with Theophile Papin, Jr., Louis K. Tontrup and Ferdinand Meyer, composed the board of directors. The other stockholders are William Kruger, superintendent, and Mrs. Semmelmann, a relative of Mr. Alexander.

The buildings cover nearly ten acres of ground, and about 300 men are employed. A brief shut-down of two or three days may be necessary to take an inventory, but the works will be kept in operation by the trustees, who believe that they can pull the company out of the hole in the time for which they are appointed, which is six months. If at the end of that time the company is not on its feet again there will undoubtedly be some new arrangement made whereby the plant will go into new hands and be made one of the largest in the country. The object of this deed of trust, Mr. Thompson states, is simply to continue the business, and for the protection of the creditors. It is voluntarily given by the company. There are no preferences among the credits, he said. The decision to give the mortgage was reached at a meeting of the stockholders, and approved by the directors on Feb. 18.

## Strike at Norfolk

The employees of the Norfolk Railway & Light Company, of Norfolk, Va., are on strike, and it has been found necessary to call out the militia to preserve order. The strike is said to have been

caused by a proposition of the company to bond the employees to protect the company from damages arising from suits, and from the shortage in conductors' collections. The lawless element has been at work. Cars have been derailed, stones and other obstructions have been placed on the tracks, and free fights between the military guards and the assembled crowds have been frequent. An attempt was made early in the week to import men from other cities, but this was met with decided resistance. Several of the imported men are reported to have been severely beaten by the strikers and their sympathisers.

## Street Railway Patents

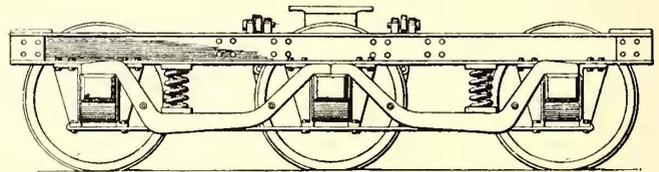
[This department is conducted by W. A. Rosenbaum, patent attorney, Room No. 1203-7 Nassau-Beekman Building, New York.]

UNITED STATES PATENTS ISSUED FEB. 18, 1902

693,384. Railroad Switch; M. S. Farmer, Washington, D. C. App. filed Nov. 25, 1901. Two switch points are connected together by a yoke and moved by a lever which is struck by a projection from the car.

693,483. Car Haul; A. M. Acklin, Pittsburgh, Pa. App. filed Oct. 21, 1901. An endless chain so arranged that a portion will move cars in one direction while another portion is moving cars in the opposite direction, one set of cars being beneath those of the other.

693,610. Car Truck; P. M. Kling, Elizabeth, N. J. App. filed Dec. 12, 1901. Open frames are secured to the sides of the truck frame over the center wheels of the truck. A second frame is secured to the open frames and the bolster supporting springs are connected to this latter frame.



PATENT NO. 693,610

693,611. Car; P. M. Kling, Elizabeth, N. J. App. filed Oct. 14, 1901. Details of construction of a convertible car.

693,672. Railway Car Truck; F. F. Shaffer, Cumberland, Md. App. filed Oct. 22, 1901. The end section of three-wheeled sections are flexibly connected to the central section, a frame or platform is supported at its end on the end sections, and has both an oscillating and an endwise sliding movement on the latter, the car being pivotally supported over the center of the central section.

693,762. Car Fender; W. J. Ward, Pittsburgh, Pa. App. filed Jan. 15, 1902. The fender is a scoop made up of a series of bars having a flexible cross-piece forward, and a spring normally supporting it above the roadway.

UNITED STATES PATENTS ISSUED FEB. 25, 1902

693,859. Track-Cleaning Device; F. Hedley, Chicago, Ill. App. filed Dec. 10, 1900. A series of scraping blades are fixed in a head, which is adjustable in position with respect to the car in order to engage with the rail; a spring normally presses the blades into contact with the rail.

693,935. Safety Attachment for Cars; C. A. Willard, St. Louis, Mo. App. filed June 22, 1901. A guard is thrust rearward from the platform of the car whenever the car stops, in order to prevent persons from walking around the rear end of the car to the adjacent track.

693,944. Street Railway Switch; W. J. Bell, Los Angeles, Cal. App. filed Dec. 14, 1901. A system of levers for throwing a switch is normally under the tension of a spring, and is tripped by a magnet which is energized automatically by the movements of the car.

693,960. Street Car Fender; A. Fischer, Detroit, Mich. App. filed March 16, 1901. Relates to the special devices for lowering and raising the fender when required.

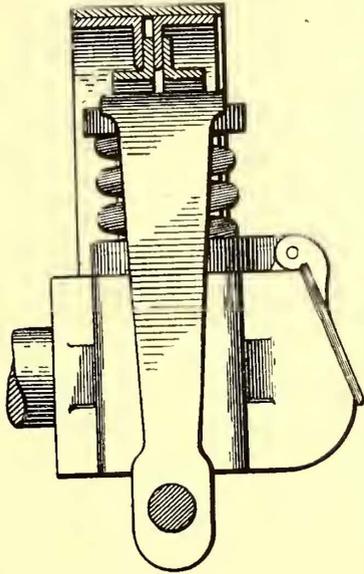
693,984. Car Truck; S. W. McMunn, Chicago, Ill. App. filed July 27, 1901. The cap piece which fits the upper end of the spring is connected to the truck in a pivotal manner by a pair of links.

693,968. Trolley for Electric Cars; E. W. Taylor, Spokane, Wash. App. filed Dec. 26, 1900. The trolley contacts are in a frame which rides upon the wire and is dragged along by a cord. Upper and lower contacts are so adjusted as to afford a pivotal connection with the wire, permitting them to pass forks and hangers.

694,006. Switch-Operating Mechanism; J. Eisele, Pittsburgh, Pa. App. filed April 24, 1901. A mechanical device for throwing a switch from a car platform.

694,020. Trolley Pole Support; F. H. Lippincott, Philadelphia, Pa. App. filed July 16, 1900. A retracting mechanism is tripped into operation when the pole rises above the wire.

694,047. Car Haul; A. M. Acklin, Pittsburgh, Pa. App. filed Nov. 25, 1901. A device for moving cars consisting of a continuously moving hauling chain having hooks thereon for engaging with the car, and mechanism for bringing the car from a state of rest or slow speed by a gradually increasing speed to that of the hauling chain to be caught and hauled thereby.



PATENT NO. 693,984

694,058. Railway Switch; D. J. Griffiths, H. W. Hitzrot & C. W. Mower, McKeesport, Pa. App. filed Sept. 10, 1901. Details.

694,114. Car Truck; W. T. Shryock, Allegheny, Pa. App. filed June 4, 1901. The motors are so arranged with relation to each other that when ascending grades the upward pressure of the rear motor will have a tendency to bear the forward motor downwardly, and vice versa when descending a grade, thereby obtaining a more uniform strain on both motors.

694,129. Railway, Tramway, or the Like; J. Brown, Belfast, Ireland. App. filed May 28, 1901. A method of railway working which consists in detaching, at successive stations, from the rear end of a continuously moving train, one or more coaches appropriated to a particular station, and taking on in front, without stopping, another coach or coaches, which the train overtakes.

694,152. Trolley Stand; H. Holland, Detroit, Mich. App. filed Aug. 28, 1901. A circular plate supporting the trolley is fitted with rollers which rest upon another circular plate, having a retaining flange at its edge and resting horizontally upon the roof of the car.

694,162. Railway Track Structure; C. H. Krauss, Johnstown, Pa. App. filed Aug. 3, 1901. A tongue-switch structure consisting of two separate cast metal bodies in which rail members of the structures are held, one of said bodies being secured to and between rail members of the other body.

694,176. Railway Track Structure; H. B. Nichols, Philadelphia, Pa. App. filed Dec. 26, 1901. A hardened plate is inserted in the casting, uniting the meeting rails, by means of a soft metal filling, which is readily removable without disturbing the structure.

694,207. Brake Mechanism; F. M. Smith, Salubria, Idaho. App. filed Nov. 6, 1901. Details.

694,218. Trolley; J. S. Van Leer, St. Louis, Mo. App. filed May 9, 1901. An arrangement of guard-plates adjacent to the wheel.

694,231. Wheel; J. T. Ashley, Brooklyn, N. Y. App. filed Nov. 30, 1901. The rim of the wheel varies in radial thickness continuously to counterbalance the weight at the crank-pin connection.

694,276. Railroad Construction; W. M. Hickok, Pharisburg, Ohio. App. filed Dec. 2, 1901. Anchor-plates are placed beneath the rails, and have an inverted cup shape, with a socket in their upper ends to receive the base of the rail.

694,283. Seat; L. Janson, Brooklyn, N. Y. App. filed Sept. 12, 1901. Details of the leverage of a reversible seat.

694,322. Fare Register; J. F. Ohmer, H. Tyler and W. F. Breidenbach, Rochester, N. Y. App. filed July 31, 1901. Means for taking printed or impressed statements from the wheels of the register, the statements showing the work of the register and the identification mark of the person taking such statements.

## PERSONAL MENTION

MR. WILLIAM P. GOUNDIE, formerly general manager of the Brooklyn Elevated Railroad, has been appointed Collector of City Revenues by Comptroller Grout, of New York.

MR. ROBERT P. LEE has resigned as superintendent of Woronoco Street Railway of Westfield, Mass. President James H. Bryan will operate the road until Mr. Lee's successor is chosen.

MR. J. F. DUSMAN, manager of the Edison Electric Light Company, of York, Pa., has been appointed general manager of the York County Traction. Heretofore Mr. W. H. Lanus has acted as president and general manager of the York County Traction Company. Mr. Dusman will not resign from the Edison Electric Light Company, but will serve as manager of both, the interests being closely identified.

MR. B. M. WARNER has been appointed superintendent of the San Diego Electric Railway Company of San Diego, Cal. Mr. Warner was formerly connected with the San Francisco & San Mateo Electric Railway Company, and when he resigned from that company to become connected with the San Diego Electric Railway Company, his associates presented him with a diamond ring as a token of their esteem.

MR. GEORGE O. WHEATCROFT has been appointed assistant secretary of the Milwaukee Electric Railway & Light Company, of Milwaukee, Wis., to succeed Mr. Francis H. Whitney, who resigned to become private secretary of Postmaster-General Henry C. Payne, formerly vice-president of the Milwaukee Electric Railway & Light Company. Mr. Wheatcroft has for some time been assistant treasurer of the company.

MR. SAMUEL J. DILL, who has been connected with the operating department of the Metropolitan Street Railway of New York city for some time, and who for the past two years has been superintendent of the Forty-Second Street, Manhattanville & St. Nicholas Avenue Railway Company, has resigned, to accept the position of assistant manager of the Detroit, Ypsilanti, Ann Arbor & Jackson Railway Company of Detroit, Mich. Mr. Dill will leave New York in a few days to assume his new position.

MR. H. M. BRINCKERHOFF, general manager of the Metropolitan West Side Elevated Railway of Chicago, lectured before the electrical engineering students of Lewis Institute in that city on the evening of Feb. 24, his subject being "Third Rail Systems." The lecture was illustrated with stereopticon slides, showing most of the principal third-rail installations in this country. No one is better adapted to lecture authoritatively on this subject than Mr. Brinckerhoff, who was so prominently identified with the first third-rail work in this country.

MR. W. D. RAY has opened an office as consulting electrical engineer at 1015 Chamber of Commerce Building, Detroit, Mich. Mr. Ray has been engineer of the electrical equipment of a number of recent Michigan electric interurban lines, and several years ago was manager of the Everett (Wash.) Railway & Electric Company. He has also had good experience from the manufacturing standpoint, having been connected at one time with the Chicago office of the Lorain Steel Company, and later general manager of the Magann Air Brake Company. He has many friends to wish him success in the new venture.

MR. JOHN MIFFLIN HOOD, who has just been elected president of the United Railways & Electric Company, of Baltimore, and who is now president of the Western Maryland Railroad Company, was born at Bowling Green, near Sykesville, Howard County, Md., on April 5, 1843. Mr. Hood's education was finished at Rugby Institute, Mount Washington, in 1859, in which year he was also employed in the engineering corps for the extension of the Delaware Railroad. Later he became principal assistant engineer of the Eastern Shore Railroad. He went to Brazil in 1861, but returned in January, 1862. After doing some special topographical work for the Confederacy he entered the Maryland infantry, becoming a lieutenant of engineers in 1864. After the war Mr. Hood was employed by the Philadelphia, Wilmington & Baltimore Railroad Company to survey for the extension of the Baltimore Central Railroad to Baltimore, and next was in charge of building the Port Deposit branch of that road. He then became chief engineer of that line, and also of the Baltimore Central. After retiring from these companies he was appointed superintendent of the Florida Railroad, but not long afterward he returned to Maryland to engineer a narrow-gauge railroad from Oxford, Chester County, Pa., to York. After several other engineering engagements he entered the service of the Western Maryland Railroad, and was elected president of that company in March, 1874.

## LEGAL NOTES

### CHARTERS, ORDINANCES, FRANCHISES, ETC.

#### CONNECTICUT.—Municipal Corporations—Street Railways—Location of Track—Mandamus—Court's Discretion—Review.

A street railway company, in locating its track in a city, did not follow the plan approved by the court of common council as to the location of a cross-over switch, and the language of the vote of the council approving the location was doubtful. It appeared that the track, as located, served, rather than injured, public interests, and that it was located in pursuance of the directions of city officials charged with the execution of the orders of the council. Held, a refusal to issue mandamus to compel the company to move the switch in compliance with an order of the court of common council was not such a plain abuse of discretion as would reverse the judgment.—(City of Hartford vs. Hartford St. Ry. Co., 50 Atlantic Rep., 393.)

#### ILLINOIS.—Street Railroads—Right of Way—Condemnation—Connecting Tracks.

1. Where a street railway company has procured a right of way to connect its track with the track of another company, the latter cannot condemn and take such right of way to connect its track with a rival company.

2. Where a street railway company desires to connect its track to that of another company, the latter is required to unite in forming the connection; and, if they cannot agree on the details and compensation, they are to be ascertained in accordance with the provisions of 3 Starr & C. Ann. St. 1896, p. 3235.

3. Where a street railway company has acquired a right of way to connect its track with that of another company, its right to hold such right of way is not affected by the fact that there is no ordinance giving it a right to lay its track over one-half the width of a street, next to the track of such other company.—(Suburban R. Co. vs. Metropolitan West Side El. R. Co., 61 N. E. Rep., 1090.)

#### MISSISSIPPI.—Municipal Corporations—Forfeitures—Remission—Ultra Vires.

1. Under Code 1892, Sec. 3003, providing that municipal expenditures of money shall be under a specific appropriation, an oral agreement by the board of mayor and aldermen that a deposit forfeited to the city by a corporation should be considered as a deposit of another corporation, and returned to it upon a certain contingency to be delivered to the corporation which originally made such deposit, was ultra vires and void.

2. Code 1892, Sec. 2986, giving the mayor of municipal corporations power to remit fines and forfeitures and annual penalties for offenses against the ordinances of the municipality, etc., relates only to the remission of fines and penalties pertaining to criminal procedure, and does not authorize the return to a corporation of a forfeited deposit made to insure the performance of a contract.

3. Const. 1890, Sec. 100, providing that no obligation or liability held by any city or town shall be exchanged or transferred except on payment of its face value, expressly prohibits such return.—(Jackson Electric Ry. & Power Co. vs. Adams, State Revenue Agent, 30 Southern Rep., 694.)

#### NEW JERSEY.—Municipal Ordinances—Vested Rights—Validity.

1. An ordinance enacted by a municipality, which, by repealing an existing ordinance, destroys or affects property rights, without the municipality first giving a notice of its intention to adopt it to the parties interested in such property rights, is void.

2. A certain borough by ordinance granted a franchise to a street railway company to construct and operate a street railroad upon certain streets. As ordered, its council gave notice by letter to the president of the company of the intention of the council at a specified meeting to introduce an ordinance revoking the franchise. The proposed ordinance was not introduced at the meeting named, but was introduced and passed after many intervening meetings. Held, that the ordinance was void, as the notice served only authorized the passage of the repealing ordinance at the day therein named, unless there was a formal adjournment of action upon it to a subsequent meeting.—(State (Newark & H. Traction Co., Prosecutor), vs. Mayor, etc., of Borough of North Arlington, 50 Atlantic Rep., 345.)

#### NEW JERSEY.—Street Railroads—Paving Between Rails—Police Regulation—Negligence.

1. A city ordinance, passed under due legislative authority to regulate street railways, that requires operating companies to re-pave and keep in repair, to the satisfaction of the proper city authorities, in any paved street of the city in which their tracks are or shall be laid, a space between lines one foot outside of their

outer rails, under penalty that, on default, after notice, the city may repair at the company's cost, is a valid police regulation, creating a duty toward the traveling public, and is evidential in an action for negligence brought against such a company by a passenger who is injured through a defect in that part of the street pavement while passing from car to sidewalk.

2. In such a case the ordained duty is absolute, and not dependent on notice. It is immaterial whether the defective pavement was laid under the ordinance, or previously laid and fallen into disrepair.

3. In an action for negligence, tried with a jury, there was evidence as follows: The plaintiff, a passenger on the defendant's street railway, alighted, at the only place afforded for that purpose, from a car which was stopped for her at a crosswalk. By direction of the conductor she passed behind the car toward her destination, pointed out by the conductor, on the opposite side of the street. In so doing she was injured through a defect in pavement adjoining the crosswalk, at a place where it was the duty of the defendant to keep the pavement in repair. The defect had existed for upward of two months. She did not see, and had no warning of, the danger. Held, that it would not have been lawful for the trial judge to have held either that no negligence chargeable to the defendant had been proved, or that negligence of the plaintiff indisputably contributed to her injury. The case, in both aspects, was for the jury.—(Fielders vs. North Jersey St. Ry. Co., 50 Atl. Rep., 533.)

#### NEW YORK.—Deed—Reservation—Construction—Damages by Elevated Road—Action by Grantee—Evidence.

1. A written reservation is a deed "of all claim or right of action" against an elevated road for damages to the property conveyed by the invasion of the road in the past, present, or future does not deprive a subsequent owner of the right to sue to recover damages suffered after he has acquired title.

2. In an action by a grantee to recover for injuries caused to an abutting lot, where he was holding under a deed reserving a right of action against the company for damages, evidence that the grantee did not intend to purchase any right of action against the road is inadmissible, where there is no dispute either as to the reservation or the intent of the parties.

3. In an action to recover for damages to property by an elevated road, an expert can testify as to the general current of values for two or three adjacent blocks removed from the line of the road.

4. Any error in allowing an expert to be asked as to the percentage downward in rents and fee values on streets in the vicinity occupied by an elevated road is harmless, where his answer was that there was no regular percentage.

5. Where an expert has testified as to the use of property in the immediate neighborhood of an elevated road, he may be asked how such use compares with that on the adjoining streets, where there is no elevated road.—(Shepard vs. Manhattan Ry. Co. et al., 62 N. E. Rep., 151.)

#### NEW YORK.—Injunction—Street Railway—Obstruction of Street—Adjoining Owner—Complaint—Sufficiency—Allegation of Damages—Same—Assessment of Damages by Court—Alternative Judgment—Same—Security for Compensation.

1. The complaint for an injunction to restrain the continued occupation of a street by a street railway, the fee of which street is in plaintiff, need not allege damage.

2. Under Const. Art. 1, Sec. 7, providing that when private property shall be taken compensation shall be ascertained by a jury, or by not less than three commissioners, the court, on an application to enjoin the proposed occupation of a street by a street railway, the fee of which is in plaintiff, cannot, against his protest, assess the damages and grant alternative relief permitting defendant to pay the damage found due, in which case the injunction would be denied.

3. Where a street railway company has not taken the preliminary steps required by the statute to authorize the condemnation of a street, the fee of which is in the adjoining owners, and of which the company is not in possession, the court will not deny the application of the adjoining owners, for an injunction restraining the occupation of the street, on the company giving adequate security for the payment of any compensation found due to plaintiffs.—(Peck et al. vs. Schenectady Ry. Co., 73 N. Y. Suppl., 794.)

#### NEW YORK.—Street Railroads—Construction—Consent of Property Owners—Motive Power.

Laws 1890, c. 565, Sec. 94 (Railroad Law), authorizes the appointment of commissioners to determine whether a street rail-

way shall be constructed in certain streets notwithstanding the refusal of the consent of the owners of abutting property. Sec. 100 provides that such railroad may operate any portion of its road by any power, other than steam, which may be approved by the State board of railroad commissioners and consented to by the owners of one-half the property bounded on the street. Held, that where the railroad commissioners had authorized a railroad to use electricity, a refusal of the property owners to consent to the construction of a road to be operated by electricity, "or any motive power other than steam that might be approved by the railroad commissioners," was not a refusal to consent to the operation of the road by electricity, so as to authorize the appointment of commissioners, under Sec. 94.—(In re Kingsbridge Ry. Co., 73 N. Y. Suppl., 440.)

#### NEW YORK.—Street Railroads—Continuous Passage.

Laws 1884, c. 252, relating to street railroads, which provides that no company operating a railroad under the act shall charge any passenger more than five cents for a continuous ride on its road, or any branch operated by it or under its control, within the limits of any city or village, does not apply to a road which such corporation had leased from a steam railroad which was not incorporated under the act.—(McNulty vs. Brooklyn Heights Ry. Co., 73 N. Y. Suppl., 698.)

#### NEW YORK.—Railroads—Intersections—Procedure—Appointment of Commissioners—Right of Appeal.

An order appointing commissioners under Railroad Law, Sec. 12, providing that, when two railroad corporations cannot agree on the compensation for making intersections or connections, or on the grades or manner thereof, "the same shall be ascertained and determined by commissioners, \* \* \* as is provided in the condemnation law," is not appealable, an appeal in a condemnation proceeding being authorized only from a final order.—(Stillwater & M. St. Ry. Co. vs. Boston & M. R. R., 73 N. Y. Suppl., 744.)

#### NEW YORK.—Railroads—Abutting Owners—Damages—Judgment—Res Judicata.

Where owners of property abutting on a street occupied by a railroad sue it for damages to the property by reason of the occupation, a judgment on the merits in defendant's favor is a bar to a second action, where the relative conditions of the parties remain unchanged, and there is only the continuing trespass by occupation; and it is immaterial that conditions and evidence change after the institution of the second action.—(McGrane et al. vs. New York El. R. Co. et al., 73 N. Y. Suppl., 498.)

NEW YORK.—Street Railways—Merger of Companies—Legality—Question—How Raised—Same—Consent of Property Owners—Several Companies—Consolidation—Rights Under Merger—Same—Injunction—Prima Facie Case—Estoppel—Same—Right to Lay Track—Same—Recorded Consent—Defect—Burden of Proof—Same—License—Irrevocable—Same—Consent of Owners—Time of Execution—Same—Failure to Record—Effect as to Subsequent Grantee—Same—Nonconsent—Effect—Damages.

1. Where in an action to restrain a street railway company from constructing its track on a certain street on the ground that it has not the consent of a sufficient proportion of the property owners, it appears that another company is merged in such company, and that each had consent of different owners to build a road on such street, and the legality of such merger is questioned, such question cannot be determined in such action, but must be dealt with in an action brought for that purpose.

2. Where two or more street railway companies are organized to build a railway on the same street, and each obtains the consent of different property owners, on the merger of such companies the consolidated company succeeds to the rights given by all such consents.

3. Plaintiff, owning property on a certain street, sought to restrain defendant from constructing a track along such street on the ground that it had failed to obtain consent of the owners of one-half the property bounded on the street, as required by the railroad law. Defendant alleged it had such consents, and attached a list thereof to the answer. Plaintiff proved his ownership of abutting property, and that in 1896 defendant applied for commissioners, under Const. Art. 3, Sec. 18, and Railroad Law, Sec. 94, to determine whether a railroad ought to be constructed on such street, alleging its inability to obtain the requisite number of consents, and that such proceeding was still pending in the court of appeals. Plaintiff then rested. The list of recorded consents attached to the answer as a bill of particulars, on which defendant relied, included consents granted to another company, which merged with defendant after such application for commissioners was filed, and the consolidated list included a sufficient number of owners. Held, that the pendency of the application for commissioners did not estop defendant from claiming that since the

consolidation it had a sufficient number of consents, and hence plaintiff's proofs did not establish a prima facie case for injunction.

4. Where a street railway company has received and recorded consents of the owners of one-half in value of the property bounded on a street, executed in the manner prescribed in Railroad Law, Sec. 91, such consents are sufficient, on the face of the papers, to justify it in entering on the street and laying its tracks.

5. Where a street railway has received and recorded consents of abutting property owners to lay its tracks on a street, the burden is on a party claiming a consent to be ineffectual to show wherein it is defective.

6. Under Const. Art. 3, Sec. 18, providing that no street railroad shall be authorized except on consent of the owners of one-half in value of the property bounded on the street, or on the determination of commissioners where such consents cannot be obtained, a consent properly executed and recorded is not a mere license, revocable at will, but conveys permanent rights, binding on the owner and his grantees.

7. The consents of the owners of a majority of the property bounded on a street to the construction of a street railroad thereon, as provided in Railroad Law, Sec. 91, may be executed and recorded at different times.

8. Where a street railroad company fails to record the consent of a property owner to the laying of the track until after such owner has conveyed such property, such consent is not thereby invalidated, but the grantee of such property is not estopped to assert any rights which may have come to him under his deed.

9. Where a street railway company has obtained consent to lay the track from the requisite number of property owners, a non-consenting owner of abutting property may maintain an action for his damages, but cannot prevent the construction of the road.—(Adee vs. Nassau Electric R. Co. et al., 72 N. Y. Suppl., 992.)

#### TEXAS.—Taxation—Street Railroads—Franchises—Separate Tax.

The franchises of a street railroad, appurtenant to the use of its property, are a part of its realty, and are not subject to a separate tax.—(Dallas Consol. Electric St. Ry. Co. vs. City of Dallas et al., 65 S. W. Rep., 201.)

#### LIABILITY FOR NEGLIGENCE.

#### CALIFORNIA.—Street Railways—Personal Injuries—Passengers—Stepping from Moving Car.

Where plaintiff told the motorman to stop at a certain street, of which request he took no notice, and while crossing such street plaintiff touched the motorman, and asked him why he did not stop the car, whereon the motorman immediately proceeded to slow up, and while doing so told plaintiff not to get off until the car stopped, but plaintiff stepped off the car before it stopped, and was injured, he was not entitled to recover.—(Campbell vs. Los Angeles Ry. Co. (L. A. 969), 67 Pac. Rep., 50.)

#### CALIFORNIA.—Street Railways—Injuries to Passengers—Collision with Wagon—Presumption of Negligence.

Where plaintiff's intestate, a passenger in a street car, was killed in a collision between the car and a wagon, and it was a question of fact as to whether the railway company or the driver of the wagon was responsible, no presumption of negligence arose in a suit against the railway company and the owner of the wagon.—(Harrison vs. Sutter St. Ry. Co. et al. (S. F. 1920), 66 Pac. Rep., 787.)

#### CALIFORNIA.—Street Railroads—Negligence—Injury at Crossing—Contributory Negligence—Evidence—Instructions—New Trial—Motion—Statement—Sufficiency.

1. Code Civ. Proc., Sec. 661, provides that, on an appeal from an order granting or refusing a new trial on the minutes of the court, the judgment roll and a statement to be prepared shall constitute the record on appeal, and that the statement shall only contain the grounds argued before the court for a new trial. Sec. 659, subd. 4, provides that, where the motion is made on the minutes of a court, the notice of intention must specify the particular errors upon which the party will rely. Held, that the requirement of the former section that the statement shall contain only the grounds argued before the court for a new trial refers to specifications mentioned in Sec. 659, or such of them as are argued, and, when specifications are set out in the statement, it will be presumed that they were contained in the notice and argued.

2. On appeal from a judgment in favor of plaintiff in an action for death owing to deceased having been struck by one of defendant's street railway cars, defendant claimed that the circumstances made it possible that deceased was killed by falling on the pavement, but the only specification on the point was that there was no evidence to show that deceased was struck by the car while making an attempt to pass over the street at a public crossing; but the preceding specification showed that the specification in

question might be construed as meaning merely that there was no street crossing at the place where the accident occurred. Held, that it would not be necessary to consider the sufficiency of the evidence to justify the jury in finding that the deceased was struck by the car.

3. There was testimony on the behalf of the plaintiff that the car was going very fast. The motorman and conductor testified that the car was going at about 4 miles an hour, but it appeared that the time consumed in arriving at the place of the accident from the point of starting would indicate a speed of about 6½ miles. The motorman said that he stopped the car within 15 or 18 feet, and that it would have required 35 to 50 to stop a car at full speed; but, according to his own testimony, deceased, when first seen, was 10 feet in front of the car, which was 28 feet long, and, according to the testimony of one of the witnesses, deceased was found on the stoppage of the car about 8 feet in the rear of its rear end. A witness familiar with the line testified that when the cars are going fast they can stop in 20 or 25 feet. Held, to justify a finding the car was going at more than full speed, or 8 miles an hour.

4. The term "street crossing," as used in an ordinance requiring a bell to be rung by a street car 25 feet from any street crossing, requires the ringing of a bell where one street intersects another, although it terminates at the point of intersection.

5. In an action for wrongful death, contributory negligence is a matter of defense, to be proved affirmatively by the defendant.

6. It appeared that deceased was killed while attempting to cross the track. The motorman testified that when he first saw deceased he was emerging into the light thrown by the headlight, about 10 feet in front of it, and 8 feet to the left of the track. There was testimony that the eyesight of deceased was bad; and from the testimony of a witness, together with that of the motorman, it appeared that the car, on stopping, passed over a distance of about 46 feet, and that the means used by the motorman to stop the car was that of putting on the brake, but that he did not reverse the current. It appeared that the night was dark and the street badly lighted, and that no bell or gong was sounded. Held, that it could not be said, as a matter of law, that negligence of the deceased was the proximate cause of the injury.

7. It could not be said, as a matter of law, that the attempt of deceased to cross a street in front of a car necessarily constituted negligence.

8. Code Civ. Proc., Sec. 2052, declares that a witness may be impeached by evidence of statements inconsistent with his present testimony. On his examination in chief the motorman testified that he could not tell whether the car came in contact with the deceased, and on cross-examination, for the purpose of impeachment, he was asked if he had not said to a witness that he struck the deceased lightly. Held, that it was proper to admit the testimony for purposes of impeachment.

9. The question whether the statements claimed to have been made by the motorman to certain witnesses were made by him or by some other man was for the jury.

10. If the deceased was guilty of negligence in going on the track, and the motorman, with proper appliances and in the exercise of ordinary care, could have avoided the injury, the negligence of deceased would not constitute any defense.—(Schneider vs. Market St. Ry. Co. (S. F. 2636), 66 Pac. Rep., 734.)

CALIFORNIA.—Trial—Misconduct of Jury—Impeachment of Verdict—Harmless Misconduct—Carriers—Carriage of Passengers—Construction of Cars—Negligence.

1. The affidavit of a third person as to the admissions and declarations made by a juror that he had personally inspected the place of accident, offered to impeach the verdict, is inadmissible on a motion for a new trial, whether the misconduct complained of occurred before retiring or during retirement, because a juror cannot directly or indirectly impeach his own verdict, except on the ground of obtaining a verdict by a resort to chance, designated in Code Civ. Proc., Sec. 657, subd. 2.

2. Where, in an action by a passenger for injuries, there was no dispute as to the place of the derailment of defendant's street car, alleged to have been caused by unlawful speed, and the defendant claimed that the accident was due to a latent defect in one of the car wheels, an affidavit of a third person that one of the jurors during the progress of the trial had inspected the place of the accident, had watched the progress of a car there, and had examined the construction of the tracks, is insufficient to show that the fairness of the trial was in any way affected by the juror's conduct, and hence is not sufficient to justify a new trial on the ground of the misconduct of the jury.

3. A street car company is responsible for defects in its cars which could not have been discovered after the cars came into possession, but could have been discovered by the exercise of the utmost precaution, care and skill in their construction.—(Siemsen

vs. Oakland S. L. & H. Electric Ry. (S. F. 1679), 66 Pac. Rep. 672.)

ILLINOIS.—Street Railways—Injury to Passenger—Collision with Vehicle Going in Same Direction as Car—Failure to Ring Gong—Misconduct of Jury.

1. Where a passenger on a street car was injured by a collision between the car and a buggy going in the same direction as the car, defendant in an action by such passenger for the injuries received was not entitled to an instruction that failure to ring the gong was, as a matter of law, not negligence.

2. During the trial, plaintiff's attorney received an anonymous letter stating that, should plaintiff fail to recover, it would be on account of a certain juror, whom the writer suspected of having been bribed; and after the jury were discharged, it was alleged, a juror asked plaintiff's attorney if he "got that letter," and, on being told that an anonymous letter had been received, said, "That is the one I mean." Plaintiff's attorney swore that he had inquired of the questioning juror as to how the suspected juror voted, and told him and other jurors of the receipt of the letter, and had answered such juror's question as to the receipt of a letter by stating that he had received an anonymous letter warning him against the juror mentioned; and the juror who asked concerning the letter swore that he did not write the same. Held, there was no evidence of misconduct of the jury.—West Chicago St. R. Co. vs. Tuerk, 61 N. E. Rep., 1087.)

ILLINOIS.—Street Railways—Negligence—Instructions—Measure of Damages—Injury to Feelings—Inadvertent Failure to Give Instructions—Impaired Eyesight—Evidence—Credibility.

1. In an action for personal injuries, an instruction that in fixing the measure of damages the jury might consider plaintiff's suffering in body and mind resulting from the physical injuries, and "such future suffering and loss of health as she had sustained or would sustain by reason of the injuries," is not erroneous as authorizing the jury to award damages for injured feelings which might arise in plaintiff's mind from the injury, but which were not a part of the physical pain attending the injury.

2. Where the court was asked to instruct that the jury should look to the evidence for the facts and the instructions for the law, and find their verdict accordingly, without reference to who is plaintiff or who defendant, and the instruction was marked "Given," but afterward, apparently by oversight, placed with the refused instructions, and not read, the giving of other instructions that the jury must accept the court's instructions as the law of the case, and should not be justified in finding a verdict contrary to the law laid down in the instructions; that the plaintiff's case must be established by a preponderance of the evidence; and that the jury could not compromise between liability and amount of damages, nor arrive at a verdict by chance, or without fairly and deliberately considering the evidence and law—rendered harmless any alleged error in omitting the first-mentioned instruction.

3. Where plaintiff in a personal injury suit testified that prior to the injury she had had one of her eyes operated on for cataract; that the other, up to the time of the injury, was sound and strong; that after the injury the eye operated on was much worse, and the previously sound eye had failed to a considerable extent; that she had constant headaches and other difficulties indicating spinal trouble; and a physician testified that myelitis affecting plaintiff's eyes might have resulted from the injury—an instruction that plaintiff had produced no evidence tending to show that her eyesight had been permanently injured and severely impaired was properly refused.

4. The refusal of an instruction that, if the jury believed that any witness knowingly testified falsely, they were at liberty to entirely disregard the testimony of such witness, was not reversible error, especially where an instruction was given on the weight and credibility of the testimony, in which the jury were told what facts might be considered in determining the credibility of the witnesses; and the jury were further charged that they might consider the apparent truthfulness of the testimony or lack of it, and that preponderance of the evidence was on the side sustained by the more credible and disinterested witnesses.—(Cicero & P. St. Ry. Co. vs. Brown, 61 N. E. Rep., 1093.)

WASHINGTON.—Judges—Substitute—Powers—Appeal—Record—Statement of Acts.

1. Under 2 Ballinger's Ann. Codes & St. Sec. 4676 authorizing the appointment of a judge pro tempore when the parties have agreed thereto in writing, and providing that a case "may be tried" by such judge, a judge pro tempore may be appointed after verdict to hear and determine a motion for a new trial, and settle a bill of exceptions and statement of facts.

2. Where the record contains no statement of facts, the supreme court cannot consider, on its merits, the denial of a new trial by the trial court.—(Nelson et al. vs. Seattle Traction Co., 66 Pac. Rep., 61.)

## FINANCIAL INTELLIGENCE

### THE MARKET

#### The Money Market

WALL STREET, March 5, 1902.

The money situation after the steady decline in New York surplus reserves during the past month has reached a stage where, though it is not yet critical, is uncertain enough to arouse some anxiety. Primarily, the enormous loan expansion, repeating the experience of a year ago, was responsible for the pulling down of resources. From the first of January to the end of last week the increase in the loan item amounted to \$67,000,000. These advances were made almost entirely in connection with one or another of the great company purchases, or with the issue of new bonds by several railroads to recompense or provide for outlays on capital account. One of the leading questions now is whether the syndicates which have taken out this money will be able to return part of it in case of need. This is what happened in March and April, 1901, and it is interesting to recall that then, as now, the relief from this quarter was only expected by a very few. Yet it would afford the simplest and at the same time the most rational solution of the problem which now confronts the money market. Gold exports are likely to keep up intermittently throughout the spring, as there still remains a balance of financial obligations due Europe by this country. The interior centers and Treasury together are drawing out considerably more than they are contributing to local bank reserves. A single specie transfer to San Francisco, through the Sub-Treasury system, of \$20,000,000 will be made according to a recent announcement during the next month or two. Plainly the situation with surplus reserve down below \$10,000,000 calls for some speedy relief, either by voluntary loan repayments from the sources suggested or by a sharp advance in money rates. The latter would unquestionably work very quickly as a means of regulating the situation. No very decided hardening in the loan market has so far appeared. Time money for the distant periods is a shade firmer at  $4\frac{1}{2}$  per cent asked, but for sixty-days the rate is 4 per cent. On the Stock Exchange call money keeps easy around  $2\frac{1}{2}$  per cent.

#### The Stock Market

There has been very little in the stock market of the last two weeks apart from the advances in the so-called specialties. Generally the share list seems to have come to a standstill, hesitating, on the one hand, to decline, because of the constant testimonials to the country's great and undiminished prosperity, and hesitating to advance, on the other hand, because of the many uncertain or unfavorable features in the situation which run very strongly counter to arguments for the rise. The Attorney-General effectually nipped in the bud all hopes of a general upward movement when he announced, a fortnight ago, his intention of proceeding against the Northern Securities Company under the Federal statutes. The subsequent decision of the Supreme Court not to entertain the bill of appeal filed by the State of Minnesota in January attracted no attention, in view of the vastly superior importance of the new development. Inasmuch, however, as the validity of the Northwestern security holding company, under the anti-trust law of 1890, cannot be finally decided for a couple of years, in all probability, it is a serious question whether before long Wall Street will not cease to take such a morbid view of the affair, and will not turn its attention to other financial matters of more universal significance. The money market and the annual period of crop uncertainty so near at hand are restrictive influences which deserve more immediate consideration than the Northern Securities litigation. There is no excuse in either of them for a general selling movement, but it is quite likely that they will continue for the present to avert public participation in the stock dealings, and so prevent any general advance. A year ago doubts about the crops were laid aside during March and April for the sake of other considerations, which at the moment appealed more strongly to the average speculator's imagination. But last year was altogether exceptional, both because the distracting influences were of an unusually forceful character, and because the winter wheat crop had got an uncommonly good start. Neither of these comments can be applied to the present situation.

The local traction stocks, as a group, have moved irregularly, and not very decidedly during the last two weeks. Manhattan has been rather depressed, not by anything unfavorable developing in connection with the property, but by the apparent disinclination of the leading speculative and investment interests in the stock to see an advance yet awhile. Metropolitan has moved up and down rather aimlessly, within a narrow range of fluctuations. Possibly the speculation is awaiting the outcome of the contest to obtain

sufficient proxies from the present stockholders to insure the adoption of the new Metropolitan Securities plan. It requires a two-thirds vote to do this, but the expectation is that the leading capitalists in the company will be easily successful in securing the necessary majority. Brooklyn Rapid Transit has been relatively the strongest of the three local stocks. Rumors that the recent buying is connected with the development of the Metropolitan Securities project do not find favor in conservative quarters. The more reasonable inference is that the stock was oversold at the time of the recent bond issue announcement, and that the covering of a short interest is what has lately put up the price.

#### Philadelphia

The upward movement which started in Union Traction a month ago, when the new financial plans of the company first began to be seriously discussed, has made further notable progress during the past fortnight. From 37 the price has risen very steadily to  $40\frac{1}{2}$ , which, for practical purposes of comparison, establishes a new high-record level. The rise is still accompanied by nothing better than gossip concerning the details of the lease which will presumably be issued to a new corporation. Either the promoters of the enterprise are not ready to show their hand or else the deal itself has not matured sufficiently for a public announcement to be made. In either case, the suspicion is not unnaturally raised that the secrecy of the management and the manipulation of the stock in the market have some connection, and that the public may be kept in mystery until the inside clique are ready to unload. All other securities associated with the Union Traction property have enjoyed a sharp advance. Philadelphia Traction touched  $100\frac{1}{4}$  on Saturday, and Electric People's Traction 4 per cent bonds also went to  $100\frac{1}{4}$  last Thursday, which is the highest figure at which the latter issue has ever sold. The only other noteworthy movements have been the advance in Consolidated Traction of New Jersey to  $70\frac{1}{2}$ , a new high record, and the equally sharp rise in Railways Company General from  $4\frac{1}{2}$  to  $6\frac{1}{8}$ . In the latter case manipulation seems to have been the main influence, but in the New Jersey shares a more legitimate incentive appears in the plans of the North Jersey Street Railway, which holds a lease of the Consolidated, to extend its system, and especially to form a tunnel connection with Manhattan Island. The new 5 per cent bonds of the Union Traction Company, of Indiana, recently listed on the Philadelphia Exchange, have been actively dealt in at an advance from 100 to 101. Other bond sales include Consolidated Traction of New Jersey 5s at  $110\frac{1}{4}$ , People's Passenger 4s at 107, Newark Passenger 5s at 118, Indianapolis Railway 4s at 85, and Wilmington & Chester Traction 5s at 108.

#### Chicago

There is not a great deal of change in prices of the Chicago traction shares from what they were two weeks ago. Union Traction has been well bought on a scale up to  $15\frac{3}{4}$ , which was the high figure reached last Monday. The preferred is firm around 49. City Railway, on light transactions, advanced to 219 a week ago, and then fell back to 215. There has been a good deal of talk about the negotiations between the Union Traction and the city for a twenty-year extension of the franchise, one report having it that 10 per cent of the gross receipts was offered by the management as a compensation. A director of the company, when interviewed, denied this story, but intimated that the franchise extension matter was coming to a head, and he also gave out that if it was arranged satisfactorily the company would have several surprising announcements to make. Elevated securities have been favorably influenced by the excellent comparative earnings statements published for the month of February. The Metropolitan is now carrying nearly 100,000 passengers daily. On the Lake Street traffic has increased to such an extent that the road has had to draw upon the Northwestern for extra coaches. This has made it very hard for the latter to handle its own rapidly expanding business. There have been no very striking changes in quotations, however. Advances have been limited, as a rule, to fractions. Speculation is still restricted by the franchise tax uncertainty, the more so as a special hearing of arguments upon the question is soon to take place before the City Council.

#### Other Traction Securities

The market for Massachusetts Electric stocks has felt the effect of profit-taking, induced by the recent sharp advance. Dealings continue large, however, and prices are well-maintained. Investment purchases as high as 97 have been noted in the preferred. Earnings are increasing at an average rate of 7 per cent over those

of last year. Boston Elevated is dull and unchanged at 162. The Baltimore dealings in the United Traction securities have been rather less active, and quotations have been shaded a trifle from the high level of a fortnight ago. If the rumored consolidation of gas and electric lighting companies goes through it will be decidedly beneficial to United Traction, which owns a large interest in the United Electric Light & Power Company. Nashville Railway 5 per cent certificates, after a quick rise to 66½, have receded to 65. Other Baltimore transactions of less note include Toledo 5s at 104¼, Richmond Traction 5s at 108, and Richmond Traction stock at 45. North Jersey Street Railway stock has been bid up to 28 in the New York curb market, without attracting sales. The bonds are also up two points. The reason for this advance is the same as noted for the rise in Consolidated of New Jersey stock in Philadelphia. A sharp advance in the bids for Columbus common from 47 to 51, and for the preferred from 101 to 102, is another feature of the New York dealings. St. Louis securities have been generally dull. Sales were made in New York a week ago at 31¾ for the common, and 84½ for the preferred, but since then nothing has been done. New Orleans City Railway is quiet, and barely changed, at 30⅝ for the common, and 105½ for the preferred. Improvements of 7¼ points in Cleveland City, 3½ points in Detroit United, and 1½ points in Cleveland Electric during the week, ending March 1 emphasised the strength of traction stocks in the Cleveland Stock Exchange. The advance of 5 points made by the bankers' committee in their offer for Detroit United caused increased interest in this stock, which is now hard to buy on the Cleveland Exchange.

### Security Quotations

The following table shows present bid quotations for the leading traction stocks, and the active bonds, as compared with a week ago:

	Closing Bid	
	Feb. 18	March 4
American Railways Company.....	44¾	43¼
Boston Elevated .....	161½	161
Brooklyn R. T.....	62¾	63¾
Chicago City .....	215	214
Chicago Union Tr. (common).....	14½	14½
Chicago Union Tr. (preferred).....	48½	50
Cleveland City .....	105	..
Cleveland & Eastern.....	31	30
Cleveland Electric .....	82	81
Columbus (common) .....	47	51
Columbus (preferred) .....	101	102
Consolidated Traction of N. J.....	68¼	70
Consolidated Traction of N. J. 5s.....	110¼	110¼
Consolidated Traction of Pittsburgh (common).....	23¼	24¾
Consolidated Traction of Pittsburgh (preferred).....	64½	64½
Detroit United .....	65½	67¾
Detroit United Certificates.....	65½	..
Electric-People's Traction (Philadelphia) 4s.....	99	99
Elgin, Aurora & Southern.....	..	a35½
Indianapolis Street Railway 4s.....	85	85
Lake Street Elevated .....	11¼	11½
Manhattan Ry. ....	133¼	131
Massachusetts Elec. Ccs. (common).....	37¼	36
Massachusetts Elec. Cos. (preferred).....	97	96
Metropolitan Elevated, Chicago (common).....	38½	39½
Metropolitan Elevated, Chicago .....	90	89
Metropolitan Street .....	171½	167½
New Orleans (common).....	30½	30¾
New Orleans (preferred) .....	105	105½
North American .....	92	92
Northern Ohio Traction (common).....	..	30
Northern Ohio Traction (preferred) .....	..	90
North Jersey .....	26½	28
Northwestern Elevated, Chicago (common).....	38½	38½
Northwestern Elevated, Chicago (preferred).....	86	86
Philadelphia Traction .....	99¾	100
Rochester (common) .....	44	..
St. Louis Transit Co. (common).....	30¾	30¾
South Side Elevated (Chicago).....	107	110½
Southern Ohio Traction .....	a65	65
Syracuse (common) .....	21	21
Syracuse (preferred) .....	63½	61
Third Ave. ....	130	129
Twin City, Minneapolis (common).....	110¾	113
United Railways, St. Louis (preferred).....	84	83½
United Railways, St. Louis, 4s.....	89	89
Union Traction (Philadelphia) .....	37	39¾

\* Ex-dividend. (a) Asked. † Last sale.

### Iron and Steel

Pig iron continues moderately active, but business is restricted by the fact that nearly the entire production for the second half-year in foundry pig, is already booked, and a very large portion also of the product of the Bessemer furnaces. Complaints are

still heard, especially in the Central West, of the inadequacy of transportation facilities hampering the output of the unfinished material and delaying the movement of finished articles. The scarcity of steel, while it has not as yet assumed the proportions of an actual famine is serious enough to interfere with the business of the finishing mills. Prices are unchanged for Bessemer standard pig at \$16.75 a ton. Steel billets in the open market are quoted as high as \$31 a ton, but this is considerably above the figure paid by the great body of consuming interests which are still supplying themselves on contracts made some time ago.

### Metals.

Quotations for the leading metals are as follows: Copper, 12½ cents; lead, 4½ cents; tin, 25½ cents; spelter, 4¼ cents.

LOS ANGELES, CAL.—Under date of Feb. 25 an official announcement of the Pacific Electric Railway Company says: "The Pacific Electric Railway Company, created under the laws of the State of California, has acquired the railroads and property of the Los Angeles & Pasadena Electric Railway Company, the Pasadena & Mount Lowe Railway Company and the Pacific Electric Railway Company, of Arizona, and entered into possession thereof, and the above-mentioned railroads hereafter will be operated in the name, under the control and as a part of the system of railroads of said Pacific Electric Railway Company."

DANBURY, CONN.—The partly completed Danbury & Harlem Electric Railway, which is to connect Danbury with the Harlem Division of the New York Central at Golden's Bridge, N. Y., has been sold to the Westchester Traction Company, of New York. The road will be completed at once. The plan is to extend the line through to White Plains, Yonkers and other points on the Hudson River. The company is said to be negotiating also for the purchase of the Danbury Street Railway.

BOISE CITY, IDAHO.—Howard D. Maize, of Chicago, and his associates, are reported to have closed negotiations for the purchase of the property of the Boise Rapid Transit Company. Mr. Maize was in Boise City some little time ago making a thorough inspection of the road.

CHICAGO, ILL.—The directors of the Chicago City Railway Company have declared the regular quarterly dividend of 2¼ per cent, payable March 31.

CHICAGO, ILL.—The directors of the South Side Elevated Railroad Company have declared a regular quarterly dividend of 1 per cent, payable March 31.

NEW YORK, N. Y.—The Third Avenue Railroad Company reports earnings as follows:

	1901		1900	
	Quarter ending Dec. 31	1901	1900	1900
Gross receipts .....	\$583,368	\$583,368	\$551,735	
Operating expenses .....	395,532	395,532	327,509	
Earnings from operation .....	\$187,836	\$187,836	\$224,226	
Receipts from other sources.....	35,478	35,478	5,804	
Gross income .....	\$223,314	\$223,314	\$230,120	
Fixed charges .....	441,151	441,151	440,824	
Deficit .....	\$217,837	\$217,837	\$210,704	
From July 1 to Dec. 31				
Gross receipts .....	\$1,182,774	\$1,182,774	\$1,118,518	
Operating expenses .....	719,170	719,170	628,272	
Earnings from operation .....	\$463,604	\$463,604	\$490,246	
Receipts from other sources.....	100,666	100,666	29,720	
Gross income .....	\$564,270	\$564,270	\$519,966	
Fixed charges .....	882,303	882,303	881,648	
Deficit .....	\$318,033	\$318,033	\$361,682	

BROOKLYN, N. Y.—The Brooklyn Heights Railroad Company reports earnings as follows:

	1901		1900	
	Quarter ending Dec. 31	1901	1900	1900
Gross receipts .....	\$2,791,145	\$2,791,145	\$2,833,681	
Operating expenses .....	1,955,351	1,955,351	1,722,379	
Earnings from operation.....	\$835,794	\$835,794	\$1,111,302	
Receipts from other sources.....	73,762	73,762	74,611	
Gross income .....	\$899,556	\$899,556	\$1,185,913	
Fixed charges .....	1,065,523	1,065,523	1,152,087	
Net earnings .....	*\$155,967	*\$155,967	\$33,826	
From July 1				
Gross receipts .....	\$5,844,946	\$5,844,946	\$5,935,395	
Operating expenses .....	3,886,348	3,886,348	3,445,915	
Earnings from operation .....	\$1,958,598	\$1,958,598	\$2,489,480	
Receipts from other sources .....	184,824	184,824	163,314	
Gross income .....	\$2,143,422	\$2,143,422	\$2,657,794	
Fixed charges .....	2,134,108	2,134,108	2,310,682	
Net earnings .....	\$9,314	\$9,314	\$347,112	

\* Deficit.

NEW YORK, N. Y.—The Metropolitan Street Railway Company reports earnings as follows:

	1901	1900
Quarter ending Dec. 31		
Gross receipts	\$3,754,400	\$3,635,940
Operating expenses	1,723,972	1,699,649
Earnings from operation	\$2,010,428	\$1,936,291
Receipts from other sources	133,536	150,090
Total income	\$2,143,964	\$2,086,381
Fixed charges	1,151,140	1,138,467
Net earnings	\$992,824	\$947,914
Cash on hand, \$4,595,763; profit and loss surplus, \$5,452,525.		
From July 1 to Dec. 31		
Gross receipts	\$7,330,945	\$7,081,309
Operating expenses	3,287,232	3,254,685
Earnings from operation	\$4,043,713	\$3,826,624
Receipts from other sources	287,276	313,027
Total income	\$4,330,989	\$4,139,651
Fixed charges	2,299,854	2,267,452
Net earnings	\$2,031,135	\$1,872,199

PEEKSKILL, N. Y.—The Peekskill Lighting & Railroad Company reports earnings as follows:

	1901	1900
Quarter ending Dec. 31		
Gross receipts	\$9,921	\$10,166
Operating expenses	5,212	4,985
Earnings from operation	\$4,709	\$5,181
Receipts from other sources	3,571	2,544
Gross income	\$8,280	\$7,725
Fixed charges	5,595	4,098
Net earnings	\$2,704	\$3,626

ALBANY, N. Y.—The report of the Hudson Valley Railway Company, which controls the electric railways from Troy north to Lake George, has filed with the State Board of Railroad Commissioners its report for the quarter ending Dec. 31, 1901. It shows the following results:

Gross earnings	\$68,253
Operating expenses	45,301
Net earnings	\$22,952
Gross income	25,170
Fixed charges	26,119
Deficit	\$949

The company was not organized in 1900, so that no comparative statement for the quarter of that year can be given. The balance sheet shows total assets of \$5,485,832, and a surplus of \$9,846.

ALBANY, N. Y.—The United Traction Company reports earnings as follows:

	1902
Quarter ending Dec. 31	
Gross earnings	\$364,251
Operating expenses	259,442
Earnings from operation	\$104,809
Receipts from other sources	2,894
Gross income	\$107,703
Fixed charges	63,313
Net earnings	\$44,390
Corresponding quarter of the former year	
Net income	\$50,510

NEW YORK, N. Y.—Looking to reorganization, John Greenough has been appointed receiver for the Staten Island Electric Railroad Company, the New York & Staten Island Electric Company and the New Jersey & Staten Island Ferry Company.

CLEVELAND, OHIO.—It is stated that a plan is being worked out to underwrite the securities of the company which it is said will be speedily formed by the consolidation of the Cleveland Electric Railway Company and the Cleveland City Railway Company. This project is being engineered by Horace E. Andrews, who formed the syndicate for the purchase of the control of the Cleveland Electric Railway. Nearly all of the stock of the Cleveland Electric Railway held by the Everett-Moore syndicate has been deposited with the Savings & Trust Company, and the stockholders have until March 12 to make the deposit of the balance. It is understood that a part of the money which Mr. Andrews paid for the stock of the Cleveland Electric Railway was obtained from the Society for Savings, of which Myron T. Herrick is president, the security being 6000 shares of the stock of the Cleveland City Railway. It is the general belief that the consolidated company, which will probably be known as the Cleveland Railways Company, will be managed by Mr. Andrews, who will have the support of Eastern capitalists, Senator M. A. Hanna, the Stanley estate, C. A. Otis, Col. Myron T. Herrick and others of equal strength.

CINCINNATI, OHIO.—The Suburban Traction Company, which has under construction an electric railway to connect Cincinnati and Bethel, has filed with the Cincinnati Trust Company a mortgage for \$600,000. The mortgage is given to secure an issue of 5 per cent bonds, 200 of the denomination of \$1,000 each and 800 of the denomination of \$500 each, all payable Jan. 1, 1927.

PORTLAND, ORE.—The Portland, Chicago & Mount Scott Railroad, which extends from the junction of Hawthorne and Berkeley Avenues to Lents, a short distance over the boundary in Clackamas County, is to be transferred to the Portland City & Oregon Railroad Company, and is hereafter to be operated as an electric power line.

HAZLETON, PA.—The Lehigh Traction Company reports earnings as follows:

	1901
Year ending Dec. 31	
Gross receipts	\$128,949
Operating expenses	59,718
Earnings from operation	\$69,231
Receipts from other sources	4,863
Gross income	\$74,094
Fixed charges	39,041
Net earnings	\$35,053
Extraordinary charges—rebonding, trestlework	2,478
Amount added to profit and loss surplus	\$32,575
Profit and loss account, Jan. 1, 1901	74,170
Total profit and loss surplus	\$106,745
Sundry charges to profit and loss	9,187
Profit and loss, Jan. 1, 1902	\$97,558

The balance sheet places the liabilities at \$1,829,451, and the assets at \$1,829,451.

DALLAS, TEX.—Suit has been filed in the district court by the Dallas Consolidated Electric Street Railway Company against the Standard Light & Power Company of Dallas, and the General Electric Company, of Schenectady, N. Y., to compel fulfillment of contract and for \$150,000 damages. The Standard Light & Power Company was recently placed in the hands of a receiver by the United States District Court, at Dallas, on application of the General Electric Company, as a result of investigations by the city authorities of Dallas, charging violation of the Texas anti-trust act. It is alleged that it was developed that the company was favoring the Dallas Consolidated Electric Street Railway Company, which was being furnished power at \$1.50 per car for a day of eighteen hours. This contract was abrogated by the Federal receiver. He fixed the price, which the street railway company shall pay, at \$3.35 per car, for a day. The Standard Light & Power Company has been sued for \$1,000,000 penalties for alleged violation of the anti-trust act.

SEATTLE, WASH.—The Seattle Central Street Railway, which has been in operation but a few weeks, has just been purchased by Jacob Furth, president of the Seattle Electric Company. In official announcements of the deal stress is laid on the fact that the road was purchased by Mr. Furth, not the Seattle Electric Company. However, there is no question but that the line will be turned over to the Seattle Electric Company. Both parties to the deal refuse to make public the consideration.

HAMILTON, ONT.—The Cataract Power Company has decided to increase its capital stock by \$50,000 for the purpose of extending the radial railway from Burlington to Oakville.

MONTREAL, QUE.—The Montreal Street Railway Company reports earnings as follows:

	1902	1901
January		
Gross receipts	\$153,374	\$142,886
Operating expenses	100,539	98,816
Earnings from operation	\$52,835	\$44,070
Receipts from other sources	1,656	499
Gross income	\$54,491	\$44,569
Fixed charges and interest on loans	15,094	9,021
Net earnings	\$39,397	\$39,548
Four months ending January		
Gross receipts	\$627,827	\$596,231
Operating expenses	387,846	373,621
Earnings from operation	\$239,981	\$222,610
Receipts from other sources	6,371	2,684
Gross income	\$246,352	\$225,294
Fixed charges and interest on loans	59,630	37,040
Net earnings	\$186,722	\$138,254

Interest on Montreal Park & Island Railway Company's bonds held by the company not included.

TABLE OF OPERATING STATISTICS

Notice.—These statistics will be carefully revised from month to month, upon information received from the companies direct, or from official sources. The table should be used in connection with our Financial Supplement "American Street Railway Investments," which contains the annual operating reports to the ends of the various financial years. Similar statistics in regard to roads not reporting are solicited by the editors. \* Including taxes. † Deficit.

COMPANY	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Available for Dividends	COMPANY	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Available for Dividends
<b>AKRON, O.</b>							<b>DULUTH, MINN.</b>						
Northern Ohio Tr. Co.	1 m., Jan. '02	48,287	29,184	19,103	-----	-----	Duluth-Superior Tr.	1 m., Jan. '02	36,702	23,159	13,543	9,665	3,877
	1 " " '01	45,631	31,732	13,900	-----	-----		1 " " '01	32,248	19,489	12,759	9,117	3,642
	9 " Dec. '00	462,800	263,361	199,439	98,978	100,466		12 " " '01	453,704	251,315	202,389	109,967	92,422
	9 " " '00	387,972	241,782	146,190	109,786	36,404	<b>ELGIN, ILL.</b>						
	12 " " '01	617,011	*350,845	266,166	136,162	130,004	Elgin, Aurora &	1 m., Jan. '02	29,075	18,337	10,737	-----	-----
	12 " " '00	513,725	*317,475	196,249	141,133	55,117	Southern Tr.	1 " " '01	26,599	17,115	9,484	-----	-----
								8 " " '02	255,706	138,977	116,729	-----	-----
<b>ALBANY, N. Y.</b>								8 " " '01	222,143	140,673	81,470	-----	-----
United Traction Co.	1 m., Jan. '02	118,979	89,126	29,853	21,963	7,890	<b>HAMILTON, O.</b>						
	1 " " '01	107,045	79,196	28,849	19,901	7,948	Southern Ohio Tr. Co.	1 m., Jan. '02	23,915	14,737	9,178	7,500	1,678
	7 " " '02	870,342	587,539	282,803	144,980	137,823		1 " " '01	19,854	15,025	4,829	7,500	-----
	7 " " '01	820,808	553,279	267,529	139,731	127,798		12 " Dec. '01	337,741	182,954	154,787	90,000	64,787
								12 " " '00	294,907	154,465	140,542	90,000	50,542
<b>AUGUSTA, GA.</b>							<b>LONDON, ONT.</b>						
Augusta Ry. & Elec. Co.	1 m., Oct. '01	18,031	10,012	8,019	-----	-----	London St. Ry. Co.	1 m., Dec. '01	12,947	6,280	6,667	1,859	4,808
	1 " " '00	15,772	9,668	6,104	-----	-----		1 " " '00	11,043	5,324	5,719	1,682	4,037
	10 " " '91	169,950	102,279	67,671	-----	-----		12 " " '01	141,846	84,557	57,289	23,835	33,454
	10 " " '00	157,049	91,785	65,264	-----	-----		12 " " '00	119,109	78,501	40,608	21,624	18,985
<b>BINGHAMTON, N. Y.</b>							<b>MILWAUKEE, WIS.</b>						
Binghamton St. Ry. Co.	1 m., Jan. '02	15,169	10,599	4,570	-----	-----	Milwaukee El. Ry. &	1 m., Jan. '02	214,884	106,532	108,352	6,540	42,950
	1 " " '01	13,867	9,065	4,802	-----	-----	Lt.	1 " " '01	186,809	106,435	80,374	61,309	19,072
	7 " " '02	128,560	66,521	62,029	-----	-----		12 " Dec. '01	2,442,342	1,185,534	1,256,806	755,139	501,669
	7 " " '01	113,589	58,518	55,071	-----	-----		12 " " '00	2,220,698	1,129,787	1,090,911	824,665	266,247
<b>BOSTON, MASS.</b>							<b>MINNEAPOLIS, MINN.</b>						
Boston Elev. Ry. Co.	12 m., Sept. '01	10,869,496	7,336,597	3,532,899	2,896,359	636,539	Twin City R. T. Co.	1 n., Dec. '01	294,341	114,106	180,235	46,850	133,385
	12 " " '00	10,236,994	6,828,110	3,408,884	2,932,839	476,044		1 " " '00	256,820	104,704	152,115	46,701	105,414
								12 " " '01	3,173,975	1,415,451	1,758,524	666,638	1,091,886
<b>Massachusetts Elec. Cos</b>	12 m., Sept. '01	5,778,133	3,915,486	1,862,648	937,206	925,442		12 " " '00	2,839,355	1,304,689	1,534,666	624,326	1,010,340
	12 " " '00	5,518,837	3,659,337	1,859,500	994,294	865,206	<b>MONTREAL, CAN.</b>						
							Montreal St. Ry. Co.	1 m., Jan. '02	155,030	100,539	54,491	15,094	39,397
<b>BROOKLYN, N. Y.</b>								1 " " '01	143,386	94,816	48,569	9,022	39,548
Brooklyn R. T. Co.	1 m., Dec. '01	1,035,525	*753,512	282,013	-----	-----		4 " " '02	694,199	387,846	246,353	59,630	186,723
	1 " " '00	978,026	*672,568	305,459	-----	-----		4 " " '01	598,195	373,621	225,294	37,040	188,254
	6 " " '01	6,534,045	*4515871	2,018,174	-----	-----	<b>NEW YORK CITY.</b>						
	6 " " '00	6,137,056	*3902052	2,235,905	-----	-----	Manhattan Ry. Co.	3 m., Dec. '01	3,098,435	1,404,971	1,693,465	753,135	880,329
	12 " June '01	12,185,559	*7216008	4,919,551	4,341,748	577,803		3 " " '00	2,728,538	1,340,696	1,387,842	749,857	638,045
	12 " " '00	11,768,550	*7106373	4,662,177	4,135,405	526,772		12 " Sept. '01	10,455,872	5,328,649	5,127,223	2,682,132	2,444,091
								12 " " '00	9,950,735	5,195,312	4,755,423	2,688,644	2,066,779
<b>BUFFALO, N. Y.</b>							<b>Metropolitan St. Ry.</b>	3 m., Sept. '01	3,750,285	1,563,260	2,187,025	1,148,714	1,038,311
International Tr. Co.	1 m., Dec. '01	270,650	174,824	95,827	95,301	526		3 " " '00	3,608,306	1,555,036	2,053,270	1,128,985	924,285
	1 " " '00	252,520	135,992	115,528	82,553	32,975		12 " June '01	14,720,767	6,755,131	7,965,636	4,534,068	3,431,567
	6 " " '01	3,032,152	1,378,705	1,653,448	596,834	1,056,614		12 " " '01	14,437,134	6,631,254	7,805,880	4,445,720	3,360,160
	6 " " '00	1,523,847	730,789	793,057	480,044	305,013	<b>OLEAN, N. Y.</b>						
<b>CHICAGO, ILL.</b>							Olean St. Ry. Co.	1 m., Nov. '01	4,200	2,044	2,156	1,146	1,010
Chicago & Milwaukee	1 m., Jan. '02	10,954	5,873	5,081	-----	-----		1 " " '00	3,934	2,392	1,541	1,597	-----
Elec. Ry. Co.	1 " " '01	8,232	5,689	2,502	-----	-----		5 " " '01	25,876	11,077	14,799	7,160	7,640
	12 " Dec. '01	171,172	74,015	97,157	-----	-----		5 " " '00	23,837	11,005	12,832	7,276	5,555
	12 " " '00	140,685	59,515	81,169	-----	-----	<b>PITTSBURG, PA.</b>						
<b>Lake Street Elevated</b>	12 m., Dec. '01	786,462	388,799	397,663	-----	-----	Consolidated Traction	1 m., Dec. '01	304,663	140,941	163,728	91,548	72,180
	12 " " '00	757,954	378,661	379,293	-----	-----		1 " " '00	277,439	109,069	168,370	89,807	78,563
<b>CLEVELAND, O.</b>								9 " " '01	2,649,656	1,145,651	1,503,905	807,667	694,238
Cleveland & Chagrin	1 m., Dec. '01	4,306	*2,420	1,886	1,380	506		9 " " '00	2,471,695	1,013,246	1,458,456	799,704	685,752
Falls	1 " " '00	4,040	*2,477	1,563	1,417	146	<b>PHILADELPHIA, PA.</b>						
	12 " " '01	47,976	*32,002	15,974	13,023	2,951	American Railways	1 m., Jan. '02	78,752	-----	-----	-----	-----
	12 " " '00	49,646	*33,272	16,374	13,294	3,080		1 " " '01	62,746	-----	-----	-----	-----
								7 " " '02	579,962	-----	-----	-----	-----
<b>Cleveland &amp; Eastern</b>	1 m., Dec. '01	7,473	*3,565	3,908	3,545	363		7 " " '01	503,936	-----	-----	-----	-----
	1 " " '00	5,171	*3,731	1,440	3,232	†1,792	<b>RICHMOND, VA.</b>						
	12 " " '01	90,390	52,022	38,368	43,678	†4,310	Richmond Trac. Co.	1 m., Sept. '01	20,981	15,669	5,322	3,196	2,126
	12 " " '00	62,893	36,672	26,221	36,148	†9,927		1 " " '00	20,727	10,770	9,957	3,843	6,115
								12 " " '01	218,569	139,542	79,027	38,618	40,410
<b>Cleveland El. Ry. Co.</b>	1 m., Jan. '02	188,082	106,006	82,076	21,775	60,300		12 " " '00	203,057	108,198	94,859	37,608	57,250
	1 " " '01	166,793	99,263	67,470	18,976	48,493	<b>ROCHESTER, N. Y.</b>						
	12 " Dec. '01	2,296,898	1,265,953	1,030,945	244,231	786,714	Rochester Ry.	1 m., Nov. '01	85,925	44,963	40,962	25,062	15,900
	12 " " '00	2,061,505	1,121,037	940,467	255,483	681,984		1 " " '00	82,225	48,997	33,228	24,229	8,999
<b>Cleveland, Elyria &amp; Western</b>	1 m., Jan. '02	18,760	12,983	5,778	-----	-----		5 " " '01	428,781	232,399	196,382	124,846	71,536
	1 " " '01	15,183	10,830	4,353	-----	-----		5 " " '00	405,911	244,182	161,736	120,760	40,975
	12 " Dec. '01	249,260	136,805	112,394	57,023	55,371	<b>SCRANTON, PA.</b>						
	12 " " '00	179,698	102,393	77,304	34,562	42,742	Scranton Ry. Co.	1 m., Oct. '01	2,638	29,300	26,661	-----	-----
								1 " " '00	48,781	34,787	13,993	-----	-----
<b>Cleveland, Painesville &amp; Eastern</b>	1 m., Dec. '01	11,920	*6,681	5,239	6,042	†803		10 " " '01	507,989	295,079	212,910	-----	-----
	1 " " '00	9,926	*7,084	2,842	6,042	†3,960		10 " " '00	504,852	298,122	206,730	-----	-----
	12 " " '01	164,971	*87,102	77,869	72,500	5,369	<b>SCHENECTADY, N. Y.</b>						
	12 " " '00	141,112	*89,592	71,520	72,500	†980	Schenectady Ry. Co.	3 m., Dec. '01	84,061	46,949	37,112	13,454	23,658
<b>DENVER, COL.</b>								3 " " '00	30,876	14,517	16,359	6,087	10,272
Denver City Tramway	1 m., Jan. '02	119,702	64,283	55,419	33,026	22,393	<b>SYRACUSE, N. Y.</b>						
	1 " " '01	108,412	56,891	51,521	31,371	20,149	Syracuse R. T. Co.	1 m., Jan. '02	58,819	32,890	25,928	19,225	6,903
	12 " Dec. '01	1,507,293	818,328	688,965	383,180	305,785		1 " " '01	52,266	29,454	22,812	18,585	4,226