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Contents of this Issue

Yerkes Wins in London

A cable despatch from London, received this week, announces the fact that the arbitrators, appointed to decide between the direct current and Ganz propositions to equip the inner circle underground railway in London, has decided in favor of the former. This was the contention supported by Mr. Yerkes, who owns a controlling interest in the District Railway, one of the two companies interested in the proposed equipment; and the opposing company, the Metropolitan Underground, which favored the Ganz, has announced, through its officers, that it accepts the decision of the arbitrators. Whatever the opinions of engineers may be as to the advantages of polyphase traction under certain conditions, we believe that this decision is the right one, and that direct current is the best system for use in this particular instance. It might be said that a number of American engineers presented testimony at the arbitration case in London in advocacy of the Yerkes proposition.

Heating of High-Speed Interurban Cars

The increase in speed and length of electric interurban cars which has been going on so rapidly for the past few years brings up new problems in heating which have not been satisfactorily solved in many of the interurban cars so far constructed. This question should be given very careful consideration by all companies ordering interurban equipments. The point to be looked out for is to have plenty of heat in the motorman's vestibule and forward end of the car. At first sight it would not seem that the matter of heating a long electric interurban car would require any different treatment than an ordinary steam railroad coach. In the case of the interurban car, however, there are often two compartments in addition to the motorman's vestibule. If the car is run only one way, and has a permanent motorman's cab and baggage compartment in the front end, the special danger is that the front part of the car will suffer for want of heat, while the rear will be too hot. A motorman's cab on the front end of a car which runs 50 miles or 60 miles an hour between stops is not an easy place to keep at a temperature in which the motorman can work with comfort all day. This part of the problem has not come up in steam road practice, because the locomotive engineer has the fire box and boiler to keep his cab at a comfortable temperature. In the case of the interurban car there is nothing of this kind. It is not an easy matter to keep the cab on the front end of a high-speed car at anywhere near comfortable temperature. By proper attention to the vestibule window sash and by providing sufficient heat radiating surface in the forward end of the car, the difficulties enumerated can, of course, be overcome. In this connection it may be advisable to locate the heater in the front end of the baggage compartment, or even in the motorman's cab, instead of in the main passenger compartment of the car. The dirt that is necessarily connected with the attendance of a hot-water heater will then be placed where it is least offensive to passengers, and the direct radiation from the heater can be utilized to keep the cab and smoking or baggage compartment warm. Electric heating of interurban cars, of course, makes it easy to place the heaters at the most desirable positions, and it is not so difficult to change the arrangement as when hot water is used. Nevertheless the importance of more intense heat in the forward part of the car than in the rear should not be forgotten when planning the arrangement of cars for high-speed interurban service.

Paving in Baltimore

The use of the streets in Baltimore by the street railway lines is conditioned on the paving of one-half the surface of the streets occupied, and the payment of a park tax. As to the equity of that, we will not now pronounce an opinion, seeing that it is an agreement duly entered into; and if the companies have consented to some special imposition like the "park tax," which is certainly unusual, that is a matter in the class of *res adjudicata*. But it does rather excite our indignation to find that further im-

positions are supposed to be in order, as though the franchise agreement entered into had not the slightest binding effect on the city. More revenue is the cry in Baltimore, as in most other places where the municipality goes on extending its sphere and functions, and the *News*, of that city, writes:

> Probably the very best form which the call upon the street railway company could take would be an obligation placed upon it to pave the streets it occupies with high-class pavements well laid, under city inspection and supervision, the whole to be completed within a specified term of years, and kept in order permanently at the company's expense. This is in line with the plan actually pursued in Philadelphia. In return for this expenditure, the company might feel that it was practically immune for an indefinite time from all attack, whether by way of legislative projects directly aimed at it. or by way of that mushroom competition which played such an unfortunate part in the history of our gas supply. The city needs all that it can equitably get out of this corporation, and needs it sorely. It will get it, sooner or later, in some form or other. The attitude of mere blind resistance will not prevent such a consummation, though it may put off the time somewhat. And the danger is that, if the time is put off too long by stubborn obstruction, the final onset, when it does come, will go beyond the bounds of justice, and will be disastrous to the interests of the corporation.

We can but smile sadly when this editor, despite the fact that he is himself coolly proposing the violation of an agreement, deigns condescendingly to promise that the company on meeting this latest "gouge" could then feel that "it was practically immune for an indefinite time from all attack." In our humble judgment, the indefinite time would mean 1902 for the next raid on the company's treasury.

The Trolley Wheel vs. the Bow Trolley

It is a somewhat curious fact that although electric railway practice in the continent of Europe and in America follows about the same lines in nearly every direction, so far as the motor equipment of the car is concerned, the original bow trolley is still retained on many of the principal lines in Europe, and seems to meet with the popular favor there. The ordinary trolley wheel has become so standardized in this country that it is difficult to think of the use of any other device for collecting the current, except in heavy traction work, where a substitute for it is found in the ordinary third-rail shoe, and in conduit service where the underground plow is employed. Nevertheless, the bow seems to possess many advantages, and foreign managers consider it superior in a number of ways to the trolley wheel, and while we do not for a moment believe that it ever will replace the latter on American roads, it might be well, in view of its extended use, to consider some of its points of merit, as well as demerit, for ordinary city railway service.

As will be remembered, the device provides a sliding contact on the under side of the trolley wire. In construction it is simply an enormous inverted U, mounted on the top of the car, and braced internally, so that it will keep its shape. The first, and perhaps the principal, advantage which the bow trolley possesses over the trolley wheel is that it is impossible for it to jump the trolley wire. This is certainly an important point, because while the danger of accident to an overhead trolley system from a jumping trolley is practically eliminated by the modern trolley catcher, the lights go out and the pole has to be replaced on the wire. This always causes some trouble and delay. Again, with the bow trolley, there are no pins or bolts to get loose; switches and curves can be passed at a good speed, the overhead trolley wire does not have to be aligned so carefully, and as the bow can be carried in a more vertical position it does not have to be reversed in changing direction at the termini of lines, as it reverses itself when the car starts in the opposite direction. This also means a saving of trouble and time, and sometimes of expense.

The first apparent objection to the bow trolley is that of wear to both overhead line and the bow itself. We have seen no statistics on this point, but so far as the upper surface of the bow itself is concerned, it must be remembered that the extent of this surface is considerable, as the position of the trolley wire on it is constantly changing. This fact, according to foreign testimony, makes the bow practically indestructible under ordinary conditions of railway operation. We should imagine, however, that the wear on the wire itself would be greater with the bow than with the ordinary wheel. The bow is also somewhat more noisy than a good running trolley wheel, and produces a sort of hissing noise as the car passes, but this noise is, no doubt, no more objectionable than the rattle of a worn wheel trolley. As regards surface of contact, the bow is undoubtedly superior, as shown by the recent experiments in Germany on high-speed traction, which show that it will collect large amounts of current, and admit of much higher speeds than a wheel contact of the ordinary kind.

In appearance the bow is admittedly more clumsy, certainly to American eyes, than the single small trolley pole, so that as far as æsthetic conditions are concerned, the ordinary American practice will probably be voted superior by the public in most, if not in all, of our cities.

The Recent Rise in Manhattan Stock

One of the features of the New York Stock Exchange during November and the first week of December was the rapid and practically continuous rise in the stock of the Manhattan Railway Company. In fact its quotation on Dec. 6 of 145 is higher than the stock has been for more than eight years, or in 1893, when it reached 174¾. This was at the time when it was supposed that the plan for an underground rapid transit line in New York would be given up in favor of important extensions to be granted the elevated railway company. In fact, the Rapid Transit Commissioners made the railway company a proposition upon this basis, but the terms were not considered sufficiently favorable by the latter, and the proposition was rejected. The selling price of this stock on the Stock Exchange has been varied considerably since that time, depending upon the competition with the surface railways, but during the last twelve months, with the exception of a short time during the Northern Pacific corner, it has not been below par.

The recent rise has been attributed to pending consolidations or leases. These stories have taken the form that the New York, New Haven & Hartford Railway Company will lease the line on the 6 per cent basis, and make its own main passenger terminal at the Harlem River, instead of at Forty-Second Street, and thus provide for transporting its passengers down town; or that the New York Central Railroad has a plan to operate the line in connection with its own system, or that some consolidation with the Metropolitan Street Railway Company is under way These consolidation rumors, especially the last, have been so frequent during the last four or five years, that while it is impossible to deny them at the present time, and while it has been announced that the New York Central is considering the plan of a through local service, in which the elevated road will be used to a certain extent through trackage rights, it is safe to say that there is no more special reason for believing any of the broader propositions for consolidation to be true than any of the preceding similar rumors, before they were shown to have no foundation. In fact, it seems to be one of the characteristics of the Stock Exchange always to attribute the rise in price of any stock to some extrinsic cause. This is undoubtedly often true, but quite as often the reason is one which could have been foreseen by the railway and financial student, and to be one which is due entirely to the intrinsic merits of the property in question.

Whatever may be the immediate future of the Manhattan Railway Company in the direction of consolidation with some larger property, or the result of any traffic agreement with the Central or other road, it is safe to say that a sufficient cause for the increase in the value of the stock can be found in the increased earnings and reduced operating expenses which should be effected by the electric equipment of the railway now approaching completion. There is no doubt but that a portion certainly of the Second Avenue line will be in operation electrically during the present month, and while the benefit financially from the change of motive power will hardly be reflected to any great extent in the report of the property for the year ending June 30, 1902, it is safe to say that by the time that the report for the following year is rendered to the State Railroad Commissioners the electrical

equipment will have been in operation for a long enough time on all the divisions to make a marked difference in the earnings of the property.

Probably the closest parallel in this country to the electrical equipment of the Manhattan Railway is the experience of the elevated railways of Chicago, particularly the Lake Street and the South Side elevated railroads, which were originally operated by steam. Both of these lines are paralleled by surface lines, and the latter also by the unsurpassed steam suburban service of the Illinois Central Railroad. The percentage of operating expenses to gross receipts with the Lake Street Railway while equipped with steam varied between 67.76 per cent and 61.78 per cent, while with electricity it has been between 51 per cent and 47 per cent. The South Side Elevated has been in operation by electricity only since July, 1898. Disregarding percentage for this year, which was for a mixed service, the percentage in 1899 and 1900 was 57.2 and 58.2, respectively, as compared with 65.5, 69.1 and 78.8 per cent in 1897, and the two preceding years, respectively.

The Manhattan Railway Company, owing to its enormous traffic, has always been able to show a better figure with steam than the smaller lines referred to, the percentage for the year ending Sept. 30, 1900, being 52.21 per cent, excluding taxes, and for the year ending Sept. 30, 1901, 50.97 per cent. While it is impossible to determine accurately from the figures available the reduced operating expenses under electrical equipment, a rough approximation can be made. The operating expenses of the company during the year ending June 30, 1900, is divided as follows:

(1) Maintenance of way and structures	$421,628
(2) Maintenance of equipment	583,376
(3) Conducting transportation	3,877,123
(4) General expenses	350,491
Total	$5,232,618

The passenger train mileage run during the year was 10,740,183, and the car mileage 44,878,601, or an average of 4.18 cars per train. Supposing the line to have been equipped with electricity, and the same train mileage run, it may be stated approximately that the cost of items 1 and 4 in the above table would remain about the same, providing the maintenance of the power station and substation buildings, feeder conduits, etc., are included, for the purposes of the present comparison under conducting transportation. The only additional structure required for electric operation, outside of those just mentioned, is the third rail itself, the maintenance of which would be very slight, as it is subjected to no strains. On the other hand, the wear on the track should be less with electric cars than with steam trains, owing to the absence of reciprocating motion, and this saving could be assumed roughly to cover, and more than cover, the maintenance of the third rail.

Item 2, or maintenance of equipment, is made up of repairs and renewals of locomotives and cars, shops, machinery, etc., the item of repairs and renewals of locomotives being $180,145, or 1.86 cents per locomotive mile. As the other items would be the same, irrespective of motive power, the comparison should be made between this figure and the cost of motor maintenance. The experience of the Metropolitan Street Railway Company, of New York, during the last three years shows the cost of repairs to electrical equipment of cars has averaged 0.6 cents per car mile. As the Manhattan six-car train will have four motor cars, we would obtain 2.4 cents per train mile, as the figure for the maintenance of its car, electrical equipment, if the conditions were the same. Such an assumption would hardly be fair, however, because although the motors on the surface cars are of less than half the size of those used on the elevated, they are close to the ground, where they have to be enclosed, while those on the Manhattan cars will always be dry, in comparatively pure air, and can be well ventilated. Again, the maintenance of the plows on the street system should be largely in excess of that of the third-rail shoe. These two considerations lead us to believe that the cost of maintenance of the electric car equipment on the Manhattan should be at least no more than that of a corresponding steam equipment, especially as it is safe to assume that in view of its early abandonment the same sum has not been expended during the last two years by the Manhattan management in maintaining its steam equipment, as would have been the case if it had been a permanent fixture.

This brings the comparison unaltered to group 3, or the transportation expenses, which is one in which considerable saving can be made. Each five-car train on the Manhattan Railway now carries six men, viz., an engineer, fireman, conductor and three gatemen. One less man would be required on the five-car electric train, viz., the fireman; the saving of the firemen's wages would mean a saving of about $330,000 per year. As, however, the company plans to run six-car trains instead of five during the rush hours, there will be an additional saving in motormen, and assuming the train to be, on the average, one car longer than before, and the same car miles run, this saving would amount to about $110,000.

The motive power at present by steam costs a total of $949,893, or 8.8 cents per train mile. Electric power, as produced in the new power station of the Manhattan Company, should cost, delivered at the track shoe, not more than $.006 per kw-hour, including maintenance of station and distribution system, and an average train of 4.18 cars should not require more than 12 kw-hours per mile, at a total cost of 7.2 cents, or a saving of 1.6 cents per train mile. This would result in the saving of $171,843. The total saving, therefore, would have been, assuming the same mileage and speed:

Power	$171,800
Saving on firemen	330,000
Saving on motormen by running one extra car per train	110,000
Total saving per trains	$611,800

The consideration thus far, however, has only been based on the same speed. The principal savings to be made by electricity, however, is in the increased speed, principally through quicker acceleration, though also in higher maxima. In other words, the same number of cars which in 1900 made 10,740,183 train miles could, with electrical equipment, have made probably between 12,000,000 and 13,000,000 train miles with but little more additional cost for power and maintenance, and practically no additional cost for conducting transportation. If 13,000,000 train miles could have been made, the figures for conducting transportation would be as follows:

	Train Mileage	Car Mileage	Total Cost	Cost per Car Mile
Steam engines with 5-car train maximum	10,740,183	44,878,601	$3,877,123	$.086
Electric equipment with 5-car train maximum	10,740,183	44,878,601	3,375,323	.075
Electric equipment with one extra car per train, or an average of 5.18 cars per train	8,666,789	44,878,601	3,265,323	.072
Electric equipment with average of 5.18 cars per train and higher speed	13,000,000	67,340,000	3,577,314	.053

The above table can only be considered as approximate, as there are a number of factors which have not been considered. Thus, the stations will be lighted and the cars will be heated and lighted by electricity at probably a considerable saving over present methods, but as the cost of these items at present does not appear in detailed form in the company's report, the extent of this saving is not easily apparent. On the other hand, it is entirely possible that other expenses will increase the cost of electric operation. A saving of .033 cents per car mile on a total annual run of 67,340,000 car miles, and this does not seem on the whole an unreasonable figure to expect, would amount to $2,222,220, or more than enough to pay 3 per cent additional on the old capitalization of the company of $30,000,000, and 7 per cent on the later issue of $18,000,000, putting the stock on a 7 per cent basis. This division is made because while the company is paying 4 per cent on its total issue of $48,000,000, part of its earnings has come from interest on a portion of its capital stock, which has not yet been applied to its electric installation.

Laying the Third Rail in the B. & O. Belt Line Tunnel

The decision to change from the overhead construction to a third-rail in the Belt Line tunnel of the Baltimore & Ohio Railroad Company was announced some time ago, and since that time the work of construction has been carried rapidly forward. Soon after the change was determined upon, the company decided to lay a heavier service rail on this section of track, and made the change from an 85-lb. rail, 5 ins. high, to a 100-lb. rail, 5¾ ins. high. This necessitated a change in the position of the third rail, which had to be raised 1¾ ins. to clear the crossings and other obstructions. The position of the third rail is now at the side of the track, 3½ ins. above the service rail, and 2 ft. 6½ ins. from the gage line.

The chief problem in the installation of the third rail came in the method of laying it in Mt. Royal and Camden station, where passengers cross the tracks. Although the Murphy safety third-rail system, in which the third rail is alive only when the locomotive passes, is employed, it was thought better additionally to protect the third rail from accidental contact by means of some sort of guard. As a consequence, the rail has been laid in these stations in a form of modified slotted conduit. Elsewhere, the third rail is protected against accidental contact by two 1½-in. planks, carried 1 in. above the top of the rail, and located 2⅜ ins. on each side of it. The third rail is 5 ins. in height. The company expects to start operation with the third rail about the middle of December, when the present overhead system will be abandoned.

It is stated that a bill to place electric railways on the same basis as the steam roads as common carriers, and which will enable them to carry freight in all parts of the State, is to be introduced in the Legislature of Ohio. The steam roads, it is expected, will vigorously oppose the measure.

Employees' Waiting-Rooms in Philadelphia

Following a policy which the company adopted several years ago, a radical change is being made by the Union Traction Company, of Philadelphia, in the waiting-rooms for conductors and motormen adjoining the several car houses on its extensive system. A number of these rooms have been reconstructed, so that they are now very satisfactory from the standpoints of comfort and hygiene, and they present many points of interest to street railway companies in other large cities.

A typical reconstructed waiting-room of this kind is that connected with the car house at Thirty-Second Street and Dauphin Street, and of which an interior view is presented herewith. About 800 men are assigned to this car house, and make use of this room. The department devoted to the cashiers and receivers of this particular depot is located at the extreme end of the motormen and conductors' waiting-room, from which it is separated by a brass lattice partition with oak base. This allows the conductors to turn in their trip sheets and cash receipts on leaving the car and without leaving their own quarters. The floor is laid with cement, which has been found especially desirable, particularly for the facility with which it can be washed up.

WAITING ROOM FOR CONDUCTORS AND MOTORMEN AT CAR HOUSE OF UNION TRACTION CO., THIRTY-SECOND AND DAUPHIN STREETS, PHILADELPHIA

Running around the rooms is a comfortable oak settee, built out a little distance from the wall and containing behind it the steam-heating pipes. The construction of this settee is so ingenious and the result so attractive that a section of it is illustrated herewith. As will be seen, the settee is supported on cast-iron brackets, spaced 4 ft. apart, bolted to the floor and set out at the back a distance of 10 ins. from the side wall, to which they are fastened at the top by an arm of the casting. Within this space are the steam pipes for heating, already mentioned. The ends of the settee are finished off by a handsome paneled oak arm rest. This arrangement hides the steam pipes completely, and the back of the seat is so high that the heated air rising from the pipes and passing

through a grating does not come in contact with the backs of the heads of the persons on the settee.

The walls of the room are fitted with slate baseboards, and at a height of about 8 ft. with an attractive oak molding from which the time cards and any other charts or bulletins can be hung, and in the center of the room is a long oak table, permanently set into the floor, and shown clearly in the accompanying engraving.

All waiting-rooms of this kind are fitted with marble toilet and hand basins, and generally have their own heating plants.

Asks for Equal Taxation

The Chicago Union Traction Company has filed a formal demand with the State Board of Equalization of Illinois that it assess the property of all other corporations throughout the State on the same basis as the street railway companies. The contention is that all other property in the State is assessed upon only 60 per cent of its fair cash value, and that, therefore, the Union Traction property should not be valued for taxation for more than 60 per cent of its actual worth. This demand, of course, is drawn out by the recent court decision, which requires the State Board of Equalization in Illinois to assess street railway and other public service companies upon the market value of their stocks and bonds. According to the Illinois statute there are certain classes of corporations which are exempted from assessment of their stock in this way. These are State banks, manufacturers, printing companies, newspapers and stock breeders. In part, the petition of the Union Traction Company is as follows:

"This petitioner demands as its constitutional right that you disregard every exemption cited in the statutes as discriminating and unconstitutional, and proceed to assess for taxation the value of the capital stock of every corporation organized under the laws of this State, by a single and uniform method.

"This petitioner will resist any assessment on its capital stock made in violation of the constitutional rule of uniformity, and which taxes this company, and at the same time exempts other corporations equally subject to like taxation."

Strike Agitators Denounced in Philadelphia

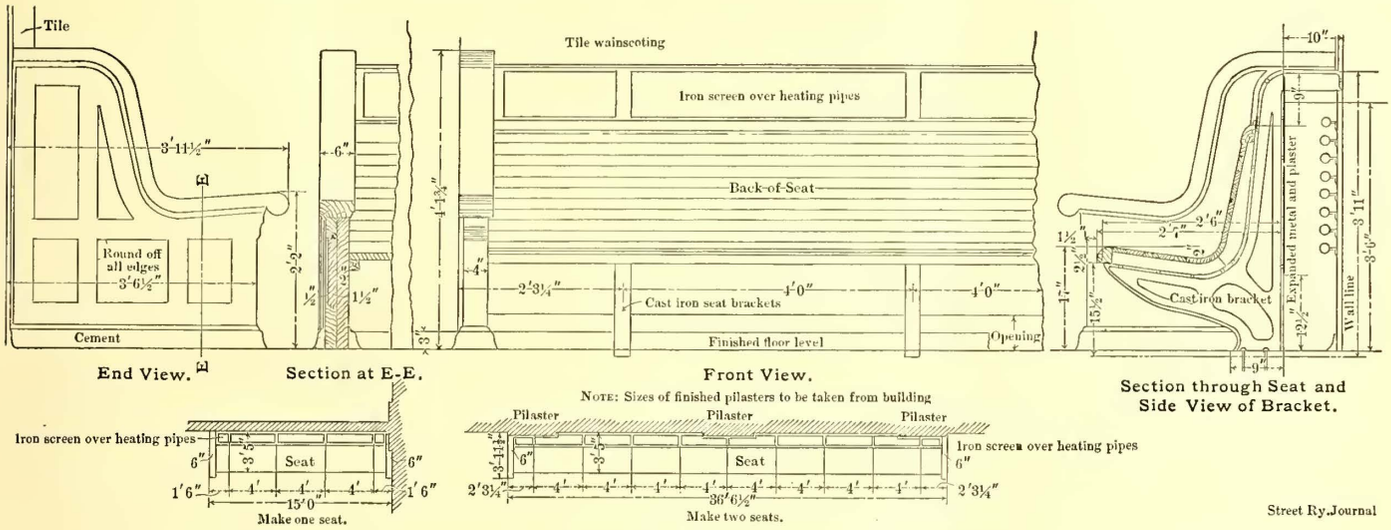
A committee representing the Philadelphia Street Railway Employees' Union and Relief Association, on Dec. 4, presented to President John B. Parsons, of the Union Traction Company, a letter denouncing the action of the local branch of the Amalgamated Association of Street Railway Employees in trying to cause a strike. The letter is signed by the officers of the union and 1000 regularly employed motormen and conductors. The communication says:

"We, the undersigned officers and members of the association, composed of active employees of the Union Traction Company, denounce the recent action of Local Branch No. 202, Amalgamated Association of Street Railway Employees, which is composed chiefly of ex-employees, in sending out circular letters to the various labor unions of this city, asking them to appoint joint committees to wait upon you with a view to asking you to meet a committee of your employees in regard to certain grievances."

The letter requests President Parsons to grant no interviews to such a committee.

Street Railway Construction

It may fairly be said that the present time constitutes an era of construction unprecedented in the history of the electric railway industry. The building of new lines is confined to no one section of the country, nor in any portion has it suffered a serious relapse; the general activity is universal. The Central States continue to lead in the construction of new lines, the amount of work being done in Ohio being marvelous. Construction work in the Eastern States, also, particularly New York and Pennsylvania, continues to a marked degree, and it is probable that these sections will retain their place as second in the amount of construction work done in 1901. The building of new roads in the New England States, which, particularly in Massachusetts and Maine, experienced its greatest boom in 1898, continues almost unremitted, some of the most important interurban lines in the country now being in process of construction in that section. The South, also, which in the construction of suburban and interurban lines, has practically lain dormant since the electric conversion of the city lines, is now following the progressive East, and instead of a total increase of 82 miles of line, which was shown for 1900 over 1899, there will certainly be an appreciable increase for 1901. There are many schemes for constructing lines in the Middle and Far West, but little actual construction work has been done, though the promoters have invaded Nevada and Oklahoma, and a number of lines are projected in Texas, where considerable construction work is now being done.



SECTIONS AND ELEVATIONS OF WAITING ROOM SETTEE

Ohio certainly is the most progressive State of all in new construction, there being at the present time over 1400 miles of road in course of construction, with about 1700 miles in actual operation. The total increase of mileage in Ohio for 1900 was 263 miles, equalling the total increase in mileage in all of the New England States, and falling only 72 miles behind the total increase in the Eastern States for the same period. New work in Ohio during 1901, it can be said, has even eclipsed that of 1900, and the total of $8,000,000 to $10,000,000, which it was estimated was spent in the construction of new lines in that State in 1900, will be exceeded by the work done in 1901. From this the faith of the capitalists in Ohio can readily be seen.

Over 50 per cent of all the new construction work done in the United States in 1900 was confined to the Central States, and so it is for 1901. The statistics compiled by the Secretary of State of Ohio in regard to incorporation of new companies are particularly significent in this respect, the increase being remarkable. From Nov. 15, 1898, to Nov. 15, 1899, there were incorporated in Ohio forty-two railways, with capital stock amounting to $15,000,000; increase of capital stock for the same period $2,180,000; from Nov. 15, 1899, to Nov. 15, 1900, there were incorporated in the State thirty-three railways, with $10,352,000 capital stock; $5,915,000 increase of capital stock; from Nov. 15, 1900, to Nov. 1, 1901, there were incorporated in the State ninety-seven street railways, with $24,361,000 of capital; $16,361,000 increase of capital stock. This shows that in three years 172 companies have been incorporated, with a total capital stock of $50,018,000. The total increase for three years has been $24,450,000. Add to this the capital of the companies incorporated outside of Ohio, and this total will be swelled.

Much work is being done in Michigan and Indiana, they following Ohio in the number of miles of line constructed in the Central States. The operation of the Pomeroy-Mandelbaum and the Everett-Moore syndicates, the two most prominent

syndicates now constructing lines in Ohio, are well known, as is also the work of the latter in Michigan. The invasion of Indiana by the Everett-Moore syndicate is but recent, and to what extent it will engage in that State is a matter for conjecture. In August last it was estimated that the Everett-Moore syndicate controlled one-third of the miles of line in operation in Ohio. The syndicate then had under construction about 250 miles of line, with 305 miles proposed. New construction work in Missouri, Wisconsin and the other Central States is about normal.

Coming now to New York, Pennsylvania and the other Eastern States, it might be said that, in construction, 1902 will, if the incorporation of new companies is significant, exceed both 1901 and 1900. In New York during 1901 much has been done to complete a line between Albany and Buffalo, and it is probable that 1902 will witness the completion of a through line. The granting of the application of the Buffalo, Niagara Falls & Rochester Railway for permission to construct a line to connect Buffalo, Niagara Falls and Rochester has done much to make possible the Albany-Buffalo trolley, and the final triumph of that company over the New York Central Railroad, which opposed its application, is especially significant. The longest incompleted stretch in the Albany-Buffalo line is between Buffalo and Rochester, and the purpose of the promoters of the Buffalo, Niagara Falls & Rochester Railway Company is to begin construction work early in 1902. Rochester has become a Mecca for electric railway promoters, and lines are now projected to extend in all directions from that city. Among the companies that propose to build lines from Rochester are the Genesee & Orleans Street Railway, Monroe County Belt Line, Rochester & Eastern Railway, Rochester & Sullivan Traction Company, and the Rochester, Syracuse & Eastern Railroad, which latter proposes to build a through line between Rochester and Syracuse. The promoters of this line have been at work on the project for months, and it is probable that the completion of the line will be witnessed during the coming year. The construction of other new railways, and the extension of existing lines, provide for the completion of the Buffalo and Albany line. There are also a number of lines projected on Long Island, but so far only three of the projects give indications of being completed in the near future.

New Jersey, Pennsylvania and the other Eastern States continue to add to their mileage and, in fact, in Pennsylvania it was simply impossible to record the companies that were incorporated after the passage of the famous franchise bills. Much work is being done throughout the entire State, but it cannot be said that the franchise bills have stimulated the work of actual construction in that State. The Secretary of State is no longer besieged with applications for charters for street railways, and the majority of the companies incorporated when the fever was at its height are destined to sink into oblivion. Considerable new works is also being done in Southern New Jersey, particularly about Trenton and Camden.

Of the New England States it can be said that Massachusetts leads in new construction work. Eastern Massachusetts is no longer the scene of the greatest activity in the construction of new lines, but rather Central and Western Massachusetts. Probably the most important lines being built in this State are the Boston & Worcester Street Railway and the Berkshire Street Railway. The former line will extend from Boston to Worcester, with entrance to both Boston and Worcester, and will be a direct completion of the Boston & Albany, which now connects these cities. The Berkshire Street Railway Company is building a line to traverse the famous Berkshire region of the State. Much construction work is also being done in the vicinity of Worcester. Probably the most important projected line in Western Massachusetts is the Troy, Rensselaer & Pittsfield Street Railway. This line will extend from Pittsfield to Troy and Rensselaer in New York, and will do much to complete a direct line from Buffalo by way of Albany to Boston. Little work of material importance is being done in Connecticut, Rhode Island, Vermont and New Hampshire.

It cannot be said that anything startling has been done in the South, but an opening has been made, and there is every reason to believe that the future will witness the development of suburban and interurban lines in the most promising sections. Despite the number of steam roads that have been built in the South, the growth of the smaller cities has created a demand for more frequent and efficient transportation than can be furnished by the steam lines, and the electric railway is coming to the rescue. The abundance of water powers has also stimulated construction in the South.

Water power has also had much to do with stimulating the construction of lines in the Western States. In California the tendency seems to be to construct suburban and interurban lines, while that in the Northwest is to construct city lines, there being a number of lines projected in the smaller cities of the State.

Meeting of the American Society of Mechanical Engineers

The forty-fourth meeting of the American Society of Mechanical Engineers was held at the society's headquarters in New York City, on Dec. 3 to 6. The gathering this year will be long remembered by those in attendance as the occasion for the dedication of a monument to Robert Fulton in Trinity Churchyard, which was unveiled after a memorial service, in the presence of a large body of prominent engineers and naval men, and for the great number of interesting and valuable papers read at the regular sessions. On Wednesday evening a reception and conversazione was held at Sherry's, which, as the only distinctively social event of the meeting, was taken advantage of by the members and their friends in true fraternal spirit. At the annual election, held in the morning, the following officers were elected: President, Edwin Reynolds, of Milwaukee; vice-presidents, Wilfred Lewis, Philadelphia; M. E. Cooley, Ann Arbor, Mich., and M. P. Higgins, Worcester, Mass.; treasurer, William H. Wilcy, New York; secretary, Prof. F. R. Hutton, New York. Three managers were elected to replace those whose terms have expired, as follows: R. S. Moore, H. A. Gillis, C. H. Corbett. There has recently been considerable agitation among the members to raise the annual dues, but the proposition was voted down, and the dues will remain the same as formerly.

A report by the committee on the standardization of engines and dynamos, and some of the papers, are reprinted in full elsewhere in this issue. Among the most interesting of the remainder of the budget of papers presented was one by H. L. Gantt, of the Bethlehem Steel Company, on "A Bonus System of Rewarding Labor." While intended particularly for manufacturing establishments, it would seem that repair shops might in many cases be benefited by some of the results obtained. In brief, it is a systematized schedule of work based on accurate experiments and previous performance, allotting to each man a certain quantity of work which is expected of him. If the worker runs above this he receives a bonus. The system has been recently introduced in the Bethlehem machine shops, and tended toward harmonizing the interests of the employer and the laborer. As a result of this system there was not only an increase of output, but there was a falling off in accidents and breakdowns to machinery and a quickening of the intelligence of the men. The details, which are given in the paper at considerable length, include bonuses for both workman and foreman, and rely largely on the co-operation of the employees. The proper time for completing a piece of work is specified by individual items on a "card of instruction," upon which the extra rates are based.

A paper on "Working Loads for Manila Rope," prepared by C. W. Hunt, recorded the author's extensive observations in this important branch of erecting work, and gave some definite facts and figures for all ordinary service. The subject of the efficiency of various types of knots, bends and hitches was also discussed, and the minimum diameter of sheaves for different loads and speeds included in one of the tables.

"The Water Power Development of Hannawa Falls," by W. C. Johnson, described in detail this hydraulic plant on the Racquette River. The total power, as at present laid out, is 5000 hp, but only one unit has so far been installed. This consists of a 1250-hp water-wheel, fed by a 6-ft. penstock and direct coupled to two generators, one at each end. Three-phase, 4400-volt current, at 60 cycles, is generated and transmitted at 10 per cent loss to the village of Potsdam, 4½ miles from the power station, by a double aluminum transmission line.

A paper on "Experiments on Spiral Springs" was presented by Charles H. Benjamin and Roy A. French. It supplies some valuable data on the strength and elasticity of compression springs, deduced from a series of tests made on a large number of different sized specimens. A spring closed solid was found to take all its permanent set in two closings, with 100 per cent overload. Various values are given for the coefficient of torsional elasticity and the torsional or shearing stress. Experience has proved that in close coil or extension springs the value of the coefficient of torsional elasticity is practically the same as in compression springs, but the torsional, or shearing, stress has a safe value of only about two-thirds, all dimensions remaining the same.

"A Silent Chain Gear," by J. O. Nixon, describes an ingenious manner of obviating the principal objections to chain gearing. The Renold chain gear is the subject and the reasons for noise, low-speed limits and short life are pointed out, with their remedies.

"An Experiment on the Effect of Clearance on the Economy of a Small Steam Engine," by Albert Kingsbury, was an account of some work, the object of which was to determine the effect of varying clearance on steam consumption. A curve of results

shows a small, regular increase in the water rate, with increase in clearance, but as the latter is accompanied by an increase in the pressure at release, and a decrease in pressure at the end of compression, it is impossible to differentiate the effect of clearance.

"A New Valve Gear for Gas, Steam and Air Engines," by E. W. Naylor, describes an electrically-operated valve, adapted for any kind of service. Both steam and exhaust valves are moved by rocker arms attached to armatures in the field of electromagnets, which are energized by current from a make-and-break apparatus on the engine. Great flexibility in adjustment of cut-off, etc., is secured, and the results of a series of tests on a small engine, fitted with the valve gear, was given in tabular form.

F. F. Nichol suggested for discussion a new system of measurements, based on ⅛ in., as a unit with prefixes similar to those of the metric system, and called the "Linvolpon System." Secretary F. R. Hutton presented for further discussion the cost of running trains at high speeds by reprinting the communications to the May, 1900, meeting.

Final Report of Committee on Standardization of Engines and Dynamos*

1. The committee on standardization of engines and dynamos has now completed its labors and has the pleasure to submit its final report, which it hopes will prove satisfactory to the society.

Since our last report at Milwaukee, the committee has continued its work on the same lines as hitherto, taking up carefully with manufacturers of engines and generators the points remaining to be standardized. We are glad to be able to repeat what we have said in previous reports, that the comments which have been received are almost without exception commendatory and show not only a willingness to adopt the committee's recommendations, but an appreciation of the work which has been done.

2. The committee's investigation has covered the standardization of the following points:

(1) The standard sizes of units recommended.
(2) The corresponding revolutions per minute for these units.
(3) The sizes of shafts for the two classes of center-crank and side-crank engines.
(4) The length along the shaft required for the generator.
(5) The height of axis or shaft over top of sub-base.
(6) The width of top of sub-base.
(7) Armature fit.
(8) Overload capacity of engines and generators.
(9) Brush holders.
(10) Holding-down bolts, keys, and outboard bearings.

3. SIZE OF UNITS.—Our endeavor has been to reduce the number of standard units to the fewest sizes. This will commend itself to all manufacturers as tending to reduce the great number of patterns required to be kept on hand. For reasons stated in our report to the Milwaukee meeting, the largest size embraced in our list is 200-kw capacity.

In this connection our report only covers the standardization of direct-current generators.

4. REVOLUTIONS.—These standard speeds have been chosen after careful deliberation and investigation of the practice of all the engine and generator builders in the country. It will be observed that we have provided for a permissible variation of speed of 5 per cent above or below the mean speed, which we recommend; an examination of the practice of all the engine and generator builders shows that this covers practically all the machines which may be considered as a standard make at the present time, and we have been assured by some builders whose conditions differ somewhat that if there is a general agreement upon the scheme outlined, they will be prepared to change their machinery to conform to the recommendations.

5. SHAFT DIAMETERS.—These are also the result of careful analysis of the existing practice of all manufacturers and a consideration of all the conditions affecting the diameter of the shaft. The preliminary report which we sent out to the manufacturers has elicited only a few adverse criticisms, and these, after correspondence, were withdrawn.

In order that the reason for the diameters of shafts that we have recommended shall be thoroughly understood, we may explain that (especially in shafts for side-crank engines) the permissible deflection has determined the diameter. This, in some cases, is larger than would have been necessary for torsion and bending where deflection did not have to be considered.

As cases sometimes arise where cross-compound engines or double engines are connected to generators coming within our recommendation, and as such units require considerably larger shafts than those given in our tables, we deem it necessary to state, specifically, that our recommendations apply only to engines of usual proportions, with the generator attached at the side of, instead of between, the cranks.

6. LENGTH OF GENERATOR ALONG THE SHAFT.—When we came to investigate the question of length along the shaft (between limit lines) to be provided for the generators, we found that the practice of manufacturers required provision for two classes, which may be called "long" and "short" generators.

It would, of course, have been much better if we could have provided for but a single class, with a small allowance for variation, but there is such a marked difference in the lengths for the same power that we have deemed it best to make provision for these two classes, so that the engine builders can govern themselves accordingly. It will be noticed that the maximum difference in lengths between the two classes is 6 ins., which in the small sizes is reduced to 5 ins.

In the case where an engine is to be provided for a generator which falls into the "long" class, but which is only a little over the limit for the "short" class, or one which is considerably less than the maximum of the "short" class, the excess clearance is to be provided for on the side next to the engine; that is to say, the side away from the commutator.

We have carefully considered the fact that for these varying lengths of generator and shaft the engine builder has to provide different lengths of sub-base, and in order to reduce the expense of patterns here to a minimum, our idea is that these patterns would be made so that the end away from the commutator can be extended the necessary amount, 5 ins. or 6 ins., to take care of the increased length of bed. Obviously, this means simply a standard pattern with a standard adjustable end for each unit.

7. HEIGHT OF SHAFT.—As is well known, there are two classes of generators to be provided for under this head: Those which are split vertically, and those which are split horizontally. The former have a flat base, which rests directly upon the flat top of the sub-base, while the latter have feet which take the weight of the generator.

In order to arrange that the engine builders' patterns may be reduced to a minimum and still may be stock patterns, which will fit every style of machine, we have chosen dimensions for height of axis of shaft above top of sub-base sufficient to allow for the vertically-split machines, and also, except as stated later, to clear the periphery of the horizontally-split machines.

As will be seen, the scheme provides for a main pattern to which patterns for the stools and seatings for both horizontally and vertically-split generators can be attached before the pattern is sent to the foundry—stools for the horizontally-split machines and rectangular seatings for the vertically-split machines.

In the case of the 150-kw units and 200-kw units, we have provided for a recess in the top of sub-base to allow the lower part of some horizontally-split generator frames to be accommodated, and so to avoid unduly raising the center of the shaft. In the case of the vertically-split machines and those which are split horizontally and do not need this recess, the top of the sub-base will be flat and continuous.

8. WIDTH OF TOP OF SUB-BASE.—This has been decided by careful examination of existing practice, and we believe that the figures we have recommended will cover the necessities for all sizes of generators.

9. ARMATURE FIT.—The matter of armature fit has received very careful consideration from the committee, and our recommendation is for what is known as a single fit.

We have obtained the opinions of manufacturers in respect to the allowance to be made for a pressed fit, and find that allowances of .001 in. for shafts 4 ins. to 6 ins., inclusive, and .002 in. for shafts 6½ ins. to 11 ins., inclusive, represent the best existing practice.

The armature bore is to be the exact size given in the table, and the allowance is to be made by the increase of diameter of engine shaft.

We believe, that in order to secure the best results, it will be necessary to work to a definite gage; to this end we recommend that the generator builder furnish a gage the *exact* diameter of the bore and the engine builder make the necessary allowance for the pressed fit, as recommended. This will avoid uncertainty as to the responsibility for the fit.

10. OVERLOAD CAPACITY OF ENGINES AND GENERATORS.—All the features of our recommendation have so far had to do with the question of dimensions as affected by the mutual relations of the generator and the engine. An important point, however, which affects both the generator and the engine, is that of the overload capacity which can reasonably be expected. As is doubtless well known, generator builders are frequently called upon to provide, during short periods, for overloads of as much as 50 per cent, and, in occasional cases, of even 100 per cent.

* Paper presented at the New York meeting of the American Society of Mechanical Engineers, Dec. 3 to 6, 1901.

It is evident to every engine builder that to provide an engine large enough to drive the generator under such extreme overload capacities, gives an unreasonably large engine for the rated load, and seriously interferes with the economy with which the power is produced.

Bearing in mind that our recommendations are entirely for standard practice, we are led to recommend that the standard overload rating of any direct-connected unit should not, in any case, exceed 25 per cent of the rated capacity.

It will, of course, be understood that under these conditions of overload the economy of the unit should not be expected to be as high as when operated at the rated load. We have also been asked by some engine builders to call attention to the importance of giving the unit special attention when it is so operated.

If, under peculiar conditions, a higher overload capacity is demanded, it must be understood that this is a special case not covered by the standard machines, and provision must accordingly be made for meeting this demand.

We recommend that the keys be made straight and be used as feathers. They should, therefore, fit accurately on the edges and not on the top. Proper allowance should be made in cutting the keyway in the armature hub, so that there will be sufficient clearance at the top of the key.

13. Suggestions.—In the course of our investigation our attention has been called to a number of points, which, from their nature, are not exactly in the same category as those on which we have made recommendations, but we consider them of such importance that we desire to offer them as suggestions for consideration by members of the society, with a view to their adoption, if considered sufficiently meritorious.

A. Pressing Armature on Shaft.—Usually the contract definitely provides by whom this is to be done, but our suggestion is that if there is no such provision in the contract, it should be understood that the engine and generator builders shall agree who is to do this work, so as to avoid any dispute when the separate portions of the unit are delivered on the premises.

B. Floor Line.—For convenience in operation and for the information of engine and generator builders, we suggest that for units up to 75 kw, inclusive, the floor line should come at the bottom of the sub-base; and for units 100 kw to 200 kw, inclusive, the floor line should be 1 in. below the rough top of the sub-base.

TABLE OF SIZES, SPEED, AND STANDARDIZED DIMENSIONS OF DIRECT-CONNECTED GENERATING SETS

(To accompany diagram)

Capacity of Unit, Kilowatts	Revolutions per Minute	Armature Bore		Diameter of Engine Shaft at Armature Fit		Space Occupied on Shaft Between the Limit Lines		*B* Length of Extension Pieces, Inches	*C* Height of Axis of Shaft Above Top of Base, Inches	*R*, Inches	*D*, Width of Top of Sub-Base, Inches	Key (a Feather)				Holding-Down Bolts	
		Center Crank Engines, Inches	Side Crank Engines, Inches	Center Crank Engines, Inches	Side Crank Engines, Inches	Long Class *A*, Inches	Short Class *A'* Inches					Width Inches	Thickness, Inches	Depth in Shaft at Edge, Inches	Projection Above Shaft at Edge, Inches	Diameter, Inches	Number
25	310	4	4½	4 + .001	4½ + .001	30	25	5	23½	Flat	48	1	¾	⅜	⅜	1	4
35	300	4	5½	4 + .001	5½ + .001	33	28	5	25	Flat	54	1	¾	⅜	⅜	1	4
50	290	4½	6½	4½ + .001	6½ + .002	37	31	6	28	Flat	60	1¼	¾	⅜	⅜	1	4
75	275	5½	7½	5½ + .001	7½ + .002	43	37	6	31	Flat	66	1½	1	½	½	1¼	4
100	260	6	8½	6 + .001	8½ + .002	48	42	6	34	Flat	72	1½	1	½	½	1¼	4
150	225	7	10	7 + .002	10 + .002	51	45	6	37¾	41½	84	1¾	1¼	⅝	⅝	1¾	4
200	200	8	11	8 + .002	11 + .002	54	48	6	42¾	47½	96	2	1¼	⅝	⅝	1½	4

Note 1.—Five per cent variation of speed permissible above and below speed in table.

Note 2.—Distance from center of shaft to top of base of outboard bearing may he less than *C* (to suit engine builder), though not less than possible outside radius of armature

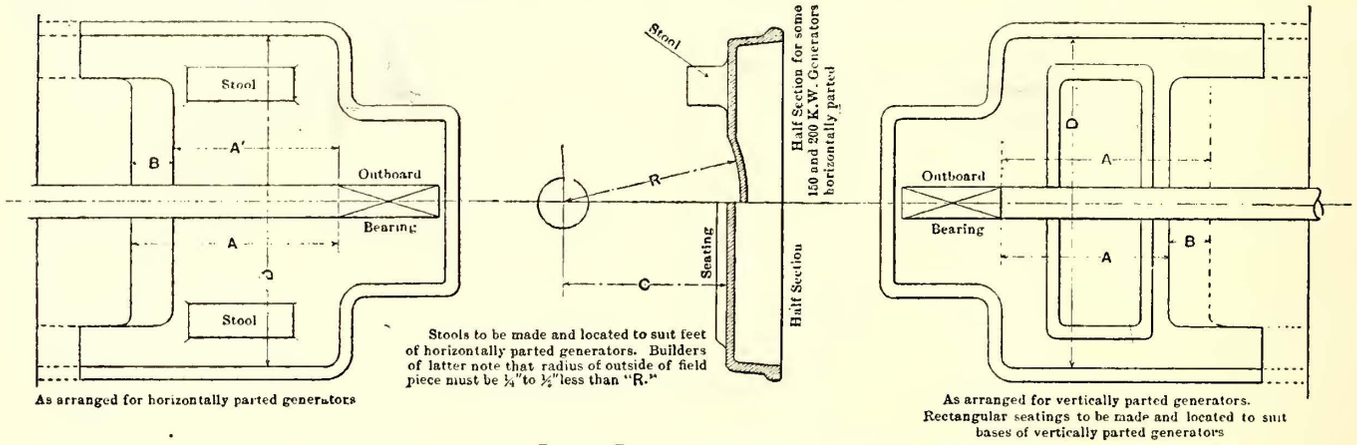


DIAGRAM AND TABLE OF STANDARDIZED DIMENSIONS

11. Brush Holders.—We recommend what we believe is now the practice of the best generator builders, that the brush-holder rigging shall be supported upon the generator frame. This, we think, will commend itself, as it makes the electrical part of the outfit entirely self-contained.

12. Holding-Down Bolts, Keys and Outboard Bearings.—We recommend that the holding-down bolts, shaft keys for securing the generator hub to the shaft, and the outboard bearings should be furnished by the engine builders. This is in accord with almost universal practice at the present time.

Our recommendations in these particulars do not cover matters of so great importance as some others; but, if adopted, they will tend to settle certain points about which there has occasionally been dispute and considerable controversy in correspondence.

In the table will be found columns showing sizes of shaft keys which we recommend; also the number and size of holding-down bolts.

It will be noticed that we do not give any lengths for keys. We gave this matter very careful consideration, but we found that such differences of opinion existed in respect to proper length, that we believe it best to leave the determination of the length of key for adjustment by engine and generator builders in each individual case.

Sizes of keys have been taken so that standard rolled stock can be employed.

C. Protecting Commutators from Oil.—In view of the fact that in some cases the distance between bearing and commutator is very small, it is well for engine builders to bear in mind that provision should be made to prevent oil from the bearing getting on the commutator.

D. Some generator builders have asked that the end of the shaft be drilled and tapped to facilitate, if necessary, the removal or placing of the armature on the shaft at the place of erection; we suggest that this be done.

E. In some cases, generator builders require special nuts, bolts, or fixtures for attaching generators to the shaft. Under these conditions we suggest that the generator builders should furnish all attachments to their apparatus that are not already specified in our report.

14. In Conclusion.—In concluding our labors, we desire to express our appreciation of the great interest in our work which has been shown by the engine and generator builders. They have realized that it was for their benefit, and they have helped us very materially by supplying freely the data in their possession and by their intelligent comments and criticisms of our various recom-

mendations. We may say, indeed, that it is this spirit of helpfulness and appreciation that has encouraged us to devote the great amount of time and labor which we have given to the solution of the problem.

We wish also to express our indebtedness to Prof. John E. Sweet, who, as president of the Engine Builders' Association and chairman of their committee on standardization, has attended all of our meetings and given us the benefit of his counsel and ripe experience.

We believe that the recommendations we submit herewith will accomplish the object for which the committee was appointed, and will, if adopted generally by manufacturers, which we have every reason to anticipate, reduce the cost of manufacture, expedite deliveries, and remove many causes of complication and dissatisfaction.

The favorable reception accorded to our preliminary report by the society leads us to hope that our completed work will be equally satisfactory.

JAMES B. STANWOOD,
FRANK H. BALL,
WM. D. FORBES,
WALTER M. MCFARLAND,
ALBERT L. ROHRER,
Committee on Standardization of Engines and Dynamos.

The Potter Mesh Separator and Superheater*

BY FREDERICK A. SCHEFFLER

1. Various designs of dry pipes have been made, all of them with a view of accomplishing the same result, namely, that of affording a receptacle for the steam passing out of the boiler, and so devised that steam only, and no water, should pass through the dry pipe. The very fact that these various forms of dry pipes (sometimes deflectors were used) have been changed in design, and also that in many instances the dry pipe has been abandoned for another device equally deceptive, without eliminating the difficulty, is proof that none of the old methods were satisfactory under all circumstances, and that a form of dry pipe which might be suitable in one case would not apply in another equally well.

2. I have no doubt that many members in reading or discussing this paper can recall their experience with priming or foaming boilers, and what they did to prevent disastrous accidents from occurring to their engines and other machinery. This is an experience which many of us have had.

It is a well-known fact that under certain operating conditions even the best designed boiler is likely to "throw water," or prime or foam badly. This may be due to various causes, which we have not the time to discuss now, and frequently is not due to improper construction of the boiler.

3. The Potter mesh separator is designed to prevent the trouble above referred to from occurring within the boiler itself, and while boilers equipped with the apparatus may prime for various reasons, the separator makes it impossible for the boiler to "throw water." The device is placed in the steam space of the boiler, and is connected in a manner similar to a dry pipe, or it can be connected to the end of the dry pipe, and the holes in the latter stopped up.

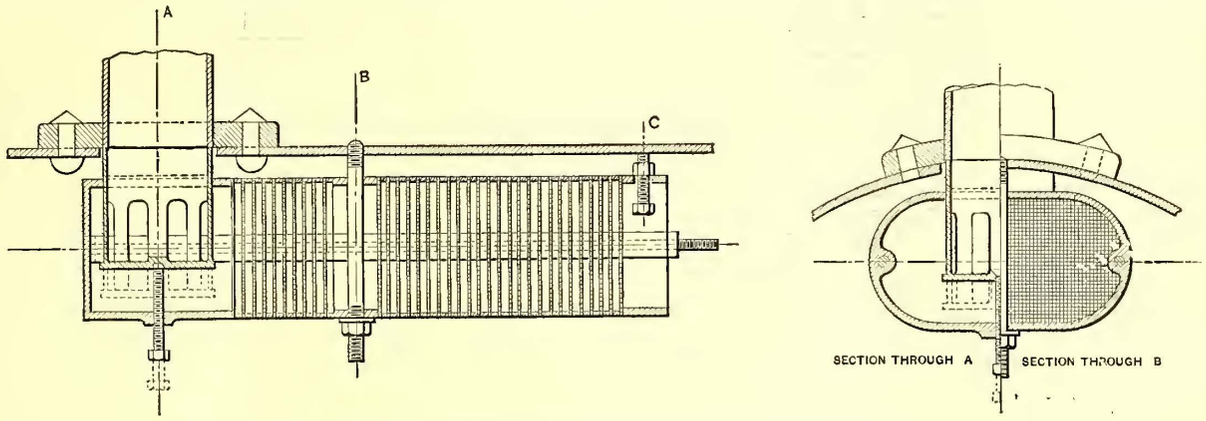
The construction of the separator is shown in the sectional elevations herewith, and consists of a series of galvanized or copper wire meshes or screens placed alternately between rings of cast iron, there being generally from twenty-five to thirty layers of mesh. [Another illustration was published in the STREET RAILWAY JOURNAL, of Oct. 5, 1901, accompanying a description of the separator then given.] The area of the screens depends on the size of the boiler outlet.

After considerable interesting experimental work, involving many other designs, more or less complicated, the above construction is found to fulfil all conditions of priming, over-saturated steam, etc., and delivers at the boiler outlet *practically* dry steam.

It has also been found by careful experiment that, given any boiler from which steam is delivered at any particular range of moisture (with or without "dry pipe"), the introduction of the mesh separator in the same boiler will change the quality of the steam by from 25 per cent to 75 per cent (making it drier), and at the same time stop any priming which may have been present.

The theory on which the action of this separator is based is, as may already have been surmised, that the small globules of moisture contained in the steam are broken up by the first piece of mesh, and this action is continued through each successive layer of mesh until it is so completely atomized upon reaching the outlet chamber, or header, that it flashes into dry steam upon the addition of a small amount of heat, which is obtained by the wire-drawing due to the steam and water passing through the screens. The reduction of pressure is about 1 per cent, and the temperature of the steam is increased proportionately.

The separator is designed so that it can be placed in any type of boiler which is equipped with a manhole of the usual size (11 ins. x 15 ins.), and is held in position by one or more studs screwed into the shell of the boiler. The connection between the outlet of the separator and boiler outlet is not necessarily steam tight, nor are the joints between the faces of the rings and wire mesh steam tight, as these openings are so small that any steam which leaks through such spaces is slightly wire-drawn with the same result which occurs to the steam passing directly through the mesh of the separator. These small openings on the lower part of the separator also provide the means whereby the entrained water returns to the boiler as it trickles down the successive layers of wire mesh.



LONGITUDINAL AND CROSS SECTION OF MESH SEPARATOR

4. Tests recently made by the writer in a 3000-hp electric plant with and without the separator are graphically shown herewith, together with water-level readings taken simultaneously with the calorimeter readings. These readings were taken every minute for five minutes over several hours' duration, at ten-minute intervals, and in plotting the curve it will be noted that the average readings for each five minutes were used to give the ordinates.

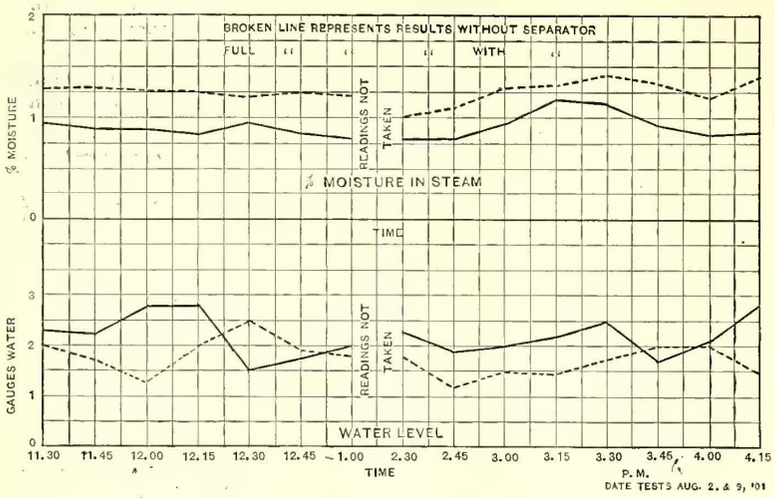
A Carpenter throttling calorimeter was used, as the readings at no time exceeded 2½ per cent of moisture.

5. In this particular case the tests show that the steam issuing from the boilers contained 37½ per cent more moisture when the separators were not used than was the case when they were used, and this, notwithstanding the fact that the water level in the latter instance averaged materially higher than in the former. Before these separators were installed, this particular plant was frequently troubled with water in the engines, but this difficulty has entirely disappeared; so that, as heretofore stated, the separators prevent the water from leaving the boiler, besides supplying a higher quality of steam.

This test was made on boilers which, as the curve shows, would ordinarily furnish a very fair quality of steam, and the test casts no reflection on the makers of the boilers. If, however, by applying the improvements in "dry pipe" construction, the possibility is assured of keeping the water in the boiler, and at the

* A paper presented at the New York meeting of the American Society of Mechanical Engineers, Dec. 3 to 6, 1901.

same time increase materially the quality of the steam *at the boiler outlet*, then the plant as a whole is improved in efficiency. There will be far less condensation to take care of in such installations between the boilers and the engines, and there will also be eliminated the likelihood of damaged engines, providing the condensation is properly looked after.



RESULTS OF TESTS OF MESH SEPARATOR

Annual Meeting of the British Westinghouse Electric & Manufacturing Company, Limited

At the annual meeting of the shareholders in the British Westinghouse Electric & Manufacturing Company, Ltd, which was held on Nov. 25, at the Cannon Street Hotel, London, George Westinghouse (the chairman) made some interesting remarks in regard to the new works and prospects for business in Great Britain. A digest follows:

I find my name chiefly associated in this country with the Westinghouse brake (an invention of thirty years ago). That, however, is a small affair compared to our business of manufacturing electrical machinery and appliances which has grown up in Pittsburgh. In this respect America got ahead of England. Partly owing to the prevailing spirit of enterprise in younger communities, partly because of greater freedom from Imperial and municipal interference, the demand for electrical power and for machinery to produce it and utilize it began to come fifteen years ago from cities great and small all over the United States. The Westinghouse Electric & Manufacturing Company, of Pittsburgh (which in your report is shortly referred to as the American company) has grown up from small beginnings through good and bad times alike, till it now has works employing 9000 men and a capital of over £4,000,000 sterling, consisting mostly of preference and ordinary shares like yours. It is paying 7 per cent dividends upon both classes of shares, and accumulates reserves besides. Three years ago we in America found that we had so large and valuable a business in the British Empire that we decided to transfer the seat of it to this country. It would obviously be more economical to manufacture at Manchester the electrical plant required—*e. g.*, for the Mersey Railway—than to incur the cost of shipping it all the way from Pittsburgh. The result was that in July, 1899, the American company sold its British business (including patents and plans which had cost a very large sum) for ordinary shares in the British company, whose second annual report is in your hands. You, gentlemen, who are 6 per cent preference shareholders, may have the satisfaction of feeling that the American Westinghouse Company—which has borne all the burden, the risk and the expense of pioneers, and has established this great business on the profitable basis over there which I have described to you—has put in the whole of its interest behind yours. It can get no return upon its outlay till you have had 6 per cent on your money, represented by preference shares. Further, after 6 per cent is paid upon the ordinary shares, you, as preference shareholders, become entitled under article 10 to one-fourth of the profits remaining available for dividend. The profits in excess of the preference dividend already amount to something considerable, but are carried forward for the present. One more point I have to refer to before I proceed to deal with the accounts and to describe the works—namely, our gas engine business, as distinguished from the business of manufacturing electrical machinery. Though you are interested first of all in the financial more than the technical aspect, you must be aware that one of the greatest of modern problems is how to economically turn fuel into power and to recapture and utilize gases from blast furnaces which are now lost or wasted. Again, you observe how great chemists like Mr. Mond are dealing with "producer gas." A company has been formed to distribute "Mond producer gas" over South Staffordshire, thus opening out a new and large field for gas engines. Already in America the Westinghouse Company has made gas engines of 650 hp, and is making one no less than 1500 hp. A demand is coming in this country, too. These considerations led you, at shareholders' meetings duly held, to decide to combine the manufacture of gas engines with that of electrical machinery under the same roof. The two businesses work in together. The same people who require dynamos require gas engines, for it is proving to be more economical to convert coal into gas and gas into electricity than to burn coal under boilers to drive steam engines. The financial arrangements to this end were on precisely the same lines as those for purchasing the Westinghouse electrical manufacturing business already described. They were sanctioned by you in general meeting, and have now been consummated, increasing your nominal capital to £1,000,000 6 per cent preference shares, and £750,000 ordinary. I now come to the accounts. As to the profits, of course, until the Manchester works are open, orders have to be executed as heretofore at Pittsburgh. In other words, the British company only gets a portion of the manufacturing profit. As soon as the Manchester works are running you will get the whole profit, whatever it may amount to. In the circumstances, I am sure you will be well satisfied with the net result for the past year, £49,533, which I may tell you is arrived at after liberal deductions from the gross profits for writing down the three accounts you see enumerated in the balance sheet, namely—(1) the stock on hand; (2) the laboratory fittings, tools, etc.; and (3) the expenditure on development, exhibitions, etc. Besides, our expenses are much larger at starting, in proportion to our capital, than they will be when our works are running, and they are all earned and paid for. The 6 per cent dividend on the preference shares as paid up requires £30,625, and after paying it there is still £18,908 surplus to carry forward. The orders on hand show a steady growth from £279,000 in July, 1899, to £738,000 in July, 1901. Among the orders, one of the more important is the contract for electrifying the Mersey Railway. This, when completed, will be another object lesson in the North, like the Tube in London, as to the speed and cleanliness of underground lines in big cities worked by electricity. It happened that the Mersey Railway Company required to pay for its electrification in debenture stock as authorized under its Act of Parliament instead of in cash; and according to our experience in America, the same is often the case. Now, it is not the business of your company to take payment in anything but cash; so to meet this and other such cases, we have formed the Traction & Power Securities Company, Ltd., with a nominal capital of £1,000,000, to handle such securities and give this company cash for its machinery. Your company has taken an interest in this, and already more than enough has been subscribed independently to the shares of the Traction & Power Securities Company to deal with the case of the Mersey Railway, and relieve your company. If any shareholders desire to be interested in the shares of the Traction & Power Securities Company, they can obtain particulars from the secretary.

I now come to a description of the works, upon which you will see from the balance sheet we have spent up to July 31, £433,126, exclusive of the land, which we rent at 3½ per cent on an agreed price, with the option of purchase at any time within fifteen years. I think I shall be meeting the wishes of the shareholders by giving them a fuller account than could be embodied in our report concerning the important works which your company is erecting at Trafford Park, Manchester, which are rapidly approaching completion, and when in full operation will be even more extensive and complete than the Pittsburgh works. They are most favorably situated and adjacent to both the Manchester Ship Canal and the Bridgewater Canal, besides being in direct connection with the main railways, thus providing unusual shipping facilities to all parts of the world. The manufacturing methods of your company will follow very closely those adopted at Pittsburgh, where the advantage gained in quality of work and in quick output by the use of modern labor-saving devices wherever possible cannot be overestimated. Your company, however, will have a great advantage in the selection and location of machine tools, in its manufacturing methods, and in many other particulars, due to the fact that its management have, in all preliminary and final work, utilized the services of the staff of the Pittsburgh plants,

and the experience gained during the past ten years in exactly the same class of business as that to be undertaken at Manchester. It is expected that manufacturing operations of your company at Manchester will begin early in 1902. The buildings run almost due north and south; the northern ends are permanent and brought up into line; the other ends might be termed temporary, as it is from here that the buildings will be increased in length as required, there being a considerable space for this purpose. The works proper are located in six buildings, each one being of proportionate size and adapted for one particular branch of manufacture. They are all of rectangular form, and arranged side by side in the order most convenient for securing straightforward work in the manufacture of the machinery from the raw materials to the finished product. On the extreme east is the iron foundry, 170 ft. wide and 580 ft. long, where a plant will be installed capable of turning out and handling the huge castings required in the largest sizes of electric power machinery. Next to the iron foundry are the smaller brass foundry, malleable iron foundry, pattern shop, steel foundry and forge. The last two are built end to end, forming a building 170 ft. wide by 580 ft. long. The next building is the machine shop, probably much larger than any other engineering shop in the United Kingdom. It is 430 ft. wide x 900 ft. long, divided longitudinally into bays, and will be equipped with the most modern electrically-operated machine tools, large and small. Electric cranes of all types are to be placed wherever required. In addition to the six buildings mentioned, there are two others—one the office building, 50 ft. wide x 250 ft. long, set in front of the machine shop, and the other, box factory and stores, 60 ft. wide x 270 ft. long. The office building will be of imposing appearance, and will accommodate the clerical staff, shipping department, drawing offices, and also have certain fireproof departments in which the works records will be kept. In these new works the comfort and health of the employees will receive every attention. Efficient heating and ventilation arrangements will be provided, and all conveniences, such as clothes lockers, lavatories, etc., will be numerous, and of the most modern type. Not only in the works proper will the workman be well dealt with, but, if he wishes, he may rent a house built purposely for him adjacent to the works. These houses, of the most modern construction, will be supplied with electricity and gas for heating purposes. The houses are being built by the Trafford Park Dwellings Company, Ltd., an independent Manchester company, which has acquired some 120 acres of land, whereon will be erected 2500 or 3000 dwellings. About 300 of these are completed, and 300 more are being rapidly pushed forward. Arrangements are also being made for the erection of some better cottages for the use of foremen, and for the erection of a large hotel to accommodate commercial travelers, etc.; also schools, clubs, and recreation grounds. The careful attention given to the securing of the health and happiness of the employees is held to be an essential condition for business success. The Manchester works will be devoted to manufacture of the well-known types of Westinghouse electrical apparatus for lighting, power, and traction, by alternating and direct current, including generators, rotary converters, stationary and tramway motors, transformers, switchboards, and auxiliary apparatus. A considerable portion of the works will be devoted entirely to the manufacture of gas and steam engines. The company's works manager, H. S. Loud, has, with a competent staff of assistants, and with the aid of the officers and engineers at Pittsburgh, prepared plans and selected the machine tools required for the conduct of the business on a large scale, and is at the present time at Pittsburgh, with a force of mechanics, engaged in the preparation of special machines, patterns, jigs, and templets in a portion of the works of the American company, which has been set aside for the purpose. Lastly, as to the field of operation and how to utilize it for your benefit. You are aware that your field is the British Empire, with the exception of Canada, which can be supplied more economically from Pittsburgh. Westinghouse companies are established also in France, Germany and Russia, each company dealing with its own field, but with agreements providing for mutual co-operation. This makes a very strong combination for exchange of engineering information, for securing valuable patents that may turn up anywhere, and for mutual assistance throughout the world. The future of electrical engineering is one which I should like to enlarge upon, but I should take up too much time. The next ten years will witness great developments. If railways want to protect the properties they have built up, they have got to take the initiative and handle their suburban traffic by electricity instead of sitting still and seeing competing companies started to cut into them. Why, in Paris, you may even see the outgoing expresses for Bordeaux and Madrid taken out of the Quai d'Orsay Station by electrical motors. You can see already in England, an electrical line to Richmond and Kew, and the effect upon congested population in London, and upon the value of suburban land. The New England and some other States are already gridironed with light electrical railways. The question for old-fashioned steam railways is what to do. Something they have got to do. It is a burning question in America already, and it is just as much so here.

The Engine Builders' Association

The third annual meeting of the Engine Builders' Association, which was held in New York Dec. 2 and 3, was an occasion of much pleasure and profit to the members in attendance. The sessions were held at Sherry's, and the proceedings of the first day, which consisted of a short address of welcome from Vice-President W. M. Taylor, of the Chandler & Taylor Company, Indianapolis, and the presentation of a number of interesting and valuable papers by various members, were reported in the STREET RAILWAY JOURNAL of last week. The second session, which was held on Dec. 3, was particularly devoted to an extended discussion on the present industrial situation, with, of course, the attention chiefly centered about the outlook in the engine building field. At this session the annual election of officers was held, the following gentlemen being elected for the ensuing year: President, W. M. Taylor, of the Chandler & Taylor Company, Indianapolis; vice-president, Charles Gates, of the Russell Engine Company, Massillon; secretary, D. N. McBrier, of the Ball Engine Company, Erie, Pa., and treasurer, C. S. Bonsell, of the Buckeye Engine Company, Salem, Ohio. Two members were elected to the council, to succeed the two retiring members, whose terms of office expired this year; they were Walter C. Kerr, of Westinghouse, Church, Kerr & Company, New York, and S. F. Bagg, of the Watertown Engine Company, Watertown, N. Y.

The annual banquet of the association took place at Sherry's on the evening of Dec. 3. There were over fifty members and their guests present, Walter C. Kerr acting as toastmaster. R. H. Edmunds, of the *Manufacturers' Record*, speaking on the subject of the South, pointed out in a most convincing manner the great possibilities of the undeveloped sections of that part of the country; Charles A. Moore, of Manning, Maxwell & Moore, New York, in responding to the toast "Reciprocity," called the attention of the gentlemen present to his convictions as to our political policy in regard to our manufacturers. He urged in the strongest terms the maintenance of a high tariff for the protection of American producers, and spoke of the advantages to be gained by improving the American consular service, which could only be done by the sending of superior men and providing for their high standing in the communities where they are located by a remuneration sufficient to enable them to command respect for themselves and the country which they represent. He further advocated the inauguration of some system whereby competent men who filled their positions with credit should be kept in office as long as they proved themselves worthy of the trust. The toast "Successful Builders" was responded to by the Hon. Job Hedges, who, by a happy interpretation of his subject, talked to his hearers upon the importance of their position in the industrial world and their duties as American citizens, in a speech which received the closest attention from all present. The toastmaster then called for a few impromptu remarks from various members of the press present at the dinner, which were made by John A. Hill, of the *American Machinist*; J. M. Wakeman, of the STREET RAILWAY JOURNAL, and Louis Cassier, of *Cassier's Magazine*. A most enjoyable evening was brought to a close by a few carefully selected and well-told stories from C. L. Eidlitz, president of the Electrical Contractors' Association, of New York.

Probably the heaviest traffic ever encountered in Boston occurred Nov. 23 in the Subway, Park Street loop, when the Yale-Harvard football game was played at Cambridge. Car movements of 301 per hour on a single-loop track were recorded, with inward and outward loads heavy and well handled. The estimated traffic rose to between 13,000 and 14,000 passengers per hour, with cars running at 12-second intervals, which appears to be about the maximum of operating capacity without serious delays. On the Park Street loop the limit of capacity is not so much determined by the conditions of platform space or movement in the subway proper as by the congestion on Boylston Street, between the Public Garden entrance and Copley Square, where the traffic is divided westbound, via Huntington Avenue and Boylston Street itself. The experience of Nov. 23 indicates the advisability of an extension of the system as soon as possible. The need of a subway under Washington Street, with elevated or underground cars to Cambridge, and a possible extension of the Park Square subway loop to Copley Square, seem to be the most important factors in the Boston transit problem which at present confront the management.

New Transfer Punch

A new type of transfer stamp and punch has recently been invented by E. G. Connette, general manager of the Syracuse Rapid Transit Company, who has given a great deal of attention to the subject of transfers, and an application for a patent covering the essential features of the device has been made by him. The object of the device is to simplify the issuing of transfers and prevent their abuse. It has been found in Syracuse, as in other cities, that passengers will often insist that their transfers have not been properly punched as to the time limit, and will claim that the transfers presented for passage had just been received by them. As conductors have to punch the time limit on a great many transfers, and as the method ordinarily used to indicate the time limit is not particularly intelligible to the ordinary passenger, the company has not felt that it could hold the passenger to a strict accountability on this feature of the transfer, or could insist on conductors ejecting passengers presenting an expired transfer for passage, unless they were absolutely sure that it was done with an intent to defraud the company.

The invention of Mr. Connette obviates this difficulty by printing on the back of the transfer, at the time that it is issued, and in plain numerals which can be understood by anybody, the exact time at which the transfer is issued.

The device for accomplishing this consists of a punch somewhat similar to those used by conductors at present, but having a larger head. The punch contains four aluminum discs with a series of dies on the outside edges. One of the wheels is for the month, one for the day of the month, one for the hour and the last for the minute. These discs revolve on pivots and can easily be adjusted so that the dies containing the characters for any month, day of the month, hour or minute, will come opposite a slit in the punch in which the transfer slip is inserted for punching. Between the dies and the transfer slip is an inked ribbon which runs on a set of wheels and can be moved along when constant use has absorbed the ink on any one portion. After a transfer slip has been inserted in the jaws of the punch, by bringing the handles together the dies on the wheels are pressed against the ribbon and the paper. The result is that a hole is punched through the transfer slip, while on the back of it is stamped in plain letters the month of the year, the day of the month, the hour and the minute, something like this: Nov. 30, 8:30.

The hole punched in the transfer ticket is that indicating the route to which the transfer is given, so that only one movement is required. The punch itself is necessarily slightly larger than that ordinarily used, but as the discs are made of aluminum, it weighs only a little more than the ordinary conductor's punch.

Another refinement which will be introduced on the Syracuse lines in the use of transfers is that a different color will be used for the transfers issued between 12 o'clock midnight and noon, and those issued between noon and the following midnight. In this way the conductor can tell at a glance whether the transfer has been issued in the morning or in the afternoon. One of the chief abuses of transfers has been that two friends or two employees in the same store, who live in different parts of the city, will ask in the morning for transfers on the line used by the other, and will exchange these transfers during the day, so that each will ride home in the evening upon the transfer originally issued to the other. This abuse will be effectually stopped by issuing say, white transfers in the morning, and colored slips in the afternoon, without obliging the conductor to even look at the time limit or date. It is understood that Mr. Connette is arranging with some manufacturer to put this punch on the market.

Pipe Covering Tests*

These tests were planned with the object of ascertaining the efficiency, both comparatively and absolutely, of some of the leading coverings as ordinarily manufactured, sold and applied. By the term "efficiency" is meant simply that efficiency which measures the degree to which the covering serves to prevent radiation of heat from the outside of the pipe, or, what is the same thing, the degree to which the covering prevents the condensation of steam in the interior of the pipe.

The plant is divided into two sections, one for coverings designed to stand the highest pressures which are now regularly carried by the modern power plants, say 150 lbs. per square inch; and the other for lower pressures, such as have been in vogue for many years past, say, 80 lbs. per square inch. It was sought to install a testing plant for the purpose in view that should be on a sufficiently large scale to approximate to practical conditions of service, rather than make it a laboratory apparatus and a laboratory test, which characterizes much of the work heretofore done in this field. That the work might also be carried out on a commercial scale it was sought to make and continue the tests a sufficient number of hours continuously in a day, and a sufficient number of days in succession, that no question could be raised as to the reliability of the data from too short duration, or from want of continuous repetition. Many of the coverings have, therefore, been tested day after day for a period of a month, and every one has been subjected to at least three days' run, from 8 hours to 9 hours continuous test each day.

The size of pipe selected for the leading tests is the ordinary standard 2-in. steam pipe, and the length selected, 100 ft., for each pipe. That the effect of size of pipe on the results might be studied and exhibited, and at the same time the work brought into line with the practice of high-pressure power plants, especially as regards much of the engine and boiler room piping, two 10-in. pipes, each 35 ft. in length, form a part of the 150-lb. section of the apparatus.

The coverings themselves were bought in open market, and were applied by workmen familiar with the application of pipe coverings, under intelligent supervision. During the progress of the tests they have been frequently pointed up with cement where the joints through continued service have become defective, the same as would be done by the repair force having the care of a steam plant in commercial service, which is well kept up. Before the conclusion of the tests opportunity was given the representatives of each covering to visit the plant, examine his goods, criticise their application, and where defective, correct the defects. It may be said, however, that where such defects have been found and corrected, no appreciable improvement was produced, thus showing that the coverings were already well applied.

The tests were started each morning with pipes empty and pipes and coverings cold. A period of one and one-half hours has usually sufficed to thoroughly heat the coverings, and after that time for seven hours to seven and one-half hours' uniform conditions as to rate of condensation have prevailed.

The results of the tests have not been worked out fully as yet, but the relative efficiencies of the coverings have been determined and tabulated. The lowest rate of condensation obtained on any of the 2-in. coverings of the 80-lb. section has been a total for the entire pipe of 13.46 lbs. per hour, and the highest, 15.14 lbs. The lowest on any of the 2-in. coverings of the 150-lb. section has been 10.47 lbs. per hour, and the highest, 14 lbs. per hour. The lowest on any of the 10-in. coverings is 10.67 lbs. per hour; total for the entire pipe and the highest, 15.93 lbs. All these figures apply to the average rate for a period of seven hours, or seven and one-half hours' continuous run. In every case the best records were made by the products of the H. W. Johns Manufacturing Company, New York, and are as follows: 2-in. coverings on 80-lb. pressure, asbestocel, minimum, 13.46 lbs.; maximum, 14.07 lbs.; 2-in. coverings on 150 lbs. pressure, asbesto-sponge hair felt, three-ply, minimum, 10.47 lbs.; maximum, 10.39 lbs., two-ply, minimum, 11.21 lbs.; maximum, 11.29 lbs.; 10-in. coverings on 150 lbs. pressure, asbesto-sponge felted, minimum, 10.67 lbs.; maximum, 11.07 lbs. Tests on bare pipes resulted as follows, with an approximate temperature in the room from 50 degs. to 75 degs. F.: 2-in. pipe, 80 lbs. pressure, minimum, 55.75 lbs.; maximum, 60.30 lbs.; 2-in. pipe, 150 lbs. pressure, minimum, 71.78 lbs.; maximum, 72.20 lbs.; 10-in. pipe, 150 lbs. pressure, minimum, 105.9 lbs.; maximum, 112 lbs.

* Abstract of paper read Nov. 12, 1901, by George H. Barrus, before a party of mechanical engineers, architects and others, at the Manhattan Railway Power House, Seventy-Fifth Street and East River, New York.

Chicago & Indiana Air Line Railway

A large interurban railway project is under way to connect South Bend, Ind., with Chicago by a direct route, the length of which is expected to be about 82 miles. The Chicago & Indiana Air Line Railway Company, which has recently been incorporated in Indiana, and has its headquarters at South Bend, has as directors: W. Osgood Orton, who is also president, and G. W. Bryson, of South Bend; F. E. Gribben, of Cleveland; Samuel Insull, of Chicago; and Frank H. Avery, of Cleveland. It is the intention to build a line upon which high speed can be made, making the trip to Chicago from South Bend in about three hours, with an hourly service. The company will construct on its own right of way. The proposed route will run almost directly parallel with the Lake Shore & Michigan Southern Railway from South Bend to Hudson Lake. Following the shore of this lake it will be extended in a direct line westward to Michigan City, and from there will follow the shore of Lake Michigan. It is the intention to run a branch line from Indiana Harbor to East Chi-

cago, to connect with the present lines in Hammond. The proposed route will touch a number of small lakes, which, in addition to the attractions of a route along the shore of Lake Michigan, will, no doubt, draw many pleasure seekers. The main power station, of about 3000 hp, will be located in Michigan City. Eighty-pound rails will be used for the track.

Standard Railway Materials Company

Garson Myers, of Chicago, so well known for many years in the street railway business as president of the Standard Railway Supply Company, and J. H. McGill, of the former firm of McGill, Porter & Berg, have become associated in what is to be known as the Standard Railway Materials Company, with offices at 1203 Fisher Building, Chicago. The leading article which this company will push is "Standard resistance strip metal," for use in rheostats and resistance boxes, especially on electric railway cars. This history of this resistance metal is an interesting chapter of electrical development. Some years ago a request was made of Mr. Myers by the electrical engineer of a large street railway system for sheet steel strips in long, unbroken lengths for refilling burned-out resistance boxes. At that time the only way of filling these boxes was to procure common sheet steel in short lengths, cut it up into strips and rivet these strips together, making it necessary to rivet at frequent intervals. The resistance of these strips would also vary from foot to foot. Mr. Myers then went to work in his search for resistance strips in long unbroken lengths homogeneous in resistance. At last he was able to furnish what was desired, and a large business has been built up as a result. This resistance metal is nothing more or less than a very soft steel of much greater eveness of composition than anything else heretofore obtainable on the market. It is cold rolled, pickled and annealed. The cold rolling gives it the necessary accuracy in thickness; the pickling and annealing the finish and evenness of resistance. This metal, when ready for the market, is very bright and smooth. It has almost the appearance of being nickel-plated. It is also very soft, and easily bent, as compared with any other steel on the market.

As a result of being able to furnish a resistance metal of this kind, the patronage of many of the largest roads has been obtained. The metal was originally manufactured for the use of the Chicago Union Traction Company and South Side Elevated Railway, and has since been adopted by the Twin City Rapid Transit Company, of Minneapolis and St. Paul; the Buffalo Railway, the St. Louis Transit Company, the Brooklyn Rapid Transit Company, and other large roads.

In conductivity this metal is a little higher than an equivalent gage and width of common sheet steel. This is, as would be expected, because of the small percentage of carbon in standard resistance strip metal. It is regularly furnished in 250 ft. to 300 ft. lengths, and thickness from .012 in. to .025 in., from ½ in. to 1⅜ ins. wide. Besides pushing this metal, Messrs. Myers and McGill will continue to be agents for the R. D. Nuttall Company's gears and trolleys, and the Westinghouse Electric & Manufacturing Company's repair parts.

New Publications

Railway Machinery, A Practical Journal for the Railway Shop. Published monthly by The Industrial Press, New York. Price, $1.50 per year.

This new engineering paper is a consolidation of the *Journal of Railway Appliances* and *Machinery*, and is devoted to the interests of the railroad machine shop. It cultivates a field which hitherto has not been specifically covered by any one paper, and aims to be of practical value to all connected with the mechanical end of railroad maintenance and repair. The first number is dated Nov. 1, and contains as a leading article a description of the Juniata Shops of the Pennsylvania Railroad, which is to be continued in a subsequent issue. Geo. L. Fowler has written a serial on "Compound Locomotives," of which the first instalment appears in this issue. It is understood from the publishers that *Machinery* is to be published as formerly for $1 per year, the latter part of *Railway Machinery* being practically the same as the original paper, and will be bound up separately for those not desiring the section dealing exclusively with railroad work.

Public Service Corporations. By Lemuel W. Serrell. 48 pages. Published by the author.

This book discusses the relations of the municipality to the street railway, gas and electric light companies, gives some very interesting figures as to the results secured under the American system of private ownership with the extent and quality of the service given, and compares them with similar services given by municipally operated plants here and abroad. The book is an argument against municipal ownership, is well written and tastefully printed.

State Supervision in Iowa

It is not unlikely that the coming session of the Legislature of Iowa will take up the question of placing the electric railway systems of the State under the control of the State Board of Railroad Commissioners. The subject is discussed at length in the annual report of the Railroad Commissioners, which has just been submitted to the Governor. The Commissioners took up the question at this time in view of the increasing traffic of the electric lines of the State and in view of the many interurban lines which are now under process of construction and the many others proposed. The Commissioners do not take a positive stand upon the question, nor do they make any direct recommendations, but they call the attention of the Governor to the situation and suggest that he recommend the Legislature to take up the question and reach a solution of it at the session, which will convene Jan. 13, 1902.

Street Railway Patents

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

UNITED STATES PATENTS ISSUED NOV. 26, 1901

687,318. Combined Fender and Net for Street Railway or Tramway Cars; C. Klaassen, Wandsbeck, Germany. App. filed June 7, 1901. The fender proper is V-shaped, to deflect an obstacle, while the net, which stands above it, knee-high, is rectangular, to catch an obstacle if it is not deflected.

687,354. Car Brake; M. Weber, St. Louis, Mo. App. filed Jan. 12, 1901. A casting for attachment to the dash, and furnishing bearings for the hand wheel and gearing connecting it with the staff.

687,453. Car Wheel; L. R. Faught, Philadelphia, Pa. App. filed Sept. 25, 1901. To retain a loose wheel in its proper position on the axle, the axle is grooved annularly, and a key-block of peculiar shape is fitted into the groove.

687,454. Car Wheel; L. R. Faught, Philadelphia, Pa. App. filed Sept. 25, 1901. A modification of the preceding.

687,462. Railway Switch; A. A. Roth, Buffalo, N. Y. App. filed Aug. 19, 1901. Details.

687,475. Electric Railway Switch; W. S. Browne, Brooklyn, N. Y. App. filed June 2, 1898. Magnates for moving the switch tongue in the two directions, respectively, are equipped with a switching device, whereby the current is maintained in a magnet after it has moved the switch, until the car has passed over the switch.

687,493. Switch Throwing Device; C. Carpenter, Swissvale, Pa. App. filed April 13, 1901. Details.

687,507. Car Fender; M. H. Van Dinter, Detroit, Mich. App. filed May 27, 1901. A horizontally extending framework, pivoted at its rear end to the truck frame, and held against downward movement below its horizontal plane, means for vertically adjusting the framework about its pivot, and a fender supported entirely upon the hinged framework at its forward end, and pivoted to the latter for rocking movement.

687,545. Car Brake; J. Shelton, St. Louis, Mo. App. filed Feb. 18, 1901. The rigging is so arranged as to be entirely above the trucks, thereby preventing contact with obstacles on the track.

687,577. Snow Plow; J. W. Russell, Boston, Mass. App. filed Jan. 2, 1900. The plow has a covered rear platform, furnished with side and end doors, to exclude the snow and allow those in charge to have free entrance to and exit from the plow at all times.

687,585. Car Brake; J. Shelton, St. Louis, Mo. App. filed Feb. 18, 1901. A modification of 687,545.

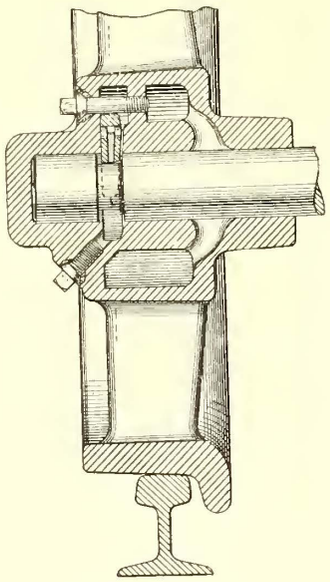
687,615. Electromagnetic Appliance; A. Duppler, Jersey City, N. J. App. filed March 25, 1901. A series of magnets and their armatures arranged at increasing distances from the corresponding magnets, means whereby the efforts exerted between such magnets and their armatures may be applied to a body to be moved under the influence of the attraction of such magnets for their armatures, such body is held in the position to which it has at any time been drawn by the effort tending to maintain the nearly closed magnetic circuit between the armature and its corresponding magnet last to come in contact.

687,616. Electromagnet and Brake-Operating Connection; A. Duppler, Jersey City, N. J. App. filed April 30, 1901. The preceding mechanism applied to a car brake.

687,622. Railway Brake; A. Green, Rochester, N. Y. App. filed May 14, 1901. A brake staff by which first the mechanical

brake, and then the electric brake, are applied, is equipped with means whereby the full effect of the mechanical brake can always be obtained before the electric brake goes into action.

687,630. Device for Removing Ice from Tracks; C. S. Johnson, Brownville, Maine. App. filed Feb. 2, 1901. Chopping



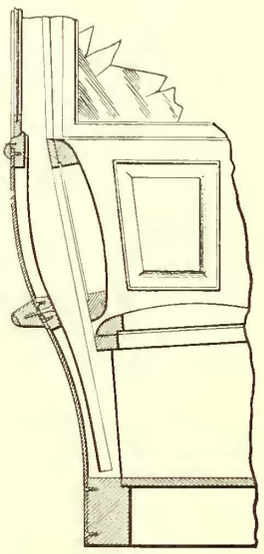
PATENT NO. 687,453

wheels placed in front of the truck, and arranged each side of the rail, to break up and remove the ice.

UNITED STATES PATENTS ISSUED DEC. 3, 1901

687,766. Trolley for Electric Railways Employing Overhead Conductors; W. F. Mack, South Bethlehem, Pa. App. filed Sept. 26, 1901. When the wheel leaves the wire, the absence of pressure permits a weight to throw a pair of divergent finder arms upward, and as soon as the wheel again finds the wire, the upward pressure of the trolley arm lowers the finder arms.

687,818. Car Fender; J. Craig, San Francisco, Cal. App. filed Aug. 8, 1901. Details.



PATENT NO. 688,180

687,861. Trolley Guard; A. W. Smith, Pine River, N. H. App. filed Jan. 16, 1901. Guard fingers, embracing the wheel and wire, are held in an upright position by springs, which permit them to yield when they strike an obstruction.

687,950. Trolley; J. Zumbrunnen, Elliott, Pa. App. filed April 4, 1900. The trolley pole is made in two sections, carrying a spring-actuated pawl, adapted to engage a segmental rack.

687,975. Automatic Car Brake and Speed Regulator; D. E. Brockett, Wellsville, Ohio. App. filed April 3, 1901. A brake is automatically applied to the wheels and to the rails, whenever the speed of the car exceeds a given rate.

688,067. Car Replacer; T. Crawford, Philadelphia, Pa. App. filed Oct. 3, 1901. Details of construction of a casting having inclined ways for directing the wheels on to the rail.

688,130. Controller for Electric Cars; B. W. Scott, San Jose, Cal. App. filed April 30, 1901. The motions of a lever in operating the mechanical brake carry a gear segment past a pinion, which thereby at the same time rotates the electric controller.

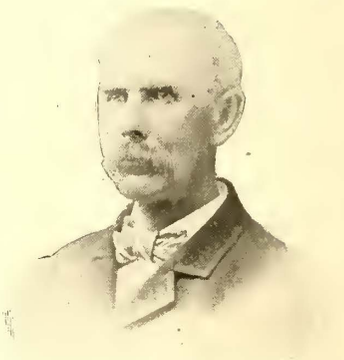
688,180. Street Car; P. M. Kling, Elizabeth, N. J. App. filed Jan. 7, 1901. A street car built without the usual trusses, and having upper and lower panels, composed, respectively, of convex and concave sheets of metal, attached to the belt-rail band, the panel furring and the car sill.

PERSONAL MENTION

MR. H. H. WINDSOR, who, for ten years, was editor of the *Street Railway Review*, of Chicago, and who severed his connection with that paper about a year ago, has announced that he will re-enter the journalistic field as the publisher of a new weekly paper, to be called *Popular Mechanics*. This is to be a review of the current mechanical trade and technical papers, so far as they appeal to the better-class mechanic, and will contain digests, with illustrations, of articles appearing in them, so far as they affect the field selected. Mr. Windsor has established for himself a high reputation as an editor and publisher, and his many friends wish him the success which he deserves in his new journalistic venture.

MR. G. W. KNOX, formerly of the Chicago City Railway, and now carrying on an independent consulting engineering practice at Chicago, in common with other electric railway engineers in various parts of the country, is finding a great deal to do in the way of supervising interurban railway construction. Some of the roads Mr. Knox is engineer for are the Rockford, Beloit & Janesville Railroad; the Rockford Railway, Light & Power Company; the Peoples Traction Company, of Galesburg; the Waukegan, Fox Lake & Western Railroad; the Wisconsin Midland Railroad; the Stark County Electric Railway Company, and the Belden Falls Water Power Company, besides other electric plants, such as the Manhattan Heat, Light & Power Company, and the American Ore Reduction Company. Mr. Knox has many friends in engineering circles, who will be glad to know of the prominent part he is deservedly taking in interurban railway development in the Middle West.

MR. EDWIN DUTY, known as the "father of street railways in Cleveland," died at his home in that city Dec. 3, of heart disease. On Sept. 6, 1860, Mr. Duty drove the first street car operated in Cleveland. It was on the Euclid Avenue line of the old East Cleveland Railroad Company, which was succeded several years ago by the Cleveland Electric Railway Company. Mr. Duty superintended the building of the line, and he remarked, not long ago, that he had laid tracks over this route five different times. The first road ran from the Public Square to Wilson Avenue, then the city limits, a distance of 2 miles. The rolling stock consisted of four 14-ft. cars, of the "double-deck" type, drawn by horses, running on a twenty-minute schedule, and taking fifty minutes to make the round trip. At one time an epidemic attacked the horses of the street railway, and Mr. Duty operated the road with oxen. Frequently it was impossible to operate cars because of snow, and the car bodies were mounted on sleds. Mr. Duty was one of the first to recognize the practical use of electricity, and in the early '80s a 2-mile strip of road was equipped with the underground trolley system. It proved a failure, and was abandoned. In 1889, however, the Euclid Avenue line was equipped with the overhead trolley system, and as soon as possible the other roads were changed. When the consolidation took place Mr. Duty was given the title of superintendent of construction, and almost to the day of his death he attended to this branch of the work for the entire system. On Sept. 6, 1900, Mr. Duty celebrated his fortieth anniversary as superintendent of the lines of the Cleveland Electric Railway. Mr. Duty was seventy-one years of age. Messrs. Everett, Moore, Wason, Andrews, McCormack, McDole and Price, directors of the company, were the pallbearers.



MR. EDWIN DUTY

LEGAL NOTES

LIABILITY FOR NEGLIGENCE

MINNESOTA.—Street Railroad—Injury to Pedestrian—Evidence—Contributory Negligence.

1. In a personal injury action it is held, that the fact that plaintiff had no prior actual knowledge of the location of, or the danger causing, her injury, is not conclusive that she was not guilty of contributory negligence. The rule in such cases is that if the person have no actual knowledge of the danger causing the injury, and could not by the exercise of reasonable care have discovered it, he can not be said to be guilty of contributory negligence. But, if ignorant of the danger, and the exercise of reasonable care would have made it known, and there be a failure to exercise such care, he is chargeable with negligence, and to the same extent as though perfectly familiar with the location and danger.

2. Evidence examined and held (a) to show conclusively that plaintiff was guilty of contributory negligence, and (b) that such evidence does not show a failure on the part of the defendant to exercise reasonable and ordinary care to avoid plaintiff's injury after discovering her in a position of peril.—(Russell vs. Minneapolis St. Ry. Co., 86 N. W. Rep., 346.)

NEW JERSEY.—Rights in Highway—Driver of Vehicle.

1. A trolley company can claim no superior right to that of the driver of any other vehicle in the use of the highway, regard being had, however, to the former's fixed line of travel. Each must have due regard to the rights of the other in its use.

2. The plaintiff, in a well-lighted street, at night, when about to cross the highway in his carriage, a short distance from the regular crossing, saw a trolley car approaching 250 ft. away. He at once proceeded to cross with his horse on a walk, without further watching the approach of the car, which collided with his carriage, causing him personal injuries. Upon the trial of his action the court refused to nonsuit on the ground of contributory negligence Held, on error, that the ruling was correct.—(Woodland vs. North Jersey St. Ry. Co., 49 Atl. Rep., 479.)

NEW JERSEY.—Negligence—Evidence—Damages.

1. A woman, seeing a car, which had been derailed while a flying drill was being made, coming out of the limits of a freight yard and across a public street at great speed toward the place where she was standing, in fright ran for safety, and fell, injuring herself. Held, that she was entitled to recover damanges for such injury.

2. Where one, by negligence, puts another under a reasonable apprehension of personal physical injury, and, in a reasonable effort to escape, the latter sustains physical injury, a right of action arises to recover for the physical injury and the mental disorder naturally incident to its occurrence.—(Tuttle et ux. vs. Atlantic City R. Co., 49 Atl. Rep., 450.)

NORTH CAROLINA.—Vehicles — Collision — Evidence — Demurrer—Vigilance—Reciprocal Duties.

1. Plaintiff testified that, when about to cross the track of defendant street railway, he looked and saw the car some distance away. His horse was about half-way across the rail when he saw the car near him. He attempted to get out of the way, but the car struck his vehicle before he could do so. The motorman could have seen some distance ahead that he was about to cross. Both the car and vehicle had lighted lamps. No gong was rung before the accident, which occurred on one of the principal streets of the city. Plaintiff, after starting to cross, did not look for the car until his horse's feet were on the track. It was then about 40 ft. from him, coming at about the rate of 15 miles an hour. Held, that a demurrer to the evidence was improperly sustained.

2. On motion for non-suit, the evidence must be construed in the light most favorable to plaintiff, both as to effect and credibility.

3. The duties of street railway companies and drivers of vehicles to use vigilance in looking out for collisions are reciprocal.—(Moore vs. Charlotte Elec. St. Ry. Co., 39 S. E. Rep., 57.)

NEW YORK.—Trial—Directing Verdict.

Though, even where the evidence is sufficient to sustain it, a verdict may be properly set aside, and a new trial granted, yet the court in such a case can not, whenever it sees fit, direct a verdict, if the evidence presents an actual issue of fact.—(McDonald vs. Metropolitan St. Ry. Co., 60 N. E. Rep., 282.)

NEW YORK.—Action for Negligence—General Denial—Demurrer—Motion to Strike.

1. Where, in an action for personal injuries, the answer contains a general denial, the defenses that whatever damages were sustained by plaintiff were due to his contributory negligence, and that such injuries were sustained because of the negligence of a third person, unknown to defendant, need not be specially pleaded

2. Where an alleged defense contains no new matter, the remedy is by demurrer, and not by motion to strike.—Levy vs. Metropolitan St. Ry. Co., 68 N. Y. Suppl., 944.)

NEW YORK.—Injury to Child on Track.

Where, in an action against a street railway company to recover for injuries to a minor child, the evidence of seven disinterested witnesses clearly showed defendant guilty of no negligence, and conflicted with the weak and indefinite testimony of four witnesses for the plaintiff, a verdict for plaintiff will be set aside, as against the weight of evidence.—(Chavias vs. Dry Dock E. B., etc., R. Co., 70 N. Y. Suppl., 1014.)

NEW YORK.—Attorney's Lien—Settlement by Parties—Same—Notice—Same—Same—Enforcement—Jury Trial.

1. Where the parties to an action settle it out of court in good faith, but without the consent of the attorney of plaintiff, the statutory lien of the attorney on the cause of action is transferred to the amount agreed upon in settlement, and may be enforced by suit in equity.

2. As Code Civ. Proc., sec. 66, as amended in 1879, gives an attorney for a party a lien on the cause of action, which can not be affected by any settlement between the parties, it is unnecessary that the attorney for plaintiff give defendant a notice of the lien.

3. Where an action is settled by the parties without the consent of plaintiff's attorney, defendant, by paying over to the plaintiff the sum agreed upon, cannot defeat the right of plaintiff's attorney to enforce his lien.

4. In a suit in equity to enforce an attorney's lien, defendant is not entitled to a jury trial.—(Fenwick vs. Mitchell, 70 N. Y. Suppl., 667.)

NEW YORK.—Personal Injuries—Insufficient Damages.

Where, in an action for personal injuries, the evidence shows substantial damages suffered, a verdict for nominal damages will be set aside, the verdict having established the fact of negligence on the part of defendant and want of contributory negligence on the part of plaintiff.—(Aherne vs. Plate et al., 70 N. Y. Suppl., 254.)

NEW YORK.—Collision with Team—Contributory Negligence.

One who, thinking he can drive across the street in front of an electric car, which he sees approaching, attempts to do so, with the result that there is a collision when the front wheels of the wagon are on the track, is guilty of contributory negligence.—(Tyson vs. Union Traction Co., 48 Atl. Rep., 1078.)

NEW YORK.—Negligence—Evidence—Competency—Same—Complaint—Proof—Amendment—Conformity to Proof.

1. Where plaintiff sued a street railroad company for injuries sustained by being thrown from a car by the conductor, and the complaint alleged that the injuries were caused by the negligence of the defendant, evidence on the part of plaintiff which showed that he had an altercation with the conductor, who wilfully pushed plaintiff off the car, was not open to objection, inasmuch as it constituted the transaction by reason of which plaintiff claimed that defendant was guilty of negligence.

2. Code Civ. Proc., sec. 723, authorizes a court to amend any pleading to conform to the facts proved, where the amendment does not amount to a substantial change of the claim or defense. Held, that where, in an action against a street railroad company, the complaint alleged that plaintiff's injuries were caused by the negligence of defendant's servants, and the proof showed that plaintiff got into an altercation with a conductor, who wilfully pushed him off the car, it was error to allow the complaint to be amended so as to conform to the proof, since such an amendment was a change of the scope of the action.—(Block vs. Third Ave. R. Co., 69 N. Y. Suppl., 1108.)

NEW YORK.—Negligence—Accident while Boarding Car—Conflicting Evidence.

Plaintiff testified that he signaled defendant's car to stop, and, though he did not see the driver look at him, the car slowed down nearly to a standstill, so that he took hold of a handle, put his foot on the step, and attempted to board it, but that just as he did so the conductor gave two short blasts of his whistle, as a signal to go ahead, and the car started with a jerk, throwing him on the track, so that the car ran over his leg. Six witnesses for defendant, four of whom were disinterested, testified that the car only slowed down partially for a crossing; that plaintiff tried to board the car while it was moving and approached it from a point back of the car, out of the range of vision of the driver; and that the conductor did not give the signal to go ahead, but blew one blast, to stop the car, when he saw plaintiff fall. Held to show, as a matter of law, that plaintiff's injury resulted from his own

negligence, so that the complaint was properly dismissed at the close of the evidence.—(Ebling vs. Second Ave. R. Co., 69 N. Y. Suppl., 1102.)

NEW YORK.—Accident at Crossing—Contributory Negligence.

Where plaintiff's intestate and herself were crossing parallel tracks of a street railway on a dark, rainy night, and, seeing a car approaching, looked both ways for other cars, and then crossed behind the passing car, so that plaintiff's intestate, being in advance, was struck and killed by a car moving rapidly on the second track, he was not guilty of contributory negligence, as a matter of law.—(Schwartzbaum vs. Third Ave. R. Co., 69 N. Y. Suppl., 1095.)

NEW YORK.—Accident at Crossing—Injuries—Negligence—Failure to Slacken Speed—Perception of Danger.

Where plaintiff was riding in his employer's delivery wagon, which was being driven by a co-servant, who stopped the horse with its feet close to, and its head projecting over, the first of two tracks, to let a car pass on the second one, the fact that the motorman of a car approaching on the first track did not slacken the speed of his car when he observed the position of the horse at a distance of half a block, but continued at a speed of 10 miles or 12 miles an hour, so that the hind wheel of the wagon was struck by the car as the driver whipped up the horse to get across the track ahead of the car, was sufficient evidence of negligence to entitle the plaintiff to have his case go to the jury on that issue.—(Brennan vs. Metropolitan St. Ry. Co., 69 N. Y. Suppl., 1025.)

NEW YORK.—Witness—Credibility—Payment in Excess of Legal Fees.

The payment to a witness of money in excess of his legal fees is a proper matter to be considered by the jury on the question of his credibility.—(Green vs. Metropolitan St. Ry. Co., 70 N. Y. Suppl., 123.)

NEW YORK.—Nuisance—Slot of Cable Railway.

A street railway, though authorized to construct a cable line in a street, may be held liable on the ground of maintaining a nuisance for injury to a person riding a bicycle on evidence that the slot was for a few feet 1½ ins. to 2 ins. wide, so that the bicycle went through it, while elsewhere it was only five-eighths to three-fourths of an inch wide.—(Brown vs. Metropolitan St. Ry. Co., 70 N. Y. Suppl., 40.)

NEW YORK.—Injury to Child Playing in Street—Evidence—Same—Imputed Negligence—Question for Jury.

1. Plaintiff, an infant two years and three months old, was playing in a street in which defendant operated a horse railway, and, on being neglected by her brother, a boy of nine years, whom plaintiff's mother had left in charge of her, plaintiff went on the track, and stumbled and fell. As she was getting up, a horse drawing one of defendant's cars struck and injured her. When she fell the car was about 20 ft. from her, and was going rapidly. Plaintiff's witnesses testified that the driver was looking to one side, and that by reason thereof he did not see the child until the horse struck her; and he testified that he could stop the car within 6 ft. or 7 ft., and did stop it within that distance after the accident. Held, that such facts were sufficient to establish defendant's negligence, warranting a verdict for plaintiff.

2. Where a child not sui juris was injured by being struck by a street car in consequence of the neglect of her brother, a boy nine years old, whom the mother had given charge of the child, the question whether the mother was guilty of negligence in permitting the boy to take charge of the child on the street was for the jury.—(Adams vs. Metropolitan St. Ry. Co., 69 N. Y. Suppl., 1117.)

NEW YORK.—Injuries—Charge—Failure to Except—Prejudice of Jury—Review—Stopping Car—Ordinances—Admissibility — Photograph—Admissibility—Identification—Same—Foundation for Admission—Showing to Witnesses—Necessity—Lunatic—Committee of Property—Order to Sue—Admissibility—Contingent Fee—Effect.

1. Where the court charged that the jury might determine whether plaintiff's husband was injured by the wrongful starting of defendant's car after it had stopped, and whether there would have been an outcry on the part of plaintiff, who was with her husband, against the motorman, for his action, and whether it would not have been natural for her to have made such an outcry, and an appeal was taken from an order denying a new trial on the minutes, the contention that error in the charge should be reviewed, notwithstanding no exception was taken to it at the trial, because it amounted to a misdirection by the judge, and raised a presumption that a verdict for defendant was the result of such misdirection, can not be sustained, since the charge was not so serious as to justify the conclusion that the jury were controlled by it, and hence timely exception was necessary to warrant a review.

2. Where plaintiff contended that the car stopped on the crossing, and defendant that it passed over before stopping, ordinances and police regulations forbidding cars to be stopped on the crossing were admissible to show the greater probability of defendant's contention.

3. Where a photograph offered in evidence was identified by plaintiff as a correct likeness of her husband, it was error to exclude it because not identified by the photographer, since identification by any one familiar with a person's photograph was sufficient to establish a foundation for its admission.

4. Where plaintiff's husband, who was injured on defendant's street railway, became a lunatic, and was not present at a trial for the injury, his photograph was not admissible to show that defendant's witnesses, from their description of the injured person, had not seen the accident, without showing the photograph to the witnesses, and giving them an opportunity to say if it was that of the injured person, since there was no proper foundation for its admission.

5. Plaintiff's husband, after receiving an injury on one of defendant's cars, became a lunatic; and plaintiff, as the committee of his property, brought an action for the injury, and was the principal witness against defendant, and an order of court authorizing her to bring the suit was admitted in evidence. Held, that the fact that the order authorized her to employ an attorney for a contingent fee constituted no grounds for reversing the judgment in favor of defendant, since that part of the order was immaterial, and the remainder was competent to show good faith on the part of plaintiff in prosecuting the action.—(Stiasny vs. Metropolitan St. Ry. Co., 68 N. Y. Suppl., 694.)

NEW YORK.—Liability for Injury to Passenger Crossing Street.

Plaintiff's intestate, while attempting to cross a street, was injured by defendant's street car. Deceased, before crossing, saw the car approaching, about 75 ft. away, and when it was about 15 ft. from deceased, who was then in the middle of the track, the motorman increased the speed of the car. There was evidence that, if the motorman had checked the car when deceased started to cross the track, he would have crossed in safety. Held, that a verdict for plaintiff would not be disturbed, the question of negligence being for the jury.—(Legare vs. Union Ry. Co. of N. Y. City, 70 N. Y. Suppl., 718.)

NEW YORK.—Injury to Passenger—Premature Start—Evidence—Complaint—Dismissal.

Plaintiff was given a transfer from one of defendant's street cars to another, and crossed to the point where he should board the car. As the car came to a stop, he took hold of the upright rail to board it, when people in front of him had got aboard, and as he was about to step on the car gave a sudden jerk, by which plaintiff was caused to fall in a hole, by which he was injured, he being compelled finally to let go his hold of the rail. Held, that as such evidence would have justified the finding that defendant was negligent in failing to give plaintiff a reasonable time to board the car, it was error to dismiss plaintiff's complaint.—(Fay vs. Metropolitan St. Ry. Co., 70 N. Y. Suppl., 763.)

NEW YORK.—Attorney and Client—Professional Misconduct—Acting for Adverse Party—Punishment—Disbarment—Suspension—Reprimand.

Where a father, as guardian ad litem of his injured child, desired to accept a railway company's offer to settle a damage suit for a sum which his attorneys thought inadequate, an attorney acting for the defendant railroad company, and receiving the major portion, if not all, of his compensation from it, who got himself substituted for plaintiff's attorneys by paying them a fee furnished by defendant, and then, in the capacity of plaintiff's attorney, attempted to effect the settlement which plaintiff had been willing to make before such attorney became connected with the case, was guilty of professional misconduct, not sufficiently flagrant to justify disbarment, but properly punishable by reprimand.—(In Re Reifschneider, 69 N. Y. Suppl., 1069.)

NEW YORK.—Injury to Stock—Abandonment of Issue—New Issue—Same—Fences—Requirement to Maintain.

1. Where a railroad company was sued for negligently killing plaintiff's horse on a public highway, and on the trial both parties, abandoning the original theory of the case, tried it on the issue of the absence of a fence inclosing the track, it is too late for the company to object on appeal to a variance between the pleadings and proof.

2. Railroad Law, sec. 32, requires railroad companies to erect and maintain fences, farm crossings, and cattle guards to prevent cattle from coming on the road. Held, that a railroad company was liable for killing plaintiff's horse, which, after crossing fields and vacant lots, finally reached the road, where it was struck by defendant's car, negligently and carelessly operated.—(Rubein vs. Brooklyn Heights R. Co., 70 N. Y. Suppl., 577.)

NEW YORK.—Injury to Persons on Street—Evidence—Question for Jury—Same—Damages.

1. Intestate was killed in a collision between his wagon and a street car; and a witness, who was in the wagon at the time, testified that they were about to cross the tracks at the intersection of two streets, and when the horse was between the crosswalk and the first track the car was about 200 ft. away, and was moving rapidly, and that its speed was not slackened on approaching the crossing. Another witness testified that at the time the car was from 75 ft. to 100 ft. from the crossing, moving at a high rate of speed, which was not slackened. If the motorman had taken proper means to stop the car when 75 ft. to 100 ft. from the crossing he could have done so He testified that he made no effort to stop the car till the horse was not over 15 ft. away, and that the appliances did not work when he applied the reverse, but admitted that, if they had worked, he could not have stopped within that distance. The motorman's excuse for not stopping was that, just before crossing the track, deceased turned the horse so as to cross at a right angle, and that, if he had not done so, he would have passed to the rear of the car. Before the collision both the car and the wagon were in sight for a distance of 200 ft. Held, that the question of defendant's negligence and of intestate's contributory negligence was for the jury.

2. Where deceased, a young man twenty-seven years of age, strong and in good health, was killed in a collision with a street car, and it appeared that he was engaged in the saloon business, and devoted a portion of his earnings to the support of his father and his children, a verdict of $1,000 was not excessive, though it appeared that his habits were not good, and that he had not been successful in accumulating any property.—(Johnson vs. Rochester Ry. Co., 70 N. Y. Suppl., 113.)

NEW YORK.—Street Cars and Vehicles—Relative Rights in Street — Same—Collisions—Contributory Negligence—Question for Jury.

1. A driver in a city street has a right to expect that street cars will be managed with reasonable care and a proper regard for the rights of others lawfully using the street, and he may drive along the track in full view of a car approaching from the rear, and the fact that he so proceeds for any distance will not charge him with contributory negligence in case of a collision, if, under all the circumstances, his conduct was consistent with ordinary prudence; the only limitation on his right being that he must not unnecessarily interfere with the passage of the car, which, though entitled to preference, has not an exclusive right to the track.

Plaintiff's horse and wagon were being driven along a populous city street in front of an approaching electric street car, the wagon being covered so that it was difficult for the driver to look behind it; and just as he reached an intersecting street into which he was turning, after the car had followed him for upward of two blocks, and when the horse and most of the wagon were off the track, a collision occurred. Held, that it was for the jury to say whether he was negligent in not looking toward the rear before making the turn.—(Cohen et al. vs. Metropolitan St. Ry. Co., 68 N. Y. Suppl., 830.)

NEW YORK.—Injuries—Negligence—Evidence—Instruction.

In an action for injuries, the refusal to charge that the burden of proving negligence on the part of defendant, and freedom from negligence on the part of plaintiff, rests on the plaintiff, and if the evidence of such negligence and freedom from negligence was evenly balanced the verdict must be for the defendant, constituted reversible error.—(Newcomb vs. Metropolitan St. Ry. Co., 68 N. Y. Suppl., 780.)

NEW YORK. — Instructions — Special Requests—Refusal—Same—Exceptions—Availibility—Same—Review.

1. Special requests for instructions covered by the charge given, which correctly stated the law of the case, were properly refused.

2. Where special requests for instructions are refused on the mistaken supposition of the court that they were included in the charge given, and one of them, which should have been given, appears not to have been included, an exception therefor is unavailing, the counsel having failed to point out the particular omission to the court.

3. Where the charge as a whole gave the true rule by which the jury were to be governed, the judgment should be affirmed, notwithstanding the court's failure to charge a correct proposition requested.—(Mahon vs. Metropolitan St. Ry. Co., 68 N. Y. Suppl., 775.)

NEW YORK.—Injury to Traveler's Property—Erroneous Instructions.

In an action for injuries to a cab by a collision with defendant's street cars, an instruction that, if the plaintiff was prudent, and the accident occurred, the accident was the fault of defendant, was erroneous, since it directed the jury to find that, if plaintiff was prudent, as a matter of law the defendant was negligent, irrespective of the defendant's conduct.—(Jones vs. Third Ave. R. Co., 68 N. Y. Suppl., 832.)

NEW YORK.—Voluntary Dismissal—Discretion—Same.

1. The exercise of judicial discretion as to the allowance of plaintiff's motion for a discontinuance without costs depends on a sufficient excuse in the instituting of the suit, or the occurrence of circumstances since its commencement which equitably entitles him to a discontinuance.

2. Plaintiff in an action for personal injuries, brought in the municipal court and removed to the city court on defendant's application, is not entitled to a dismissal without payment of costs on the ground that he is in reduced circumstances.—(Petty vs. Metropolitan St. Ry. Co., 68 N. Y. Suppl., 730.)

PENNSYLVANIA.—Injury to Passenger—Contributory Negligence.

A passenger on an open street car signaled the conductor to stop, and, after the latter pulled the bell, and as the speed slackened, he stepped to the side, and stood with one foot on the car and the other on the running-board. Observing that the car was not stopping at the crossing, he withdrew his foot from the running-board, stood just inside of the car, firmly holding the hand rail, and again signaled the conductor to stop. He again rang the bell, and the speed was slackened until the car almost stopped, when it was suddenly accelerated, giving the car a jerk which threw the passenger off. Held, that he was not chargeable, as matter of law, with contributory negligence.—(Sweeney vs. Union Traction Co., 49 Atl. Rep., 66.)

WISCONSIN. — Personal Injuries — Crossings—Injuries to Children—Negligence—Evidence.

A motorman, when some 60 ft. from a street crossing, seeing a five-year old girl about 12 ft. from the track, and starting to cross it, applied the brake and sounded the gong. The child moved forward, looking at the car, and stopped about 3 ft. from the track, on which the motorman released the brake. When the car was within about 6 ft. of the crossing the child suddenly started to cross, and was run over and killed. The motorman testified that he was running at the rate of 8 miles per hour, while one witness testified 12 miles, and another 16 miles per hour. The car stopped about 60 ft. or 70 ft. from the crossing. Held, that the motorman was not guilty of negligence entitling plaintiff to recover.—(Tishacek vs. Milwaukee Elec. Ry. & Lt. Co., 85 N. W. Rep., 971.)

WISCONSIN.—Injuries—Proximate Cause—Erroneous Definition—Conductor—Qualifications—Exception—Sufficiency.

1. An instruction that the term "proximate cause," as used in injury cases, means the efficient or inducing cause, or that which sets in motion other causes producing the injury, there being an intimate and close "casual" relation between the first cause and the final result, was erroneous, since there must be a "casual" relation between the cause and result.

2. Where plaintiff was injured, while boarding a street car, by reason of the sudden starting of the car, an instruction that, to warrant a finding that the injury was caused by the want of ordinary care on the part of the conductor, the jury must find that the accident might reasonably have been expected as a result of his conduct, by such conductor, in the exercise of ordinary care as "a man of intelligence, having the knowledge that may be reasonably expected and ought to have been had" in doing such work, was erroneous, since it permitted the jury to use as a standard their ideal of what a conductor ought to be, instead of what they usually are.

3. Where the only exception to an objectionable part of a charge is one reserved in connection with an exception to other parts of the charge which were correct, no reversible error is presented.

4. Where the record on appeal contains thirty pages of matter concerning which no question was raised, the expense of printing such matter can not be taxed as costs.—(Dehsoy vs. Milwaukee Elec. Ry. & Lt. Co., 85 N. W. Rep., 973.)

WISCONSIN. — Collision — Contributory Negligence — Evidence.

1. Plaintiff, driving on a load of hay, turned onto a street used by an electric railway company, and passed upon the track without looking, and was struck by a car coming up from behind, and was injured.. Held, that he was guilty of contributory negligence if the car was in sight and could have been seen when he turned upon the track.

2. If, when plaintiff drove upon the track, the car was not in sight, and he traveled about 300 ft. along the track without looking for the approach of a car, and was injured by a collision with one, he was guilty of contributory negligence.

3. Where, in an action for injuries by a collision with a street car, the complaint simply charges negligence, evidence of a wilful intent to injure, or reckless disregard of plaintiff's safety, is inadmissible.—(McClellan vs. Chippewa Val. Elec. Ry. Co., 85 N. W. Rep., 1018.)

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

Wall Street, Dec. 11, 1901.

The money situation has taken a sudden and rather unexpected turn for the worse during the last fortnight. The change is due primarily to the failure of the Treasury's bond purchases to longer afford relief. Apparently the free supply of bonds in the market became exhausted two weeks ago, but the high premium offered for redemption, combined with the slender profit in circulation, induced the banks to sell some of the bonds which were held in Washington as security for note currency. The redemption purchases, when they came to be of this character, naturally served to defeat their intended purpose, for the money paid out by the Treasury was counterbalanced by the necessary paying into the Treasury of an equivalent sum to retire the notes which had to be withdrawn from circulation. Outside of this, the ordinary collections of revenue have run far ahead of disbursements, and the influx of gold to the Pacific Coast centers has fallen to almost nothing beside the movement of a month ago. Receipts still exceed shipments through the direct interior exchanges, but the excess furnishes very little offset to the drain from the Treasury. Consequently, the last two weeks have witnessed a heavy contraction in the New York Clearing House reserve, which has been emphasized by moderate shipments of specie to Europe and by a further expansion in loans. The legal surplus on Saturday last was brought down to less than $6,500,000, and on Monday the leading lenders of money marked up their call rates quite generally to 6 per cent. Rates for sixty-day loans were quoted firmly at 4½ per cent, and for the longer periods up to six months 4½ per cent and 5 per cent was bid. Some relief was caused by the heavy liquidation in copper and other securities on the Stock Exchange, and by the fall in foreign exchange, which carried the rate below the level at which general engagements of gold could be made at a profit. But there is very little doubt that the money market will be very close during the remaining weeks of the year, and at the end of the month, when preparations for the enormous annual corporation settlements are being made, it is possible that borrowers on call may have to pay some figures. There is no cause, however, for the alarm which has been felt in certain speculative quarters, that any serious stringency will develop.

The Stock Market

The general stock market is dominated at the moment by the twofold uncertainty of the outcome of the copper speculation and of the immediate course of the money market. With all that has been discussed and written upon the subject of the decline in Amalgamated Copper, no one apart from the select few on the inside really know the truth. The facts, as the general public know them, are that conditions in the copper trade have for long been unsatisfactory, that dividends have already been cut to correspond to diminished profits, and that a further reduction is probable when the Amalgamated directors meet, on the 19th of this month. On the other hand, the company's shares have fallen to exactly half their valuation of five months ago, and the question logically arises whether this tremendous decline has not amply measured the fall in the financial condition, together with all reasonable possibilities of further trouble, in the affairs of the Amalgamated Company. The reason why the copper situation has such a close bearing upon the movement of the market lies not so much in the magnitude of the financial interests which control the property as in the wide distribution of the copper shares in the hands of the speculative public. The enormous losses in this quarter have naturally compelled the sacrifice of a great quantity of securities held on margin, and while there is any prospect of this liquidation being renewed, the general market position must remain a good deal unsettled. As a further cause of disturbance, there is the sudden tightening of money rates, which has been described in the foregoing paragraph. So long as the possibility remains of the local banks being forced to curtail loans in order to protect their surplus reserve, it is obvious that speculative interest in the market cannot broaden. But the two unsettling factors are manifestly of a temporary nature, and sentiment beneath the surface is still very strong that ultimately the movement of prices must respond to the remarkably favorable features of the general situation, which have a permanent significance for security values.

The rise in Manhattan Elevated reached its climax for the time being a week ago, when the quotation touched 145. Subsequently it became apparent that a strong pool, which recently has been operating in the shares, had liquidated, and that the withdrawal of their support was what led to the sudden break. Neither the extreme advance nor the ensuing relapse, however, reflected any change in the attitude of the really important owners of the stock. There is no doubt that capitalists associated with the management added largely to their holdings during the autumn, and while they did not directly encourage the violent bidding up of quotations, they have not sold out yet. Metropolitan and Brooklyn Rapid Transit have dropped back sharply as the speculative parties responsible for the recent advance have sought to realize profits.

Philadelphia

Union Traction has been the only feature in the recent dealings among the street railway stocks in Philadelphia. From 31, the quotation of two weeks ago, it rose steadily to 35 last Thursday, reacting in sympathy with the general market, however, to 33. No definite reason is assigned for the advance. The speculative gossips are busy discussing the probability of another assessment call, and are still predicting that the management will offset this action by declaring a dividend on the shares. But aside from this the possible grounds of the buying are a mystery. The market for the stock reflects the extensive accumulation of the stock, which went on at the low level of the autumn, and the comparative ease with which the price has advanced shows that the present supply is limited. Apart from Union Traction, dealings have been light, and generally unimportant. American Railways, "ex" the quarterly dividend of 1¼ per cent, is selling about where it did a fortnight ago. The increasing earnings of the company are attracting much favorable comment. Railways Company General on small sales dropped from 5½ to 5. Fairly large dealings in Consolidated Traction, of Pittsburgh, preferred, all around the one figure of 63¾, an apparently part of the operation of turning the property over to the Philadelphia Company. Only one sale of Pittsburgh common—100 shares, at 23⅜—was recorded. Other minor transactions include Philadelphia Traction at 98, United Traction of Pittsburgh preferred at 50⅞, Rochester Passenger common at 40, Consolidated of New Jersey at 67½, and Hestonville Passenger preferred at 74. Sales of bonds include United Railways 4s at an advance from 90 to 90½, Electric-Peoples Traction 4s at 98. Consolidated of New Jersey 5s at 111¼, and 109¼, ex interest, Hestonville Passenger 5s at 121, Newark Passenger 5s at 118¾, and Indianapolis 4s at 87½ up to 88.

Chicago

The decline in the shares of the surface lines which followed the franchise tax decision of a month ago appears to have run its course. City Railway is the only issue which has suffered any further loss during the fortnight. It sold down to 185 a week ago, rallied to 187, and then fell off again to 185½. Union Traction common, which sold as low as 10⅞ on Dec. 2, recovered a fraction to 11⅛ on Dec. 5, since when no sales have been reported. The preferred is heavy, but no lower, around 47. Elevated shares have held firm, but with scarcely anything doing. Northwestern preferred on small lots advanced from 88 to 90, and Lake Street was firmer at 11⅝, on the publication of the annual report, which showed a surplus of $15,000 for the year, against a deficit of $16,000 the year before. Metropolitan preferred rose on the execution of a single buying order to 91, and the common changed hands at 41. Officials of the road anticipate that when the new Douglas Park extension and the Canal Street terminal are put in operation, around Jan. 1, they will contribute 15,000 additional cash fares to the company daily. When the Garfield Park branch is completed, and connection made with the Aurora and Wheaton electric line, another large source of increased income will be opened up.

Other Traction Securities

St. Louis street railway issues have excited great interest during the last two weeks, both on the New York curb and in all the other markets where they are dealt in. St. Louis Transit, which was selling around 31 on Nov. 26, advanced to 32½ on Nov. 30, and on the succeeding days was bid up rapidly to 36⅞, the last point being reached on Dec. 4. Since that time there has been little doing, and the stock has reacted about 2 points from the top. The reason for the rise, whatever it may be, has not as yet been disclosed. But that the recent buying has been for the purpose of accumulation, and not as part of a purely speculative campaign, may be inferred from the comparatively small transactions which have accompanied the advance. United Railways, of St. Louis, preferred, rose as high as 91 on Dec. 5, but

has since reacted to 89 bid. The 4 per cent bonds have been dealt in freely around 91. The only other dealings of note on the New York curb occurred in American Light & Traction issues. The common rose 2 points to 23, and the preferred went up to 91, when the highly favorable October statement of the company was published last Thursday. Since then the stocks have attracted no attention. Quotations for North Jersey Traction securities have risen several points on gossip of a bridge to be erected across the North River, which will connect the road with the New York surface lines. Sales have been confined, however, to the local New Jersey markets. United Railways, of Baltimore, issues have continued to decline very steadily during the last fortnight, the common stock selling down from 15½ to 14½, the income bonds from 71¼ to 67½, and the 4 per cent bonds from 94¾ to 94¼. The decline is partly attributed to the unsatisfactory showing made in the recent earnings reports, and partly to the fears that Baltimore traction interests will be attacked in the coming session of the State Legislature. Other recent sales on the Baltimore Exchange include Charleston Railway 5s at 107½, Nashville City & Suburban 5s at 94½ and 94¾, Baltimore City & Suburban 5s at 114, City Passenger 5s at 108½, Knoxville Traction 5s at 98½, and Nashville common stock at 3. Massachusetts Electric common has been very weak on the Boston Exchange. From 36, where it sold two weeks ago, the stock has fallen rapidly to 31, without any further explanation than the liquidation, which has been going on all over the Boston speculative market. Massachusetts preferred is off ¾ to 93½. On the other hand, West End common is strong and higher at 95, and the preferred at 114, while sales of Boston Elevated are reported at an advance to 167. It is said that the annual statement about to be issued by the company will show a considerably larger proportion of increase than the statements of previous years. In Louisville 100 shares of Louisville Railway common sold on Friday at 107¼, a loss of a point from the previous sale. New Orleans City & Lake has sold in odd lots at 30, and 30¾ for the common, 105 for the preferred, and 109¾ for the general mortgage bonds. The Cleveland market has been very quiet during the past week.

Security Quotations

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

	1901 Closing Bid Nov. 26	Dec. 10
American Railways Company	45½	*44
Boston Elevated	165	166
Brooklyn R. T.	67½	62¼
Chicago City	188	185½
Chicago Union Tr. (common)	11¼	10½
Chicago Union Tr. (preferred)	47¼	47
Cleveland City	106	112
Cleveland & Eastern	31	31
Cleveland Electric	86½	86
Columbus (common)	45	45
Columbus (preferred)	100	100
Consolidated Traction of N. J.	67¼	67½
Consolidated Traction of N. J. 5s	110¾	†109¼
Consolidated Traction of Pittsburgh (common)	23	22¾
Consolidated Traction of Pittsburgh (preferred)	64	63¾
Detroit United	74½	75½
Detroit United certificates	a75¾	75
Electric-People's Traction (Philadelphia) 4s	97½	98
Elgin, Aurora & Southern	40	42
Indianapolis Street Railway	42	42
Indianapolis Street Railway 4s	87	87½
Lake Street Elevated	12⅛	11½
Louisville (common)	107¼	107¼
Louisville (preferred)	115¾	115¾
Manhattan Ry.	136¼	135⅝
Massachusetts Elec. Cos. (common)	35½	32
Massachusetts Elec. Cos. (preferred)	93⅞	93½
Metropolitan Elevated, Chicago (common)	40¾	40
Metropolitan Elevated, Chicago	91	90
Metropolitan Street	167¾	158½
New Orleans (common)	29¾	29¾
New Orleans (preferred)	105	105
North American	93	93½
Northern Ohio Traction (common)	..	42
Northern Ohio Traction (preferred)	88½	88¼
North Jersey	22½	24
Northwestern Elevated, Chicago (common)	a41	a38½
Northwestern Elevated, Chicago (preferred)	87	a90
Philadelphia Traction	97¼	97¾
Rochester (common)	34	40
St. Louis Transit Co. (common)	29¾	34
South Side Elevated (Chicago)	a109	a109
Syracuse (common)	26	25
Syracuse (preferred)	63	60
Third Ave.	120¼	121¼
Twin City, Minneapolis (common)	107½	106¼
United Railways, St. Louis (preferred)	87¾	89
United Railways, St. Louis, 4s	90	90½
Union Traction (Philadelphia)	31¾	33

* Ex-dividend. † Ex-interest. (a) Asked.

Iron and Steel

The general features of the iron and steel market remain about as they were two weeks ago. With the exception of certain finished materials, notably wire and nails, which have displayed some weakness, the situation is remarkably strong, with demand outstripping supply at every point. In the foundry pig trade the entire output of the furnaces is booked from four to six months ahead. Bessemer pig is sold well into January, while the scarcity of steel is so embarrassing that it has actually been found profitable to import from abroad small quantities for special transactions, and to pay the high duty. It is impossible for large orders to be filled promptly, even when premiums are offered. Regarding steel rails the *Iron Age* estimates the sales for 1902 delivery at 1,368,000 tons, exclusive of the tonnage of electric lines and the orders which will be carried over from this year. Quotations are nominally unchanged at $16 for Bessemer pig, $28 for billets, and $28 for rails.

Metals

Quotations are as follows: Copper, lake, 16⅝ cents; tin, 25½ to 25¾ cents; lead, 4⅜ cents, and spelter, 4⅜ cents.

CHICAGO, ILL.—All of the Northwestern Elevated Railroad first mortgage 5 per cent gold bonds of 1900 have been called for redemption Jan. 1, 1902, at 105 and accrued interest, at the Illinois Trust & Savings Bank of Chicago.

CHICAGO, ILL.—The Lake Street Elevated Railroad Company has filed a report with the Railroad and Warehouse Commission at Springfield for the year ending June 30, 1901. The accounts for the year and for the preceding year are as follows:

INCOME ACCOUNT.

	1900-1901	1899-1900
Earnings from operation	$782,030	$727,587
Operating expenses	379,513	370,259
Net earnings	$402,517	$357,328
Deductions from income:		
Accrued interest	$230,217	$224,070
Interest on current liabilities	47,144	37,281
Interest on real estate mortgages	1,277	1,418
Rents paid for lease of road	88,899	100,009
Taxes	17,074	11,178
Miscellaneous	2,337	.....
Surplus	$15,566	*$16,628

* Deficit.

Following is the balance sheet of June 30, 1901:

ASSETS.

Cost of road	$17,872,489
Bonds owned	308,350
Cash and current assets	41,220
Supplies and materials	1,033
Sundries	55,117
Profit and loss surplus	312,651
Total	$18,590,860

LIABILITIES.

Capital stock	$10,000,000
Funded debt	6,981,500
Current liabilities	1,589,822
Real estate mortgages	19,538
Total	$18,590,860

The period reported is not the regular fiscal year of the company, which coincides with the calendar year, but the figures given are required by the Railroad and Warehouse Commission.

LOUISVILLE, KY.—It is reported that offers for the purchase of the Louisville Railway and the Louisville Gas Company have been made. The reports are numerous and conflicting. One report states that 120 has been offered for both the common and preferred stock of the Louisville Railway, and that 115 has been offered for the Louisville Gas. The United States Traction Company, incorporated a few months ago and whose officers have refused to disclose its direct purpose, is said to be behind the deal. Among those interested in the latter company are: William de Herthern Washington and Fred. Howard Porter, of New York; Stephen D. Dennison, Gardiner W. Kimball, of Wilmington, Del.

UPTON, MASS.—It is stated that the Milford, Holliston & Framingham Street Railway Company is negotiating for the purchase of the Milford, Attleboro & Woonsocket Street Railway, and it is also said that the company is negotiating to secure control of the Norfolk county line, which runs into Dedham.

BOSTON, MASS.—The Massachusetts Electric Companies have declared a regular semi-annual dividend of $2, payable Jan. 1 to stockholders of record Dec. 10. The books will not be closed.

WORCESTER, MASS.—The Worcester Traction Company has been dissolved. The capital of the company was $460,000, and was reduced a few months ago to $60,000.

PITTSFIELD, MASS.—The Railroad Commissioners have approved the issue of $550,000 original stock asked by the Berkshire Street Railway Company.

MILFORD, MASS.—The Milford, Holliston & Framingham Street Railway Company has asked the Railroad Commissioners to approve an issue of $201,600 new stock.

MILFORD, MASS.—The Milford & Uxbridge Street Railway Company has asked the Railroad Commissioners to approve the issuance of $50,000 stock and $50,000 bonds.

AMHERST, MASS.—The Railroad Commissioners have approved an increase of $5,000 in the capital of the Amherst & Sunderland Street Railway Company.

WESTFIELD, MASS.—The Woronoco Street Railway Company has petitioned the Railroad Commissioners for approval of an issue of $75,000 twenty-year 5 per cent bonds, to take up floating indebtedness.

NEW BEDFORD, MASS.—The New Bedford & Onset Street Railway Company has asked the Railroad Commissioners to approve an increase of $200,000 in its capital, making the total $400,000, and of an issue of $300,000 in bonds.

BOSTON, MASS.—The annual report of the Boston Elevated Railway Company for the year ending Sept. 30, as filed with the Railroad Commissioners, shows:

	1901	1900
Gross receipts	$10,792,993	$10,141,209
Operating expenses	7,336,597	6,828,110
Earnings from operation	3,456,395	3,313,099
Receipts from other sources	76,503	95,784
Gross income	3,532,899	3,408,834
Fixed charges	2,896,359	2,932,840
Net earnings	636,539	476,044
Dividends	575,000	337,500
Surplus	61,539	138,544

The balance sheet as of Sept. 30 compares as follows:

Assets	1901	1900
Cost of road	$5,278,371	$2,353,955
Cost of land	3,514,928	1,803,175
Cash	636,799	7,088,536
Bills receivable	469,313	200,187
Current assets	212,010	240,010
Deposit with State	500,000	500,000
Material and supplies	604,191	215,429
Somerville Horse Railroad	102,851	102,851
West End property acount	4,026,045	2,584,628
Subway	133,061	.....
Totals	$15,486,573	$15,088,775

Liabilities	1901	1900
Capital stock	$10,000,000	$10,000,000
Vouchers and accounts	421,056	695,719
Salaries and wages	133,649	149,067
Dividends not called for	9,884	7,950
Matured coupons	35,400	31,647
Rentals due	317,975	317,975
Outstanding tickets	20,281	19,564
Notes payable	375,000	.....
Accrued liabilities	2,386,556	2,321,618
Sinking and special funds	1,323,262	1,143,262
Surplus	463,509	401,970
Total	$15,486,573	$15,088,775

DETROIT, MICH.—S. F. Angus and J. D. Hawks, chief owners of the Detroit, Ypsilanti, Ann Arbor & Jackson Railway, have just returned from New York. They deny that their trip was for the purpose of closing a deal for the sale of the road to the Everett-Moore syndicate, but, rather, they completed arrangements to make extensions to their system on plans originally proposed. It is understood, however, that negotiations are still under way for the sale of this property to the syndicate.

MINNEAPOLIS, MINN.—Twin City Rapid Transit Company has declared a regular quarterly dividend of 1¾ per cent on preferred stock, payable Jan. 2. Books close Dec. 23 and reopen Jan. 2.

MINNEAPOLIS, MINN.—The Twin City Rapid Transit Company has called and will redeem at 105 and accrued interest, after May 1, 1902, at the Farmer's Loan & Trust Company of New York, twenty $20,000 bonds issued in 1880 by the Minneapolis Street Railway Company.

MANCHESTER, N. H.—The New Hampshire Traction Company has purchased from Wallace D. Lovell, of Newton, Mass., the Exeter, Hampton & Amesbury Street Railway; Amesbury & Hampton Railway; Dover, Somerworth & Rochester Railway; Seebrook & Hampton Beach Railway; Haverhill & Plaistow Street Railway; Haverhill, Plaistow & Newton Street Railway; Portsmouth & Exeter Railway. The Haverhill, Plaistow & Newton and the Haverhill & Plaistow are under construction, and the Portsmouth & Exeter is to be constructed. The officers of the company are: W. W. Woodman, president; C. H. Tenney, vice-president; H. A. Tenney, treasurer; Samuel W. Emery, clerk.

NEW YORK, N. Y.—The Manhattan Railway Company has declared a quarterly dividend of 1 per cent, payable Jan. 2, 1902, to stockholders of record, at the closing of the transfer books on Dec. 13. Transfer books will be reopened Dec. 26.

KINGSTON, N. Y.—The Railroad Commissioners have granted the Kingston Consolidated Railroad Company the right to issue a mortgage for $700,000 and for an increase in its capital stock from $250,000 to $400,000. The company absorbed the former Colonial Traction Company, and will employ the increased capital in the purchase of the Kingston City Railway and for new construction.

NEW YORK, N. Y.—The earnings of American Light & Traction Company for October were $87,069, an increase of 32 per cent. To pay one month's dividend on the preferred stock requires $36,690, leaving a surplus for the month of $50,379; surplus for three months ended Sept. 30, 1901, after paying quarterly dividend of 1¼ per cent, $19,570, making a surplus for the four months ended Oct. 31, 1901, of $69,949.

BINGHAMTON, N. Y.—A certificate of consolidation of the Binghamton Railroad Company and the Binghamton, Lestershire & Union Railroad Company, forming the Binghamton Railway Company, was filed with the Secretary of State Dec. 6. The capital is $1,150,000, and the directors are: G. Tracy Rogers, J. B. Landfield, J. P. Clark, George E. Green, J. M. Johnson, Thomas J. Keenan, T. S. Rogers, C. J. Knapp, F. E. Ross and J. B. Rogers, of Binghamton, and J. W. Cunningham, of New York City.

CINCINNATI, OHIO.—The stockholders of the Cincinnati, Georgetown & Portsmouth Railroad have ratified the action of the directors in authorizing an increase of capital from $400,000 to $1,500,000; also the issue of $1,000,000 5 per cent bonds, the money to be spent in extending and electrifying the road. The work of electrifying the road is progressing satisfactorily. Rails are being laid, and a dam to provide water power is being constructed across Olive Branch Creek.

COLUMBUS, OHIO.—The rumor that the Everett-Moore syndicate is attempting to secure control of the Columbus Railway Company's system is being renewed with persistency. It is stated the syndicate is quietly buying up all the small blocks of stock in sight, with a view to securing the controlling interest.

CANAL DOVER, OHIO.—The Pomeroy-Mandelbaum syndicate has acquired and consolidated the Tuscarawas Electric Company and the Tuscarawas Railroad Company. The new company will be known as the Tuscarawas Traction Company, and will be capitalized at $350,000, bonds being issued for the same amount. Officers have been elected as follows: F. T. Pomeroy, President; J. A. Reutherford, of Canal Dover, vice-president; J. O. Wilson, of Cleveland, secretary, and W. A. Akins, of New Philadelphia, treasurer and general manager. The above, with Will Christy, A. E. Akins, Cleveland; George Burrows, of New Philadelphia, and Theodore Wentz, of Canal Dover, constitute the board of directors. Lines are in operation from Canal Dover to New Philadelphia, and from New Philadelphia to Uhrichsville. The former line will be extended from Canal Dover to Strasburg, giving the system 20 miles of road. F. T. Pomeroy has been inteersted in both of the acquired roads for some time.

CLEVELAND, OHIO.—The Springfield & Xenia Traction Company, heretofore known as the Little Miami Traction Company, has authorized an issue of $500,000 in bonds. The road is being built between Springfield and Xenia, and is nearly completed. Cars will be in operation in about sixty days. The bond issue is for the purpose of paying for the construction work. The road is one of the properties of the Pomeroy-Mandelbaum syndicate.

PITTSBURGH, PA.—The stockholders of the Philadelphia Company met here Dec. 4 to conclude negotiations by which all but one traction line in Allegheny County—the West End Company—will come under its control. The stockholders also voted on increasing the capital stock of the company from $21,000,000 to $36,000,000, and the authorized bond issue from $6,500,000 to $22,000,000. When the meeting had adjourned it was announced that the several propositions were unanimously voted. The new regime will begin on Jan. 1 next. Of the 375,460 shares of the company, 302,808 were voted. Separate meetings were held. The first meeting voted to increase the capital stock by $15,000,000 common shares; the second voted to issue the $22,000,000 in bonds, and the third meeting voted to approve the several leases. The Widener-Elkins syndicate did not vote its holdings for an additional director on the board. This matter was deferred until some future time. There were no changes made in the officers of the Philadelphia Company. It is said J. D. Callery will be general manager of the combination. Time for exchange of Consolidated Traction stock has been extended by the Philadelphia Company until Dec. 24.

HAMILTON, OHIO.—A letter to the stockholders of the Southern Ohio Traction Company announces that arrangements have been perfected for the consolidation of the Southern Ohio Traction Company, the Cincinnati & Northwestern Railroad, the Miamisburg & Germantown Electric Railroad and the Hamilton & Lindenwald Electric Transit Company. The anonuncement is signed by President Will Christy, of Akron, and Secretary H. C. Lang, of Cleveland. The joint capital involved is about $3,500,000.

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.
a Deficit due to strike.

Company	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Available for Dividends
AKRON, O.						
Northern Ohio Tr. Co.	1 m., Oct. '01	51,479	28,769	22,710	12,438	10,272
	1 " " '00	46 426	26,562	19,864	10,417	9,447
	3 " Sept. '01	193,833	98,904	94,929	------	------
	3 " " '00	158,379	94,977	63,402	------	------
	9 " " '01	462,800	263,361	199,439	98,973	100,466
	9 " " '00	387,972	241,782	146,190	109,786	36,404
ALBANY, N. Y.						
United Traction Co.	1 m., Oct. '01	120,823	84,091	36,733	19,901	16,832
	1 " " '00	117,301	82,489	34,815	19,901	14,914
	4 " " '01	505,041	323,061	181,980	79,604	102,376
	4 " " '00	483,918	319,764	164,154	80,028	84,126
AUGUSTA, GA.						
Augusta Ry. & Elec. Co.	1 m., Oct. '01	18,031	10,012	8,019	------	------
	1 " " '00	15,772	9,668	6,104	------	------
	10 " " '91	169,950	102,279	67,671	------	------
	10 " " '00	157,049	91,785	65,264	------	------
BINGHAMTON, N. Y.						
Binghamton St. Ry. Co.	1 m., Oct. '01	16,884	9,294	7,590	------	------
	1 " " '00	14,792	8,218	6,574	------	------
	4 " " '01	80,044	40,318	39 726	------	------
	4 " " '00	69,973	35,660	34,313	------	------
BOSTON, MASS.						
Boston Elev. Ry. Co.	12 m., Sept. '01	10,869,496	7,336,597	3,532,899	2,896,359	636,539
	12 " " '00	10,236,994	6,828,110	3,408,884	2,932,839	476,044
BROOKLYN, N. Y.						
Brooklyn R. T. Co.	1 m., Oct. '01	1,067,106	* 772,396	294,710	------	------
	1 " " '00	991,454	* 639,982	351,472	------	------
	4 " " '01	4,500,707	*3031519	1,469,188	------	------
	4 " " '00	4,217,912	*2601525	1,616,387	------	------
	12 " June '01	12,135,559	*7216008	4,919,551	4,341,748	577,803
	12 " " '00	11,768,550	*7106373	4,662,177	4,135,405	526,772
BUFFALO, N. Y.						
International Tr. Co.	1 m., Oct. '01	601,241	268,989	332,252	100,928	231,323
	1 " " '00	240,417	120,454	119,963	82,758	37,205
	4 " " '01	2,477,793	1,029,687	1,448,106	408,134	1,039,972
	4 " " '00	1,031,887	469,199	562,688	324,551	238,137
CHICAGO, ILL.						
Chicago & Milwaukee Elec. Ry. Co.	1 m., Nov. '01	12,041	5,804	6,237	------	------
	1 " " '00	9,781	5,604	4,177	------	------
	11 " " '01	159,453	68,234	91,218	------	------
	11 " " '00	131,065	53 940	77,125	------	------
Northwestern Elev.	12 m. June '01	978,766	322,645	656,121	400,693	255,428
	7 " " '00	525,023	180,452	344,571	221,553	123,018
Union Traction	12 m. June '01	8,158,809	3,942,194	4,216.615	4,058,040	158,575
	12 " " '00	8,345,748	3,761,797	4,583,951	3,979,876	604,075
CLEVELAND, O.						
Cleveland & Chagrin Falls	1 m., Oct. '01	5,128	2,368	2,760	1,362	1,398
	1 " " '00	4,125	2,936	1,189	1,004	185
	9 " Sept. '01	34,255	23,144	11.111	9,875	1,266
	9 " " '00	36,800	24,752	12,018	9,902	2,146
Cleveland & Eastern	1 m., Oct. '01	8,765	4,624	4,141	3,205	936
	1 " " '00	7,201	3,443	3,758	3,123	635
	7 " " '01	75,163	43,125	32,038	35,653	------
	7 " " '00	52,134	29,856	22,278	27,568	------
Cleveland El. Ry. Co.	1 m., Oct. '01	200,280	109,662	90,618	21,256	69,362
	1 " " '00	194,615	100,339	94,276	27,828	66,448
	9 " " '01	1,705,634	942,983	762,651	179,634	583,016
	9 " " '00	1,506,701	822,454	684,248	190,385	493,863
Cleveland, Elyria & Western	1 m., Nov. '01	21,125	12,370	8,756	4,478	4,278
	1 " " '00	15,813	11,793	4,021	3,228	793
	11 " " '01	229,853	125,768	104,085	49,253	54,833
	11 " " '00	163,674	92,993	70,681	35,503	35,179
Cleveland, Painesville & Eastern	1 m., Oct. '01	15,639	8,558	7,081	------	------
	1 " " '00	14,075	6,218	7,857	------	------
	9 " Sept. '01	124,184	63,243	60,941	54,375	6,566
	9 " " '00	106,187	49,979	56,207	54,375	1,833
CORTLAND, N. Y.						
Cortland & Homer Tr. Co.	12 m. June '01	31,624	19,857	11,767	7,297	4,470
	12 " " '00	28,925	16,927	11,998	22,129	df 1 ,131
DENVER, COL.						
Denver City Tramway Co.	1 m., Nov. '01	118,863	64,838	54,024	32,437	21,588
	1 " " '00	109,768	60,858	48,911	31,607	17,303
	11 " " '01	1,374,784	750,850	623,934	350,749	273,185
	11 " " '00	1,187,728	664,097	523,721	343,229	180,501
DETROIT, MICH.						
Detroit United Ry.	1 m., Oct. '01	267,081	* 153,504	113,577	62,388	51,189
	1 " " '00	231,417	* 131,010	100,407	55,997	44,410
	10 " " '01	2,392,922	*1291679	1,098,243	527,825	570,418
	10 " " '00	2,116,153	*1182309	933,843	511,384	422,469
Rapid Ry.	1 m., Oct. '01	31,008	* 18,747	12,261	9,470	2,792
	1 " " '00	28,912	17,176	11,766	9,692	2,074
	10 " " '01	327,216	188,602	138,614	96,695	41,919
	10 " " '00	237,761	134,583	103,178	62,032	41,146
DULUTH, MINN.						
Duluth-Superior Tr.	1 m., Oct '01	38,678	22,523	16,156	9,181	6,975
	10 " " '01	373,946	204,074	169,872	91,559	78,313
ELGIN, ILL.						
Elgin, Aurora & Southern Tr.	1 m., Oct. '01	28,578	16,964	11 614	------	------
	1 " " '00	25,270	16,984	8,285	------	------
	9 " " '01	275,504	152,904	122,600	75,000	47,600
	9 " " '00	234,125	149,851	84,274	67,500	16,774
HAMILTON, O.						
Southern Ohio Tr. Co.	1 m., Oct. '01	31,839	13,862	17,977	7,500	10,477
	1 " " '00	28,431	14,296	14,136	7,500	6,636
	9 " Sept. '01	252,892	138,324	114 568	67,500	47,068
	9 " " '00	218,846	112,023	106,824	67,500	39,324
LONDON, ONT.						
London St. Ry. Co.	1 m., Nov. '01	12,084	6,002	6,082	2,176	3,907
	1 " " '00	10,425	5,106	5,319	1,647	3,672
	11 " " '01	128,898	78,277	50,622	21,976	28,646
	11 " " '00	108,066	74,748	33,318	19,941	13,376
MILWAUKEE, WIS.						
Milwaukee El. Ry. & Lt.	1 m., Oct. '01	206,812	99,249	107,563	63,409	44,154
	1 " " '00	189,068	96,023	93,044	69,296	23,748
	10 " " '01	1,992,060	977,589	1,014,471	624,810	389,661
	10 " " '00	1,820,850	933,250	887,600	691,962	195,638
MINNEAPOLIS, MINN.						
Twin City R. T. Co.	1 m., Oct. '01	270,952	118,054	152,898	29,033	123,865
	1 " " '00	240,793	109,501	131,291	25 748	105,543
	9 " Sept. '01	2,340,165	1,068.846	1,271,318	503,273	768,045
	9 " " '00	2,102,029	981,006	1,121,023	474,801	646,222
MONTREAL, CAN.						
Montreal St. Ry. Co.	1 m., Sept. '01	182,584	------	------	------	------
	1 " " '00	161,526	------	------	------	------
	12 " " '01	1,900,679	1,251,428	649,251	------	------
	12 " " '00	1,769,908	1,122,657	647,246	------	------
NEWBURGH, N. Y.						
Newburgh Electric	1 m., Aug. '01	13,615	5,699	7,916	------	------
	1 " " '00	12,780	4,932	7,848	------	------
	2 " " '01	27,003	10,767	16,236	------	------
	2 " " '00	25,769	10,182	15,587	------	------
NEW YORK CITY.						
Manhattan Ry. Co.	3 m., Sept. '01	2,284,565	1,312,136	972,434	632,350	340,084
	3 " " '00	2,081,964	1,236,711	845,253	626,925	218,328
	12 " " '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
Metropolitan St. Ry.	3 m., Sept. '01	3,750,285	1,563,260	2,187,025	1,148,714	1,038,311
	3 " " '00	3,608,306	1,555,036	2,053,270	1,128,985	924,285
	12 " June '01	14,720,767	6,755,131	7,965,636	4,534,068	3,431,567
	12 " " '01	14,487,134	6,631,254	7,805,880	4,445,720	3,360,160
OLEAN, N. Y.						
Olean St. Ry. Co.	1 m., Oct. '01	4,630	2,145	2,485	1,814	671
	1 " " '00	4,183	1,877	2,306	1,188	1,118
	4 " " '01	21,676	9,033	12 643	6,014	6,629
	4 " " '00	19,904	8,613	11,290	5,714	5,576
PITTSBURG, PA.						
Consolidated Traction	1 m., Oct. '01	305,751	126,261	179,491	63,974	115,517
	1 " " '00	285,277	108,137	177,140	63,213	113,927
	7 " " '01	2,048,300	878,495	1,169,805	444,825	724,980
	7 " " '00	1,930,716	797,583	1,133,134	434,751	698,383
PHILADELPHIA, PA.						
American Railways	1 m., Nov. '01	73,798	------	------	------	------
	1 " " '00	61.888	------	------	------	------
	5 " " '01	418,929	------	------	------	------
	5 " " '00	373,025	------	------	------	------
Union Traction Co.	12 m , June '01	13,431,680	5.836,186	7,595,495	6,734,228	861,267
	12 " " '00	13,249,825	5,624,905	7,624,921	6,686,899	938,022
RICHMOND, VA.						
Richmond Trac. Co.	1 m , Sept. '01	20,921	15,669	5,322	3,196	2,126
	1 " " '00	20,727	10,770	9,957	3.843	6,115
	12 " " '01	218,569	139,542	79,027	38,618	40,410
	12 " " '00	203,057	108,198	94,859	37,608	57,250
ROCHESTER, N. Y.						
Rochester Ry.	1 m., Oct. '01	79,972	45,150	34,821	24,923	9,899
	1 " " '00	77,866	51,107	26,759	24,155	2,604
	4 " " '01	342,856	187,436	155,420	99,784	55,636
	4 " " '00	323,693	195,186	128,508	96,531	31,976
ST. LOUIS, MO.						
St. Louis Transit Co.	1 m., Aug. '01	509,048	------	------	------	------
	1 " " '00	505,728	------	------	------	------
	9 " " '01	3,801,409	------	------	------	------
	9 " " '00	2,657,716	------	------	------	------
SCRANTON, PA.						
Scranton Ry. Co.	1 m., Oct. '01	2,638	29,300	adf26661	------	------
	1 " " '00	48,781	34,787	13 993	------	------
	10 " " '01	507,989	295,079	212,910	------	------
	10 " " '00	504,852	298,122	206,730	------	------
SYRACUSE, N. Y.						
Syracuse R. T. Co.	1 m., Oct. '01	56,206	30,825	25,380	19,025	6 355
	1 " " '00	49,481	26,721	22,760	18,687	4,072
	4 " " '01	224,575	122,351	102,223	76,046	26,177
	4 " " '00	194,908	107,213	87,695	74,546	13,149
TOLEDO, O.						
Toledo Ry. & Lt. Co.	1 m., Oct. '01	------	54,617	60,049	37,812	22,237
	1 " " '00	101,220	52,094	49,126	34,270	14,855
	9 " Sept. '01	957,584	461,507	496,077	241,730	254,347
	9 " " '00	871,258	468,239	408,019	216,238	191,781
W. NEW BRIGHTON, S. I.						
Staten Island El	3 m., Sept. '01	80,197	42,103	38,094	27,221	10,872
	3 " " '00	78,432	46,155	32,277	27,348	4,928

NEWS OF THE WEEK

CONSTRUCTION NOTES

MOBILE, ALA.—George S. Leatherbury, Jr., has applied to the Council for a franchise for the construction of an electric railway here. The new line, if the franchise is granted, will be a direct competitor of the Mobile Light & Railway Company, recently consolidated.

BIRMINGHAM, ALA.—The Birmingham Railway, Light & Power Company has begun rebuilding its lines from Birmingham to Bessemer and from Powderly to Bessemer. The entire distance will be 19 miles. The track will be rebuilt and laid new with 70-lb. rail. The company has acquired the Bessemer power plant at Bessemer, and, it is said, will spend $250,000 improving it.

OAKLAND, CAL.—It is reported that the franchise for an electric railway between Richmond and North Berkeley secured by William G. Henshaw and A. S. Macdonald, of Oakland has been purchased by the Oakland Transit Company, or by interests connected with the company.

LOS ANGELES, CAL.—The Pacific Electric Railway Company has applied to the Council for a franchise for the construction of a system of electric railway lines to traverse the principal streets on which no lines are at present operated. The company has perfected its organization, the following officers being elected: H. E. Huntington, president; Espes Randolph, vice-president; E. B. Holliday, secretary; I. W. Hellman, treasurer.

REDLANDS, CAL.—The San Bernadino Valley Traction Company expects to have part of its extensive system of roads in operation by Jan. 1. The main line of the company connects Redlands, San Bernardino and Colton, and will be about 15 miles long. There will be several branches, the most important one extending from San Bernardino to Urbita Springs, one of the best-known health and pleasure resorts in the country. The main line will pass the Cole race track, owned by the company, and the plan is to so improve this property that it will be the principal amusement grounds for Redlands, San Bernardino and Colton. At the city line of Redlands the new road will connect with the Redlands Street Railway, and it will traverse the principal thoroughfares of San Bernardino and Colton. A siding into the Santa Fe station grounds will be constructed at San Bernardino, and the Santa Fe shops in that city will also be passed. In Colton the road will extend to the Southern Pacific Railroad station. The company will not erect its own power station, but will secure power from the Edison Company, which is now supplying power to the Los Angeles roads. The car house of the company, now under construction, is located at San Bernardino. The Illinois Steel Company supplied the rails for the road. The Brill Company is supplying the cars, and the Roebling Company is supplying the overhead material. Max French, of Los Angeles, who does most of the construction work for the Los Angeles Railway companies, is the general contractor. The officers of the company are: Henry Fisher, president; A. C. Denman, Jr., vice-president and general manager; Harvey H. Duryee, secretary; Edward S. Graham, treasurer.

ROCKFORD, ILL.—The Rockford-Belvidere Electric Railway has been placed in operation.

BLOOMINGTON, ILL.—James E. Johnson has given notice that he will shortly apply to the Council of Normal for a franchise to construct an electric railway in that city. The plan of Mr. Johnson and his associates, who are local business men, is to construct an electric railway to connect Bloomington and Normal.

CHICAGO, ILL.—Work on the Metropolitan Elevated Railroad extension is progressing rapidly. All the foundations on the Douglas Park branch are in to Fortieth Street, and the superstructure is completed almost to the main line of the Burlington Railway. All stations are well under way, and track timber and all materials have been received. It is expected that the line will be open to traffic early in January. On the Garfield Park line nearly all foundations are laid.

ELGIN, ILL.—A petition with the necessary number of voters' signatures, requiring that the matter of extending franchises of the Aurora, Elgin & Chicago Railway in Elgin be submitted to a vote of the people, has been submitted to the City Council. This is the result of an agitation of the Trades Council in favor of 3-cent fares in the city of Elgin.

CHICAGO, ILL.—J. Hamilton Farrar has presented a scheme for placing street railway tracks under glass sidewalks along each side of the street.

WABASH, IND.—The Wabash River Traction Company, operating between Wabash and Peru, will shortly begin the construction of an extension to Logansport, a distance of 20 miles. The extension will probably be built by C. W. Blakeslee and Sons, of New Haven, Conn., who are financially interested in the company.

EVANSVILLE, IND.—The Evansville & Mt. Vernon Railway Company has been incorporated, with a capital stock of $10,000, to construct an electric railway from Evansville to Mt. Vernon, extending through Vanderburg and Posey Counties. John E. Anderson, D. P. Leonard, of Mt. Vernon; John S. Conlin, of Evansville; A. D. Jones, of Howell; George Ford, of New Harmony are the incorporators of the company.

CORAOPOLIS, IND.—The Coraopolis & Monaca Electric Railway Company has succeeded in securing all the franchise for its proposed line, and grading has been begun. The road will be constructed partly on private right of way and partly on the Beaver Road. A list of the franchises secured by the company follows: Monaca, Allegrippa and Colonia and the townships of Moon, in Beaver County, and Moon, Crescent and Hupinsell, in Allegheny. The officers of the company are: Joseph A. West, president; C. I. McDonald, vice-president; William M. Beach, treasurer; H. W. Klein, secretary; Joseph A. West, Henry C. Fry, H. W. Klein, William M. Beach and C. I. McDonald, directors.

MUNCIE, IND.—E. P. Roberts & Company, of Cleveland, are closing contracts for the construction and equipment of the Muncie, Hartford & Fort Wayne Railway, for which they are consulting engineers. Last week contracts were closed as follows: Chase Construction Company, Detroit, grading and overhead work; C. & G. Cooper, of Mt. Vernon, Ohio, two 750-hp cross-compound condensing engines; the Sterling Company, of Chicago, three 300-hp boilers; General Electric Company, two 500-kw, three-phase generators, rotaries, static transformers, switchboards and car motors. Bids have been called for eight passenger coaches and one work car. The cars will be equipped with four 50-hp motors. For the present the road will be constructed between Muncie and Montpelier, a distance of 30 miles, all on private right of way. The officers of the company are: S. M. Hexter, of Cleveland, president; A. J. Johnson, of Muncie, vice-president; J. C. Gilchrist, of Cleveland, treasurer; W. E. Hitchcock, of Muncie, secretary. The officers and F. A. Osborn and S. A. Scheuer, of Cleveland, constitute the board of directors.

DES MOINES, IA.—The Des Moines City Railway Company has completed the extension of the University line to Waveland Park, a distance of one-half mile.

DES MOINES, IA.—The Interurban Railway Company has secured deeds for the right of way of the extension from this city to Colfax, between Des Moines and Altoona, a distance of 6 miles. It is hoped to secure deeds for the remaining distance of the line some time this month.

CEDAR RAPIDS, IA.—The Cedar Rapids, Iowa City & Southern Railway Company has been incorporated, with a capital stock of $100,000, to construct a steam or electric railway between Cedar Rapids and Iowa City. The officers of the company are: William G. Dows, president; William J. Greene, vice-president; Isaac B. Smith, secretary and treasurer. The officers constitute the board of directors, and their place of residence is Cedar Rapids.

DES MOINES, IA.—The railroad committee of the City Council reported Dec. 2 that the promoters of the electric railway from Des Moines via Colfax to Marshalltown refused to comply with the conditions stipulated in the ordinance which the committee had presented to the Council, modifying the ordinance submitted by the promoters themselves. In the ordinance submitted by the committee a provision had been made for the company to pay into the city treasury the sum of 2 per cent of the gross receipts annually. The promoters of the electric railway refuse to consent to the 2 per cent tax, contending that they ought not to pay any more for franchise rights than is paid for the franchise held by the Des Moines City Railway Company. On Dec. 3 the City Council instructed the railroad committee by resolution to give no further attention to the new street car franchise until the proposition of 2 per cent on the gross receipts of the company is complied with. The promoters of the new line now propose to circulate petitions among the people, and thus secure sufficient signatures to force the City Council to submit the question of a franchise to a vote of the citizens of Des Moines. They want a twenty-five-year franchise to operate a street railway in Des Moines, and are desirous of obtaining this franchise without giving any concessions in return. Surveys are now being made between Des Moines and Colfax for the proposed line.

LOUISVILLE, KY.—A meeting of the directors of the Louisville & West Point Electric Railway, which proposes to construct an electric railway from Louisville to West Point, was held here a few days ago. After the meeting it was announced that arrangements for building the line were being perfected, and that a site for the power house had been obtained at Meadowlands. The line will be built over a private right of way, all of which has been secured. A. J. Turpin is vice-president of the company.

LEXINGTON, KY.—The Georgetown & Lexington Traction Company has filed amended articles of incorporation with the Secretary of State. The capital stock of the company has been increased from $5,000 to $250,000. The incorporators of the company as set forth in the articles are: Y. Alexander, of Brooksville; William Adams, B. D. Berry, A. S. Rice, of Cynthiana; H. P. Montgomery, of Georgetown; Gay W. Mallon, of Cincinnati, Ohio.

LEXINGTON, KY.—The Blue Grass Consolidated Traction Company, with a capital of $7,000,000, has just been incorporated by H. C. Beatty, George B. Davis and H. B. Davis, of Detroit; C. B. Knapp, Jr., of Chicago; W. J. Loughridge, Hal P. Headley, M. C. Alford, of Lexington. The purpose of the company is to construct electric railways from this city to eight or nine surrounding county seats. The company will absorb the Blue Grass Traction Company, which has secured the necessary franchises for constructing the projected lines.

LOUISVILLE, KY.—The Louisville, Anchorage & Pewee Valley Electric Railway has been completed and placed in operation. The new road is the first of several projected suburban lines to be completed, and the traffic that has been enjoyed since the inauguration of the service has been most gratifying. The company has obtained entrance to the city over the lines of the Louisville Railway Company, the connection being made at Crescent Hill.

DANVILLE, KY.—The Danville Electric Power & Railway Company has been incorporated to construct an electric railway to connect Danville, Junction City and Shelby City. The new line will be 8 miles long.

NEW ORLEANS, LA.—Franchises granting the Orleans Railroad Company permission to build 5½ miles of new line are now pending before the City Council.