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Advertising of Interurban Electric Railways

Advertising of interurban, and even of city electric railways, is now becoming so general and so much thought is being given the preparation of attractive folders and other advertising matter that it is the belief of the editors of the STREET RAILWAY JOURNAL that it would be of value to those in charge of advertising of interurban roads in one part of the United States to know what those in other localities are doing. A great many excellent and original ideas in the advertising of interurban roads may be found in different parts of the country, but because of the necessarily local circulation of the advertising matter of an electric railway, the advertising men of roads in other parts of the country seldom see what their distant brethren are doing. It is with the hope that some helpful ideas in this class of advertising will receive greater circulation that the STREET RAILWAY JOURNAL will, from time to time, reproduce as nearly as possible pages from the most attractive or striking advertising folders, timetables or other matter published by various electric railways over the country, together with such comment as may seem advisable to make clear the local conditions under which the advertising matter is published, and to call attention to the principles of advertising exemplified in the matter reproduced. Unfortunately, it is not possible in the pages of technical journals of this kind to reproduce timetable folders in the original colors, and much of the effect is therefore lost in some cases; but even if the full effect is not obtained from the reproduced pages, sufficient idea will be given of the nature of the advertising matter so that those interested can write to the company publishing the matter and obtain the originals if desired.

A set of folders issued by the Aurora, Elgin & Chicago Railway is published elsewhere as the first of the series of advertising literature alluded to.

Manhattan Report

The annual report of the Manhattan Railway Company, which was published in our last issue, contains some statistics that cannot fail to be of interest to those who are studying the transportation problems of New York. During the year the company carried 223,427,283 passengers, as against 194,152,316 in 1901, showing an increase of 29,274,967 in twelve months, and 2,020,086 over the best previous year in the history of the company. The increase in the gross receipts during the last year amounted to \$1,447,182, while the operating expenses for the corresponding period were increased only \$216,746, although the cost of fuel had advanced considerably during the year. This improvement is attributed to the introduction of electricity, and it is confidently predicted by the management that a much better showing will be possible next year after the entire system is electrically equipped. April 1, 1903, is named as the extreme date, when, in the opinion of the management, the last locomotive should be discarded on the L roads of New York. In the meantime the gradual transformation will be accomplished with as little inconvenience to the public as possible, and without disturbing traffic conditions any more than is absolutely necessary. It is not to be expected, of course, that a system carrying nearly a quarter of a billion passengers annually can make such a radical change as that of substituting electricity for steam locomotives on its lines with absolutely no confusion or interruption whatever, yet the record of the Manhattan in this respect approximately attains this result.

An examination of the reports of the last ten years suggests the thought that even with the improved facilities of the Manhattan Company the capacity of the present elevated system must soon be reached if the present rate of growth is maintained in the Harlem and Bronx districts. Previous to last year, as has already been noted, the highest passenger movement was reached in 1893, when 221,407,197 passengers were carried. In this period the reports show the following totals by years: (1893) 221,407,197, (1894) 202,751,532, (1895) 187,614,958, (1896) 184,703,639, (1897) 182,904,851, (1898) 183,360,846, (1899) 174,342,575, (1900) 184,164,110,

(1901) 194,152,316. The drop recorded in 1894 was due to the introduction of improved methods on the surface lines. With the betterments in this service much of the short haul traffic was diverted from the elevated to the surface system, but of late years the increase of population in the outlying districts has more than offset this loss, and the reports have been very favorable. The remarkable showing in the elevated passenger movement last year is due partly to the uptown movement of population, and the growth of the districts too remote from the business centres to be quickly reached by surface lines, but the fact must not be overlooked that much of the gain must be attributed to the progress in the substitution of electricity for locomotives, thus giving new and more comfortable cars, better lights, longer trains, higher speeds, and a much better provision for the public comfort in every way than was possible with steam locomotives. The extension of these improvements to the entire system will doubtless result in further gains. It is a significant fact that even the partial electrical equipment of the system has resulted in a reduction of the operating expenses (exclusive of all taxes) from 55.38 in 1901, to 50.10 in 1902.

Interurban Terminals

On another page of this issue will be found a reference to the traffic arrangement just in force between the Boston Elevated and the Lexington and Boston companies, whereby the cars of the latter are now run through from Lowell, Mass., to the Sullivan Square terminal in Charlestown. Up to the present time the only foreign cars to enter Boston have been, as far as we are aware, those operated on the Scollay Square loop of the Boston Subway by the Lynn and Boston branch of the Massachusetts Electric Companies. The new line soon to be operated by the Boston & Worcester Street Railway Company will also bring foreign cars into Boston, the plan being to terminate the route at the Park Street subway station, which is the traffic focal point of the entire Boston Elevated system.

It is evident to the most casual student of transportation that the terminal facilities thus to be enjoyed by these roads, with their superb transfer privileges, and provision for protection against inclement weather, are no small advantage when their influence upon traffic is considered. No progressive manager can well afford to ignore the problem of adequate terminal accommodations, as the speeds of interurban roads climb steadily up to the level of steam railway practice. It is manifestly impossible for many roads to make much terminal provision unless their resources are considerable, but it must be borne in mind that some kind of terminal facilities is almost indispensable to any road which has the comfort of its patrons under consideration. Many of the street railway waiting rooms, which to-day abound in cross-country trolleying, are quite unfit places for ladies, and children to wait for cars, and offer comparatively unattractive shelter from the storms and wind of a rainy day.

In our issue of Aug. 30, 1902, there was described a large interurban terminal station which has been built in Cincinnati. While many roads are utterly without the means to build and operate such a station as this, or are geographically unable to secure such terminal facilities as the lines centering in Boston are about to enjoy, we feel assured that it is within the power of every electric interurban railway worthy of the name, to provide suitable, clean, well lighted, sheltered and protected waiting rooms for the benefit of its passengers, who are to travel from city to city over its lines. It is a fortunate line, indeed, which can secure accommodations like these in Boston and Cincinnati.

Some of the greatest advantages enjoyed by the present steam railways are the terminal facilities which have been erected at large expense, and as the days of electric suburban equipment of steam roads approach, the electric railway manager who provides waiting places, rooms or some sort of terminal accommodations, modestly suitable to the needs of his road's patrons, is going to gain traffic which would otherwise be lost to the electrically-operated steam road, and not be left behind in the march of transportation progress.

High Speed on Electric Lines

Car No. 18 of the Lake Shore Electric Railway, which has several times been referred to in these columns by reason of its speed performances, recently made a run from Cleveland to Toledo which proves conclusively that electric interurban roads are fast approaching a stage of perfection which will enable them to compete with steam roads for long-distance traffic. The running time from Cleveland to Toledo for the Lake Shore (steam) trains is three and one-half hours. The road is famous as being one of the finest in the country, and the fast trains make but one stop in the 110 miles. The Lake Shore Electric takes a longer route, nearly 120 miles, and passes through the centers of a dozen large villages and towns where high speed is impossible. Added to this handicap are the facts that the road is practically new, much of it unballasted and that it requires forty-five minutes to follow the city cars out of Cleveland and twenty-five minutes into Toledo. Yet the actual running time for Car 18, on the run mentioned, was three hours and twenty-two minutes. The car was a special and was heavily loaded with a party of Eagles returning from a convention in Cleveland, but it made remarkable time between certain points. The run from Bellevue to Clyde, 8 miles, was covered in nine minutes, and the next 8 miles, to Fremont, in ten minutes. Between Monroeville and Norwalk the running time was slow, owing to the present unsatisfactory condition of the track. The run out of Cleveland, 7½ miles on city tracks, took twenty-two minutes. The car which made the Toledo-Cleveland run on the previous day was equipped with the standard Lake Shore equipment of four 75-hp motors, and its elapsed time was four hours, including a thirty-minute stop at Norwalk. No. 18 has four 125-hp motors, with multiple-unit control. It is now proposed to cut the regular schedule down to four and one-half hours, and possibly to four hours, when improvements now under way are completed. This will certainly be a radical innovation.

Coincident with the performance at Cleveland the announcement is made from Berlin that recent experiments with electric trains on the Zossen-Berlin military railroad have resulted in demonstrating that a speed of 75 miles an hour can be maintained without destructive wear of motors or roadbed. It is not known whether the results referred to were obtained with the Siemens & Halske locomotive, described in these columns Nov. 8, but it is stated in the despatches that the motors were modified preparatory to the tests just held, and this would seem to indicate that the new electric locomotive had been tried. It is added, however, that the trials have been suspended in order to change the machinery and the roadbed further.

New Transfer System of the Chicago Union Traction Company

The Chicago Union Traction Company put in operation a new system of transfers Nov. 16 which enables a passenger to ride from any point on the North Side and West Side of Chicago to any other point without limit to the number of transfers, provided he does not attempt to travel back toward the point from which he started. This transfer system was adopted in compliance with the recent decision of the Illinois Supreme Court, which has been previously noted and commented upon in these columns. The problem before the management of the Chicago Union Traction Company was to provide practically a universal transfer system, but to prevent a person from making a round trip from one point to another and back again on one fare.

The transfer which has been adopted is illustrated and explained on another page. It has the merit of simplicity and involves little labor in punching on the part of the conductor. It is one thing for a transfer system to be theoretically perfect without a loophole for misuse, and quite another to be practically so simple as well that fraud or misuse will be easily detected by the conductors and auditing department. An elaborate transfer ticket, no matter how refined in theory, is sure to open the door to abuses in heavy city traffic, where conductors have time neither to punch such a ticket nor to examine it minutely upon acceptance. The simplicity of

the Chicago transfer is therefore admirable, considering the conditions under which it is used, and as long as the transfers are properly punched and examined before acceptance by the conductors there is no opportunity for abuse of the transfer privilege.

The principle of the system is that when once a passenger has established his general direction of travel he cannot change that direction. The transfer slip given passengers on the West Side, for instance, bears the names of the West Side lines. On the North Side a different slip is used, containing the names of North Side lines. The placing of all the lines on one transfer slip would make too crowded a transfer. Besides, since the issuing line only is punched on a transfer there is no necessity of having all lines enumerated on one slip. When a passenger paying a cash fare asks for a transfer he is given one upon which the hour, route and direction of travel of the car at the time the transfer was issued are punched. The date is printed on the ticket and the conductor stamps his badge number upon it, opposite the date line. The direction is punched in one of the four spaces at the top, adjacent to the date line, and also in the space reading "for cash to any intersecting line." The operation of the system is fully explained in the company's instructions to the conductors, which are printed elsewhere in this issue, together with sample tickets. Transfers are issued at the time fare is paid.

A strict compliance with the plan as described permits a passenger to make a zigzag course from one side of the city to another, but there is always the check of the direction punched on the previously issued transfer to prevent him from going back in the direction from which he came.

There are special cases where a passenger might need to travel in the direction in which he started for a short distance, in order to reach a given point on the opposite sides of a rectangle, where the cross-town lines are not frequent. In such a case he is given a "special" transfer, which is the regular transfer slip punched in the space reading "special," and showing the direction in which it is good. These tickets are good going back toward the direction from which the passenger originally started, but are good for passage only to the next intersecting line.

The working of the new plan will be followed with interest by street railway men generally, as the conditions in Chicago are not at all favorable to a universal transfer system. The effect on the receipts of the company will also be carefully noted.

The Union and the National Guard

One result of the strike on the Hudson Valley Railway lines, the expulsion of William Potter, of Schenectady, from the Painters and Decorators' Union because he was a member of the militia, has attracted wide attention during the last week. The immediate reason for this action was the fact that Mr. Potter was a member of the company which was called out last month to protect the property of the Hudson Valley Railroad Company during the recent strike on that road, so the incident possesses an unusual interest from a railway standpoint. There is a State law which provides a severe penalty to any employer who discharges an employee for doing jury duty or belonging to a labor union, but there seems to be no statute by which the persons responsible for the expulsion of a member of a union for serving the State in the militia can be reached. Nevertheless, the offense is one which is a most serious offense against the safety of the State, and one which constitutes at the same time a defiance of the right of the State lawfully to protect property.

As may be imagined, the act of the Schenectady union is being denounced by the reputable press of the country and all right-minded citizens. Nevertheless, a few representatives of labor unions are quoted as justifying the action and as being opposed to members of trades unions joining the National Guard. They do not openly come out in defense of riot, but their sentiments admit of no other construction. If a member of a trades union is debarred from joining the National Guard, it simply means

that the unions favor disorder and the destruction of the property of those who will not be governed by any arbitrary fiat which they may issue. This is very much farther than most labor leaders have ever gone before. Even the most radical, when it has served, or has seemed to serve, their ends, have at least openly taken the ground that they disapprove of unlawful acts, and that all disorder is generally performed by persons outside of the union. But the action taken by the union at Schenectady conclusively proves that those who are responsible for it, at least, are willing to go on record as enemies of the State itself.

It is said that under the present laws of the State of New York action of this kind cannot be punished as treason, although it is somewhat difficult to imagine how a more treasonable act could be committed by a body of citizens than the expulsion of a member because he obeyed the laws of the State and volunteered for its defense, except, possibly, that of actually levying war upon it. The labor leaders have tried the patience of the public on more than one occasion, almost to the snapping point, and they should take warning. The American public is very good natured, too much so sometimes, and is too apt to give its sympathy to the "under dog," whether the canine deserves any sympathy or not. But when the dog proceeds to bite everybody within a radius of half a mile it does not take long for the bystanders to conclude that he has hydrophobia and should be despatched with the least possible delay.

The Schenectady Boycott

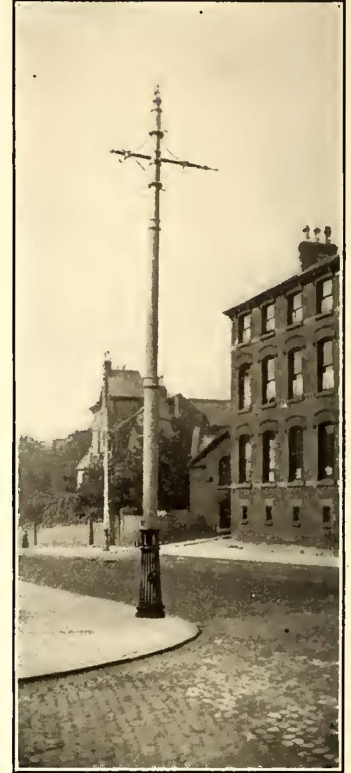
Coincident with the Potter incident, the Schenectady trades unions have further distinguished themselves by declaring a boycott against the Schenectady Railway Company. This company employs about 250 motormen and conductors, who are perfectly satisfied with their work, and who do not want to form a union. This, however, did not satisfy the committee of the Trades Assembly, and to compel the railway company to force the employees to form a union a boycott was instituted Nov. 18 against the railway. The anomalous condition is thus presented of organized labor declaring war against a body of men who have no dispute with their employers, for the sole purpose of dragging them into a union for which they have no use. The threat is made that if any union workman rides on the cars he will be expelled, and if they are patronized by trades people the latter will lose their union custom. An effort has even been made to compel the City Council to cancel a contract made with the railway company for street lighting, as punishment for not bringing pressure to bear upon the employees to give up their freedom.

The reports of the boycott, as we go to press, indicate that it will fail as dismally as it was fated to, and as it should, on account of the absurd grounds upon which it was instituted. Attempts of this kind and of the nature indicated by the attack on the National Guard in the Potter incident do more to put back the interests of labor, and even of the unions themselves, than can be recovered in a good many years. The cause of labor has had no greater enemies than its own leaders. Made seemingly great by a little brief authority, and having no sense of responsibility, the president or governing officers of a labor union are more than apt to assume some absurd position which they cannot possibly sustain, and so are ignominiously defeated. A reform will not come until the men themselves recognize the fact that they must elect as executive officers men who have a profound sense of the responsibility of their office, who are loath to take any position which is not fundamentally sound, which does not interfere with the rights of others, and which will be sustained by the public, who will, in other words, exercise the same caution, conservatism and regard for contracts as would be exhibited by the management of a large business corporation. These qualities cannot be found in the radical, frothy minority which now usually dominates the councils of a trades union and secures control of all the principal offices.

Nottingham Corporation Tramways

In the STREET RAILWAY JOURNAL for May 4, 1901, a short description was published of the plans of the Nottingham Corporation for the conversion of its tramway system to electric

in every 60-ft. length of rail two cross anchors, each 2 ft. long, placed at right angles to the rail and bolted to the bottom flange of it by two 7/8-in. bolts. The joint rail and the cross anchors are carefully laid with 6 ins. of concrete underneath and around them, and the fine bedding is carefully rammed under, so as to make a thoroughly sound bed. The object of the cross anchors is to



SIDE BRACKET, CENTER AND SPAN POLES

traction. At that time only one section had been opened—from the Market Place to Sherwood—which consists of 2 1/8 miles of double track. This section was opened for traffic on Jan. 2, 1901. A second section, of about 4 1/4 miles, was put in operation on July 23, 1901, and other sections have been added to the system, which now includes about 30 miles, measured as single track.

The first two sections were laid with the rail and joint, described in the issue of May, 1901. An alteration was made in the other sections, and the accompanying engraving shows the section of rail now being used. The rails weigh 107 lbs. per yard, and are in 60-ft. lengths. The groove in the rails, as shown, is 1 1/8 ins.

guard against the creeping of the rails, especially on the steep inclines which are so frequent in Nottingham. Lock nuts are used throughout. Great satisfaction has so far been expressed as regards the use of the anchor joint plates; they give a much easier running joint than with the ordinary sole-plate.

The paving consists mainly of 6 ins. x 3 ins. granite blocks, the greater portion of which were obtained from the Leicestershire quarries, but Norway and Aberdeen granite blocks have also been used. A considerable quantity of Jarrah and Karri wood paving has been laid down in some of the main thoroughfares in the center of the city.

The tramways committee has adhered principally to the double-



EXTERIOR OF BULWELL CAR HOUSE



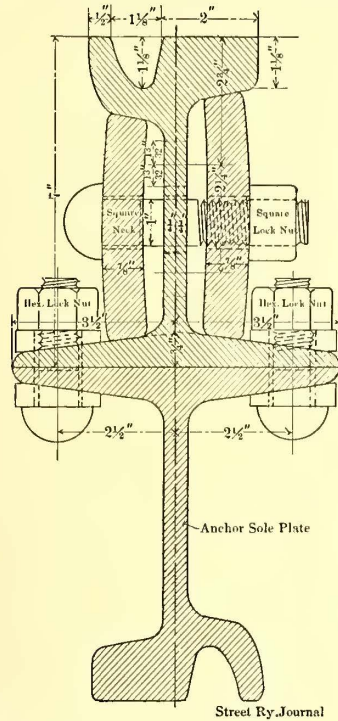
EXTERIOR OF TRENT BRIDGE CAR HOUSE

wide and 1 1/8 ins. deep. The fish-plates weigh 77 1/2 lbs. per pair, are 31 ins. long, and are secured to the rail by eight 1-in. bolts. The joints are fitted with Cooper's patent anchor joint plates, which, as shown in the section, consist simply of a piece of rail 30 ins. in length, inverted and secured to the bottom flange of the rail by eight 7/8-in. bolts. In addition to this joint brace there are

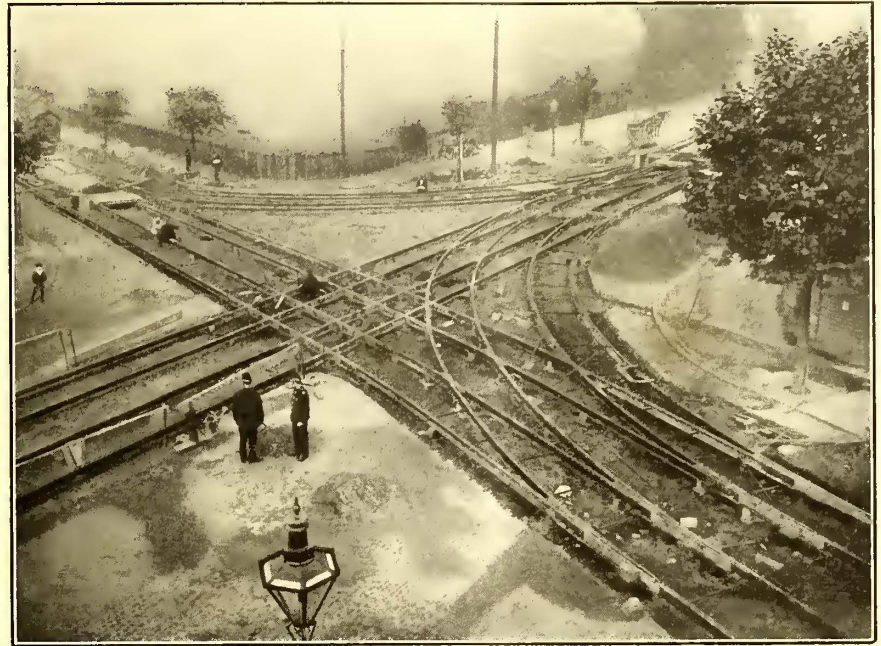
deck, single-truck car, with the reversed stairway, as built by the Electric Railway & Carriage Works, of Preston. The single truck was adopted in consequence of its being well known as a good hill climber, as some of the grades in Nottingham are from 7 per cent to 9 per cent. Owing to a popular demand for eight-wheel cars, however, an order was placed for sixteen of this type,

with maximum traction trucks, with only two motor equipments to each car. Six of the cars were put on the road, but with a greasy rail they often became stalled on moderate grades, or say one of 4 per cent, and it was not an unusual sight to see one of these cars, unable to proceed, being compelled to wait to be pushed along ignominiously by a well-filled four-wheel car. It was then decided to change the equipments of the remaining ten cars to have equal-wheel double trucks and four motor equipments. This work is being carried out by the British Westinghouse Company, and it is hoped that these cars will mount any

shops forming the Trent Bridge Depot, shown herewith, were completed in May of this year, and altogether form a very convenient and imposing set of buildings. The car house proper is 266 ft. long and 126 ft. wide, and contains spaces for eleven tracks and accommodation for from eighty to ninety cars. The steel roof is in three spans, the center one being 54 ft. 8½ ins., and the two side spans 36 ft. ¾ in.; the height from rail level to springing of roof is 21 ft. 6 ins. At the front there are nine entrance openings for cars, fitted with the B. & S. Folding Gate Company's revolving shutters. On the right-hand side on enter-



SECTION OF JOINT



SPECIAL WORK, CORNER OF LENTON BOULEVARD AND DERBY ROAD

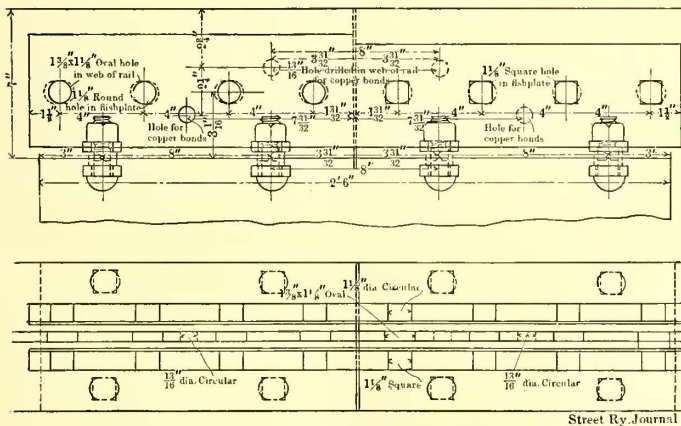
hill in Nottingham in any weather. All the eight-wheel cars are fitted with the Newell magnetic brakes, and so far this brake has exceeded all expectations. The seating capacity of the eight-wheel cars is seventy-four persons.

The British riding public shows a decided preference for double-deck cars, as passengers have the option of traveling either inside or outside, as weather permits, and the upper deck provides accommodation for smokers, who form a good proportion of the riding public.

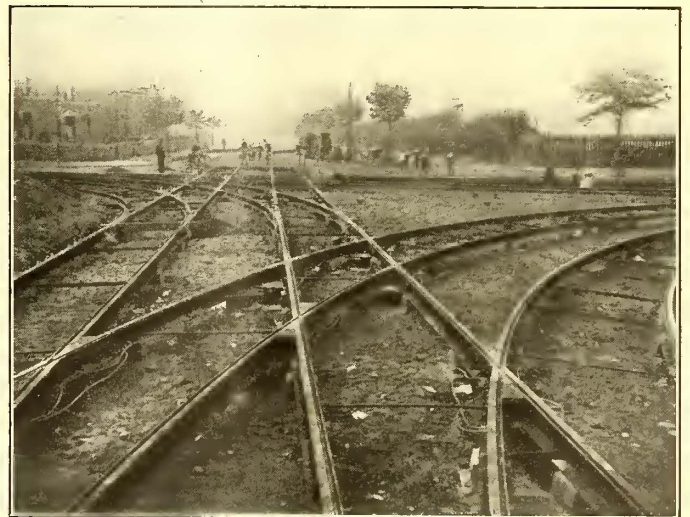
The poles and fittings have been supplied principally by Spencer & Co., of Wednesbury. The Mannesmann Tube Company sup-

plied some poles, and R. W. Blackwell & Co. have also supplied some poles and fittings. Where the road is sufficiently wide center poles have been adopted, as shown in one of the engravings. Elsewhere span and single bracket construction has been employed.

The car house at Sherwood was illustrated in the previous article; another car house has been erected at Bulwell, which is 284 ft. long and 77 ft. wide, and will accommodate forty cars. This building was built in remarkably quick time, only twelve weeks being occupied in its construction. The car house and repair



PLAN AND SIDE ELEVATION OF JOINT



END VIEW OF LARGE SPECIAL WORK

shops forming the Trent Bridge Depot, shown herewith, were completed in May of this year, and altogether form a very convenient and imposing set of buildings. The car house proper is 266 ft. long and 126 ft. wide, and contains spaces for eleven tracks and accommodation for from eighty to ninety cars. The steel roof is in three spans, the center one being 54 ft. 8½ ins., and the two side spans 36 ft. ¾ in.; the height from rail level to springing of roof is 21 ft. 6 ins. At the front there are nine entrance openings for cars, fitted with the B. & S. Folding Gate Company's revolving shutters. On the right-hand side on enter-

ing the building is a two-story office, and on the left-hand side a mess room and conveniences for motormen and conductors. At the other end of the building is a transfer table. All of the track space is "pitted," and is admirably adapted for its purpose. Adjoining the car house is a repair shop for motors, etc., 120 ft. x 63 ft., roofed over in two bays, each 31 ft. 6 ins. span. The height from the rail level to springing of roof is 24 ft. 6 ins., and 19 ft. from rail level of shop to rail level of traveling cranes. There are two tracks in the shop, "pitted" so as to give access underneath the cars. The repair shop contains the following machinery: Two 5-ton electric traveling cranes, hack saw, vertical and radial drills, lathes, emery wheel, wheel grinding machine, shaping machine, wheel borer and wheel press. The machinery in the repair shop will be driven by two motors, and the shop is fitted with an oven heated by gas for drying armatures, etc.

The carpenter shop is 66 ft. long x 32 ft. wide. It contains two

tracks, and is equipped with the necessary woodworking machinery for economically dealing with repairs and maintenance of cars. It is not the Corporation's intention at present to undertake the building of cars. The paint shop is the same length as the carpenter shop, but is 27 ft. 9½ ins. wide, and has also two tracks. This, as well as the carpenter shop and repair shop, is well heated with hot-water pipes. A blacksmith's shop with two

principle of having one huge car house to hold all the cars in use, but to have three or four at points near the termini, where land is cheap, and so that a large proportion of the cars can start their journeys immediately on leaving the house, and not have to run empty for miles before they commence carrying passengers.

The traffic carried on the tramways has exceeded all anticipations. Until the sections are all completed and opened for traffic it is impossible to say what the possibilities are as regards the tramways undertaking; it may be said, however, that for the fifty-two weeks ending March 31, 1902, 16,170,613 passengers were carried, and the total income was £78,753. The passengers carried per week usually number about 450,000, or about twice the population, and it is the hope of those interested in tramway management that when the system is fully completed at least three times the population will be carried in one week. During the week ending Oct. 9 the number of passengers carried was 628,302. So far, as the result of having a good road and good management, there have been few accidents. For nine months the cars have run without one single case of derailment.



INTERIOR OF BULWELL CAR HOUSE

forges adjoins the repair shop, with convenient access from one to the other. In the blacksmith's shop is the boiler for heating the building, and adjoining this shop is the sand drying furnace.

At the back of the repair shop are situated the stores. On the ground floor there are two store rooms, each 31 ft. 6 ins. x 30 ft. On the upper floor there is another store room 31 ft. 6 ins. x 30 ft. There are also oil stores, salt stores, carriage house, cart shed, stable for three horses and a residence for the superintendent in charge of the depot.

The comforts of the men when off duty have been carefully and considerably looked after. Over one of the ground floor stores before mentioned there is a recreation room, supplied with papers,

present time is 1¼d. per unit. The amount now required is about 50,000 units per week.

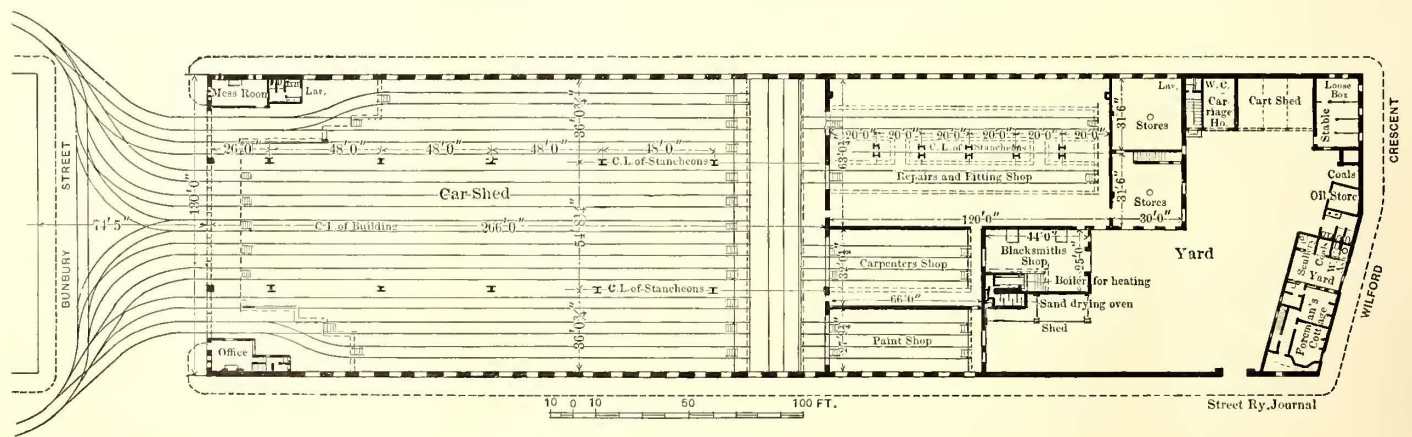
The new station is situated in a fairly central position, the site being chosen on account of its accessibility. The area is about 7520 square yards, only about half of which is occupied by the buildings about to be described.

The buildings were commenced in November, 1900, and were practically completed by October, 1901. The chimney, however, was not completed until early in January of this year.

The boiler house is a very commodious room, 239 ft. 6 ins. long, 53 ft. wide, and is 25 ft. high to the springing of the roof. The principals are of steel, and are 11 ft. 7 ins. and 10 ft. 7 ins. centers.

POWER STATION

The power for the tramways up to the beginning of August, 1902, was supplied from the electricity station in Talbot Street. As the demand for electric light and power for ordinary motors was so rapidly increasing this was only a temporary expedient until a new power station could be completed and equipped. This station will provide not only the power for working the electric tramways, but will also be used for the supply of current for ordinary lighting purposes, and is under the control of the electricity committee. The charge made to the tramways committee for current at the



PLAN OF TRENT BRIDGE CAR HOUSE

books, chess, draughts and other games, and over the carriage house and cart shed is an exceedingly well arranged and lighted billiard room to hold two full-size tables with benches on one side. It is believed that these rooms are very much appreciated by the men.

The whole block forms a group of buildings which show that they have been carefully planned and thought out, and are a credit to those who have been connected with the work. The buildings do not display any undue or lavish expenditure of money to obtain architectural effect, but are plain and substantial. There is also a yard of large area, in which stores of rails, etc., can be kept.

The tramways committee of Nottingham has not adopted the

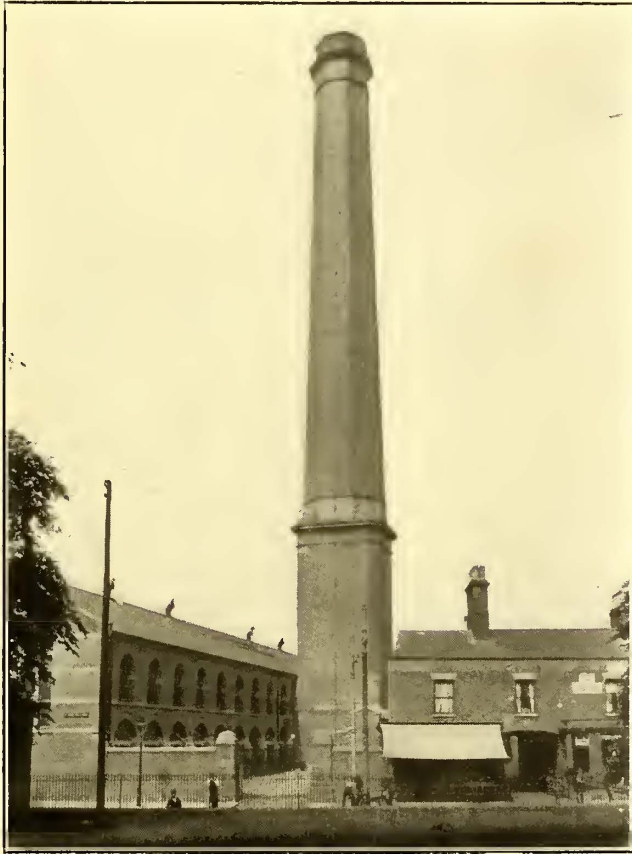
The whole of the interior walls, where exposed, are faced with glazed bricks. At present eight boilers only are being installed (or half the capacity of the house). These boilers are each 30 ft. long and 8 ft. diameter; they are designed for a working pressure of 160 lbs. per square inch, and have been supplied by Yates & Thom, of Blackburn. The boilers are equipped with Vicar's mechanical stokers, with elevators and automatic conveyors to feeding hoppers, and the coal is not handled after being tipped into the pits in which the elevators work. The boilers are fed by Weir's pumps, through a Berryman heater, which is capable of heating 4000 gals. of water per hour from 60 degs. to 212 degs. The economizer was supplied by E. Green & Sons, Ltd., of Manchester, and contains 256 tubes, arranged in two sections. The

scrapers are driven by an electric motor. The feed water is always delivered to the boilers about 212 degs. temperature. There is space in the boiler house for eight more boilers, with feed pumps, heater and economizer of the same capacity as arranged for the eight boilers already fixed.

Provision is made for water storage in case the water from the mains is cut off for a few hours, by means of an underground tank with arched top, 60 ft. long x 9 ft. wide, and 15 ft. to summit of arch. This tank has a capacity of about 50,000 gals.

The chimney is a very fine structure, 220 ft. high from ground level, and 252 ft. from bottom of foundations to top of iron cap. The concrete bed upon which the chimney stands is 39 ft. square, and is laid upon hard sandstone rock. The chimney is of octagonal shape, and the inside is 15 ft. at the bottom and 13 ft. 6 ins. at the

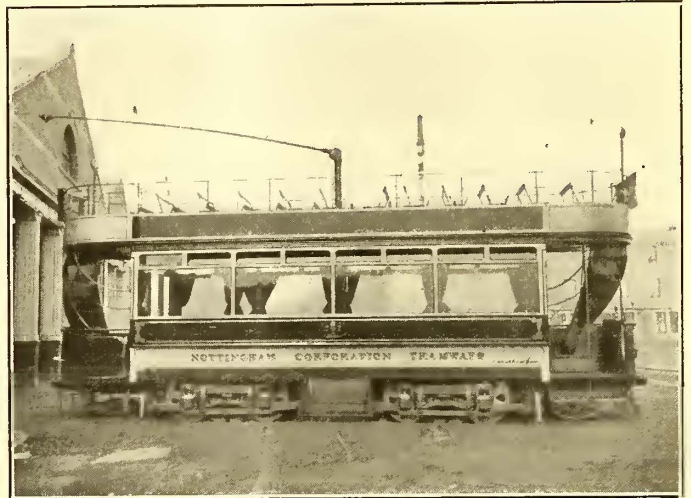
top. The total weight of the chimney, including exhaust pipes, concrete foundation, etc., is 4050 tons, and the weight on the rock foundation is only 2.66 tons per square foot. The number of bricks used in the construction of the chimney is 745,000.



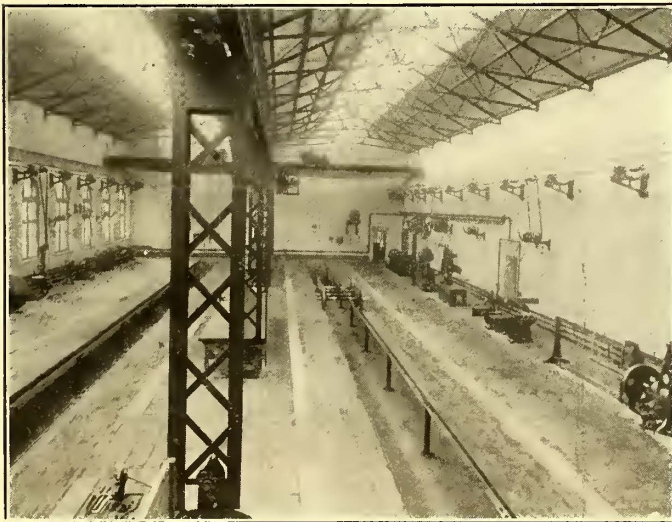
CHIMNEY OF POWER STATION



BILLIARD ROOM FOR EMPLOYEES



DOUBLE-TRUCK CAR



INTERIOR OF REPAIR SHOP



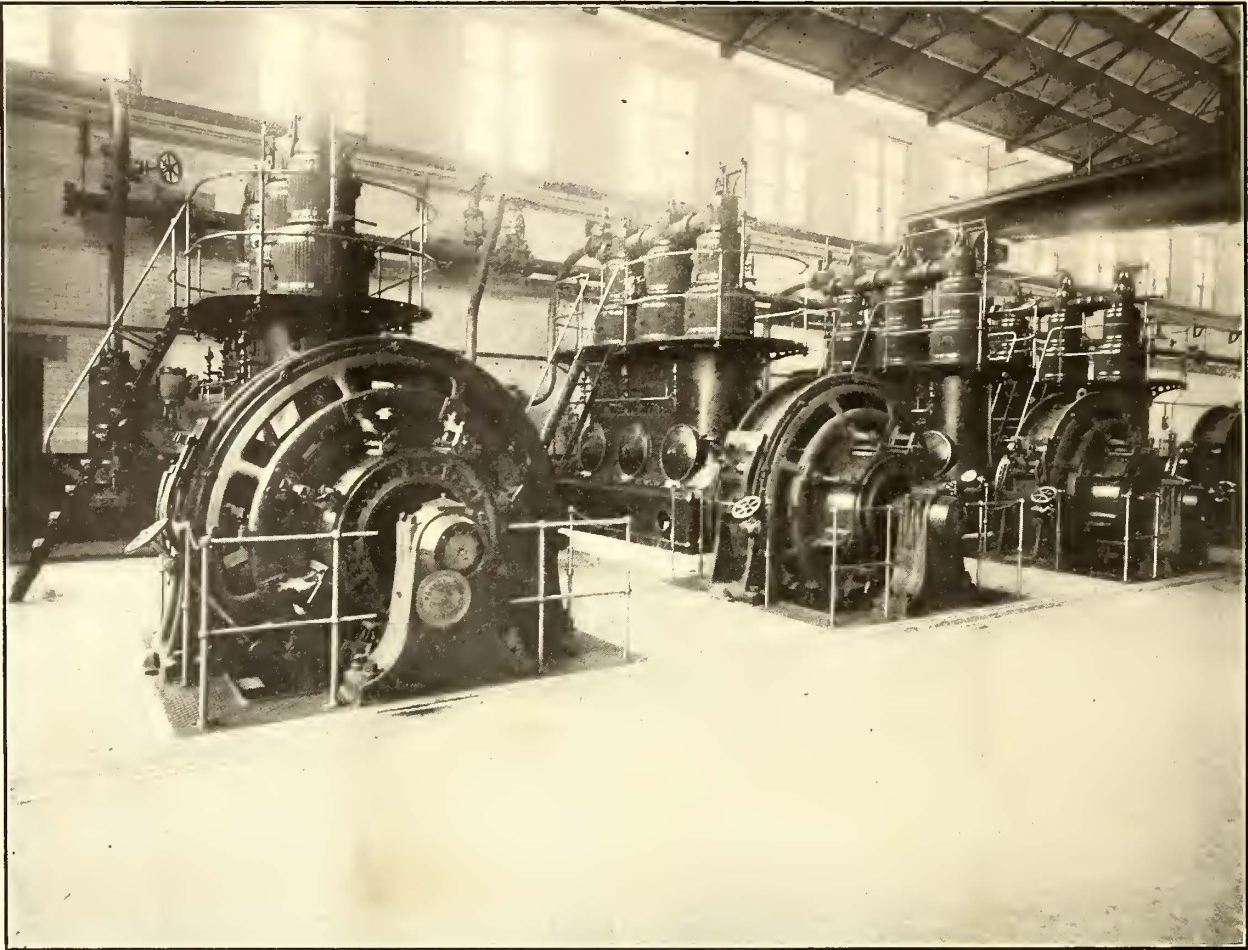
INTERIOR OF TRENT BRIDGE CAR HOUSE

top. It is surmounted by an iron cap, 9 ft. high and weighing 25½ tons, and is lined with firebrick to a height of 65 ft. above ground level. Two exhaust pipes are carried up inside the chimney, each 30 ins. diameter, for carrying away into the atmosphere the exhaust steam from the engines. The weight of these two pipes is

The flue at the back of the boilers is 12 ft. x 6 ft., and the main flue is 12 ft. x 7 ft., which divides into two flues, 12 ft. x 5½ ft., entering the chimney on opposite sides. The main flue is carried under the engine house as a reserve flue, as it is expected in the near future that the whole of the plant will require to be doubled, in

which case another chimney would be built for the second boiler house, but the arrangement of the flues and dampers is such that the gases could all be turned into one chimney while the other underwent examination or repairs.

Brown, M. I. C. E., the city engineer to whom this paper is indebted for the particulars from which this article was prepared. Mr. Brown has been very ably assisted by T. Wallis Gordon, the assistant engineer. Herbert Talbot, M. I. E. E., the city electrical



INTERIOR OF ENGINE ROOM, NOTTINGHAM TRAMWAYS

The engine house is 206 ft. long by nearly 40 ft. wide, and is 27 ft. to springing of roof, and 18 ft. to traveler rail. It is roofed with steel principals, 9 ft. 10 ins. centers, and, like the boiler house, the whole of the interior faces of the walls are lined with glazed bricks. The floor of the engine house is 10 ft. above the level of the boiler house floor. This difference in level is desirable in any case, but here the configuration of the ground rendered it necessary. One side of the engine house is carried on steel stanchions, and is at present temporarily filled in with timber framing, boarded on the inside and covered with corrugated iron on the outside. When the demand for power for tramways and current for electric lighting exceeds the capabilities of the buildings described, it is proposed to practically double the size of the engine house by having one of equal size alongside, thus forming one room 206 ft. long x 80 ft. wide. The traveling crane is of 15-ton capacity, and was supplied by Marshall, Fleming & Jack, of Motherwell. Six 700-hp or 440-kw Willans compound valve engines have been ordered. Four of these are practically finished, and it is expected that the other two will be in running order in a couple of months. The engines are direct-coupled to Siemens's multipolar generators, of the latest type, contain all the latest improvements, and are fitted with Sankey's patent automatic expansion gear. The traction switchboard has been supplied by Siemens Bros. & Co., Ltd., of Woolwich, and consists of four dynamo panels, each fitted with an automatic circuit breaker, ammeter, shunt regulating switch and single-pole switch, one board of trade panel, carrying the necessary recording and testing instruments, and six feeder panels, each fitted with a circuit breaker, recording ammeter and single-pole switch and fuse.

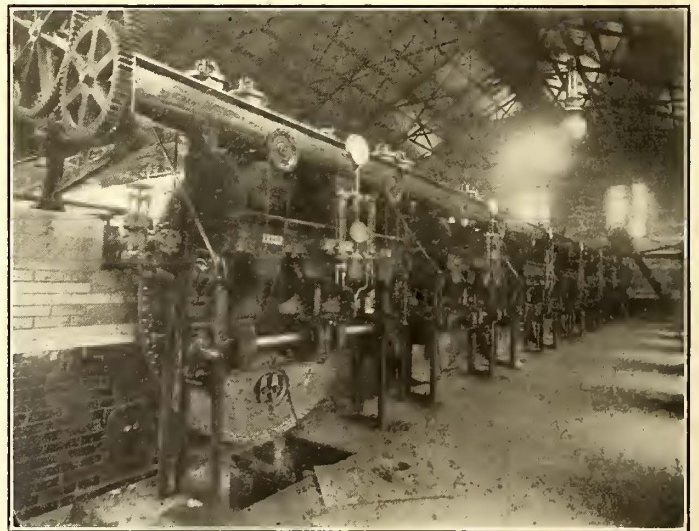
The panels are of white marble, and are carried in wrought iron frames.

The buildings are of a substantial character, principally of brick with stone dressings, and have been well thought out and every point apparently well considered.

The whole of the engineering and constructional (except electrical) work in connection with the tramways, including the power station, car houses and depots, has been carried out by Arthur

engineer, is responsible for all the electrical work in connection with the tramways and the power station.

The manager of the tramways is John Aldworth, whose previous



BOILER ROOM, NOTTINGHAM TRAMWAYS

large experience eminently fits him for dealing with the large and rapidly increasing traffic in Nottingham.

The St. Louis Transit Company has disposed of its old power house at Broadway and Lami Street to parties who propose to convert it into a vaudeville theater.

New Transfer Regulations of Chicago Union Traction Company

Under the recent decision upon the transfer question the Chicago Union Traction Company has organized a comprehensive system of transfers to meet the requirements of Judge Magruder's ruling.

It is the intention of the company to comply fully with the spirit as well as the letter of the law, and give passengers who desire it a ride from one point to any other point on the company's lines for a 5-cent fare and any number of transfers he may require to make the trip, but an effort will be made to prevent the abuse of the privileges thus extended, and not issue transfers to passengers that will allow them to return in the direction from which they started without paying an additional fare. The new order was issued by T. A. Henderson, general superintendent, on Nov. 14, and went into effect on Sunday, Nov. 16. It was ac-

and will be entitled to a transfer to any intersecting line which carries him in that general direction.

Conductors will readily see that it will be necessary to carefully punch the direction in which their car is going and the direction in which the passenger is entitled to ride.

In order to assist in showing conductors what is desired, four transfers are herewith submitted, showing the proper way to punch transfers to carry a passenger over different lines of road.

It will be readily perceived by the sample that the passenger paid a cash fare on a Halsted Street car, south bound, at 7 a. m., north of North Avenue, for which he received transfer No. 1. This he presented to a west-bound North Avenue conductor, who, by looking at the direction in which the Halsted Street car was going, could readily see that the passenger came from the north and was entitled to a transfer punched "south only." The North Avenue conductor therefore issued a transfer similar to sample No. 2. This was given to a conductor going south on Milwaukee Avenue, who gave in return for it sample No. 3, which he punched

Sample No. 1.

Sample No. 2.

Sample No. 3.

Sample No. 4.

Sample No. 5.

Sample No. 6.

5	6	8	9	10	11	12
EAST			NORTH			
NOV 16						
SOUTH			WEST			
Limits	Clark	Clark Elec.				
Lincoln	Clark	Chicago Ave.				
Clybourn	Clark	Robey				
Limits	Wells	Clybourn Elec.				
Lincoln	Wells	Garfield Av.				
Dearborn	Wells	Larrabee				
Lincoln	Wells	Lincoln Elec.				
Division St.	Wells	Sheffield Av.				
Belmont and Boscoe	Wells	Fullerton				
Halsted	Wells	Ervanston				
North Ave.	Wells	Indiana St.				
State St.	Wells	Lincoln Av.				
Southport	Wells	On Account of Delay				
Sedgwick	Wells	To Extension				
Ashland Av.	Wells	To Extension				
SPECIAL. To next cross line only.						
Issued on Transfer for ride in direction stamped below.						
NORTH ONLY			WEST ONLY			
EAST ONLY			SOUTH ONLY			
7	8	9	10	11	12	
1	2	3	4	5	6	

5	6	8	9	10	11	12
EAST			NORTH			
NOV 16						
SOUTH			WEST			
Limits	Clark	Clark Elec.				
Lincoln	Clark	Chicago Ave.				
Clybourn	Clark	Robey				
Limits	Wells	Clybourn Elec.				
Lincoln	Wells	Garfield Av.				
Dearborn	Wells	Larrabee				
Lincoln	Wells	Lincoln Elec.				
Division St.	Wells	Sheffield Av.				
Belmont and Boscoe	Wells	Fullerton				
Halsted	Wells	Ervanston				
North Ave.	Wells	Indiana St.				
State St.	Wells	Lincoln Av.				
Southport	Wells	On Account of Delay				
Sedgwick	Wells	To Extension				
Ashland Av.	Wells	To Extension				
SPECIAL. To next cross line only.						
Issued on Transfer for ride in direction stamped below.						
NORTH ONLY			WEST ONLY			
EAST ONLY			SOUTH ONLY			
7	8	9	10	11	12	
1	2	3	4	5	6	

5	6	7	8	9	10	11	12
EAST				NORTH			
NOV 16							
SOUTH				WEST			
Western Av.	Milwaukee	Ogden	Blue Island	Armitage	14th St.	Desplaines	Halsted
Grand Ave.	North Ave.	Taylor St.	North Ave.	18th St.	Kedzie and California	Van Buren	Colorado
SPECIAL. To next cross line only.							
Issued on Transfer for ride in direction stamped below.							
NORTH ONLY				WEST ONLY			
EAST ONLY				SOUTH ONLY			
7	8	9	10	11	12		
1	2	3	4	5	6		

5	6	7	8	9	10	11	12
EAST				NORTH			
NOV 16							
SOUTH				WEST			
Western Av.	Milwaukee	Ogden	Blue Island	Armitage	14th St.	Desplaines	Halsted
Grand Ave.	North Ave.	Taylor St.	North Ave.	18th St.	Kedzie and California	Van Buren	Colorado
SPECIAL. To next cross line only.							
Issued on Transfer for ride in direction stamped below.							
NORTH ONLY				WEST ONLY			
EAST ONLY				SOUTH ONLY			
7	8	9	10	11	12		
1	2	3	4	5	6		

5	6	7	8	9	10	11	12
EAST				NORTH			
NOV 16							
SOUTH				WEST			
Limits	Clark	Clark Elec.					
Lincoln	Clark	Chicago Ave.					
Clybourn	Clark	Robey					
Limits	Wells	Clybourn Elec.					
Lincoln	Wells	Garfield Av.					
Dearborn	Wells	Larrabee					
Lincoln	Wells	Lincoln Elec.					
Division St.	Wells	Sheffield Av.					
Belmont and Boscoe	Wells	Fullerton					
Halsted	Wells	Ervanston					
North Ave.	Wells	Indiana St.					
State St.	Wells	Lincoln Av.					
Southport	Wells	On Account of Delay					
Sedgwick	Wells	To Extension					
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SPECIAL. To next cross line only.							
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NORTH ONLY				WEST ONLY			
EAST ONLY				SOUTH ONLY			
7	8	9	10	11	12		
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5	6	7	8	9	10	11	12
EAST				NORTH			
NOV 16							
SOUTH				WEST			
Western Av.	Milwaukee	Ogden	Blue Island	Armitage	14th St.	Desplaines	Halsted
Grand Ave.	North Ave.	Taylor St.	North Ave.	18th St.	Kedzie and California	Van Buren	Colorado
SPECIAL. To next cross line only.							
Issued on Transfer for ride in direction stamped below.							
NORTH ONLY				WEST ONLY			
EAST ONLY				SOUTH ONLY			
7	8	9	10	11	12		
1	2	3	4	5	6		

NEW TRANSFER TICKETS ON UNION TRACTION COMPANY'S LINES, CHICAGO

companied by the following instructions to conductors to guide them in this work:

For a cash fare you will issue a transfer, punching the direction the car is going, the time, the name of the line issuing and the section reading "For cash on any intersecting line." This transfer will be accepted on any intersecting or connecting line except on a line which would carry the passenger back in the direction from which he started.

When passengers present a cash transfer and in exchange for it request another transfer, the conductor issuing the second transfer will punch the direction in which his car is going, time, the line issuing the transfer and the section at the bottom of the transfer which contains the words north, south, east or west only. In regard to the direction in which the passenger will be entitled to go, these transfers are to be punched as follows:

A cash transfer issued by south-bound cars when presented on to a west-bound car will entitle the passenger to a ride south on any intersecting line west of the receiving point on a transfer to be punched "south only." When this transfer is presented on a south-bound car and another transfer is requested the conductor will punch "west only." Should this transfer be presented to a car going west which receives transfers from the issuing line, the conductor will, on demand, issue another transfer punched "south only." There shall be no limit to the number of transfers on transfers this passenger may receive, provided the transfers that he uses are presented onto the lines properly receiving transfers from the line issuing it, and that his direction of travel continues to be south and west. This zig-zag system of transfers will be allowed for any other direction and from any other starting point.

A passenger may go north and west, and north and west again repeatedly, to the end of the system. He may go north and east, and north and east again, until he reaches the end. He may go west and south, or he may go west and north as many times as he chooses. He may go east and south, or he may go east and north,

"west only," because the North Avenue transfer was issued by a car going west. The Milwaukee Avenue transfer was given to a west-bound Division Street conductor, who looked at the direction in which the Milwaukee Avenue car was going, and punched (sample No. 4) the same direction in the transfer section at the bottom of his transfer, thus allowing the passenger to continue his journey on any line going south of Division Street. It would seem that a conductor could readily handle these transfers by simply looking at the top of the transfer received for the direction of the car issuing it and punching out the same direction in the bottom of the transfer to be given in exchange.

SPECIAL TRANSFER PRIVILEGE

For the purpose of taking care of a class of patrons of this company whose requirements do not seem to be provided for in the general system of transfers, a special rule is hereby placed in effect, which shall be carried out by conductors, as follows:

To a passenger presenting a cash transfer who requests of a conductor a transfer back in the same direction from which he started, the conductor will issue the regular transfer slip showing the direction in which he is going, the time of day and the name of the line, and will also punch the section reading "special, to next cross line only." The conductor who takes up such transfer shall allow the passenger to ride as far as the next street railway crossing, and if he desires to go beyond that point will collect another fare.

This special privilege is intended for the purpose of taking a man around three sides of a square without his paying a double fare.

For instance, the passenger starts on Chicago Avenue, between Western Avenue and California Avenue, and desires to go to a point on North Avenue, between Western Avenue and California Avenue. Our regular transfer on a transfer system would not take him to that point for one fare, hence this special rule.

A man who boards a Chicago Avenue car going west and pays a cash fare, for which he receives a cash transfer, would present this transfer north on California Avenue. Upon requesting a "special" transfer the conductor will issue the transfer punched "special, next cross line only," and also marked "east only." This will entitle the passenger to a ride east after he had started on a car going west, but it would not be good for another transfer, nor would it be good for a ride east of Western Avenue.

If the passenger so desired he could make the same ride by going east in Chicago Avenue to Western Avenue, north in Western Avenue to North Avenue and west in North Avenue to any point he desired to reach as far as California Avenue.

Transfers necessary to make this round trip are submitted herewith properly punched as samples. The same will apply to a great many other places in the system and are the only occasions at present where the special section in the transfer shall be used and also under the only circumstances where a man who goes in one direction shall be given a transfer going back towards his starting point.

Sample No. 5 shows that a passenger paid a cash fare on an east-bound Chicago Avenue car. When this was presented on a north-bound Western Avenue car the passenger, by requesting a "special" section, limited to a ride west to the next cross line only.

All transfers are to be issued at the time fare is collected.

Transfer passengers from extension lines are entitled to the same kind of a transfer as the one they present. Should the transfer be punched "for cash," issue one punched in the same way; if it shows a limitation as to direction, give a transfer with the same limitation shown.

Advertising Leaflets of the Aurora, Elgin & Chicago Railway

One of the railways in the Middle West to give considerable attention to the subject of advertising its schedules is the Aurora, Elgin & Chicago Railway.

Shortly after the opening of the line Secretary Warren Bicknell issued a map and advertising folder for this road, which was excellently adapted to the purpose for which it was designed. The road being a new one, the primary object of the first folder issued was to call the attention of people living in the vicinity of the road to the fact that it was in operation and the advantages to be derived from patronizing it rather than the former means of trans-

portation along the road, which are in red. This brings out the route with prominence, and is, furthermore, an easy map to prepare, as it involves but little work save the addition of the portion in red ink to a standard map. While in some cases this ease of

...TAKE THE ...

Aurora, Elgin & Chicago Railway

(The New Third-Rail Double-Track Electric Railroad)

TO CHICAGO

Round Trip Fare 90 Cents

From Aurora to Fifty-Second Avenue Station of the Metropolitan Elevated, Chicago.

From the business center of Aurora to the Elevated Loop in the heart of the retail district of Chicago in as short time as by steam roads.

DIRECT CONNECTIONS WITH ALL ELEVATED RAILWAYS IN CHICAGO.
Passengers from points West of Aurora will save money by changing from steam roads to the Electric at Aurora.

Elegant Railway Coaches. Beautiful Scenery. Quick Time. Absolute Safety.

For a Comfortable and Enjoyable Trip go to Chicago via The Aurora, Elgin & Chicago Railway.

Time Tables of routes between Aurora and Chicago may be obtained from any Agent of the Company.

SEE MAP ON OTHER SIDE.

FOLDER FOR AN INTERURBAN ROAD

preparation is not a great consideration, frequently it is desirable to save expense and time in the preparation of a map of this kind, and this is one of the easiest ways to accomplish it. On the opposite side of the folder from the map are pages in very simple type, calling attention to the opening of the road and its advantages, some of which pages are reproduced herewith.

One of the pages not shown contains a table giving rates of fare; another one is a half-tone engraving of a three-car train on the road. As reproduced herewith three of the pages are devoted to a single advertisement stretching across the three as seen. Although this folder is free from the elaborate designs sometimes found on railroad timetables, it is none the less attractive to modern eyes on that account, as the tendency in present railroad advertising is rather toward simplicity and plainness (if the simplicity is not a crude sort), rather than toward elaborate designs, which, to a certain extent, obscure the reading matter. In the

To be Rid of the Smoke, Noise, and Cinders of Steam Roads, travel on the

Aurora, Elgin & Chicago Railway..

From Points West of Aurora buy your Steam Railroad Tickets to Aurora

Take Electric Line from

AURORA TO CHICAGO AND RETURN

Round Trip 90 Cents

...NO... CINDERS SMOKE NOISE

ALL trains of the Garfield Park Branch of the Metropolitan Elevated connect at Fifty-Second Avenue with the

Aurora, Elgin & Chicago Railway

AND BEAR SIGNS

Garfield Park
WHEATON
AURORA
BATAVIA

Take any train on the Union Loop indicated as above for direct connection with the...

New Third-Rail Double-Track Electric Railway

for Wheaton, Aurora, and Intermediate Stations.

Lower Fare

The attention of Passengers Destined for Chicago from points West of Aurora is called to the considerable saving in fare via

THE AURORA, ELGIN & CHICAGO RAILWAY

The New Third-Rail Double-Track Electric Railroad

Aurora to Chicago

CHANGE from the Steam Road AT AURORA and take the Electric New Cars of the Electric Railway FOR CHICAGO

RETURNING, Cars on the Electric Railroad run at such frequent intervals that connection can be made with any train desired on the Steam Roads at Aurora.

THE AURORA, ELGIN & CHICAGO RAILWAY

The New Third-Rail Double-Track Electric Railroad

CONNECTING THE

Great Fox River Valley

... Chicago ...

Has been constructed with the view of securing the highest speed and greatest safety. The best devices to secure these ends have been installed. The roadbed, track, and equipment are the best that money can buy and human ingenuity produce. In short, this is the

Finest Electric Railroad

IN THE WORLD

It offers the public an unexcelled service.

QUICKEST TIME

MAXIMUM SAFETY

... THE ...

Aurora, Elgin & Chicago Railway

The New Third-Rail Double-Track Electric Railroad between the Fox River Valley and Chicago

QUICK TIME ELEGANT CARS

From Points West of Aurora buy your Steam Railroad Tickets to Aurora

Take Electric Line from

AURORA TO CHICAGO AND RETURN

Round Trip 90 Cents

General Office, Title and Trust Building, 100 Washington Street, Chicago.
 Telephone CENTRAL 1900

Offices of Operating Departments, Wheaton, Ill.
 Telephone WHEATON 264

CHICAGO PASSENGERS

via THE

Aurora, Elgin & Chicago Railway

are landed in the business heart of the City—at any station on the Elevated Loop—thus avoiding all annoyance of finding the bridges open when coming from or going to Depots

No other line serving the Fox River Valley has this unique advantage.

ADVERTISING LEAFLETS FOR AN INTERURBAN ROAD

portation. Thousands of these were sent to Aurora and towns along the Fox River valley, and also to points west of Aurora. The idea of sending to towns west of Aurora was that many people desiring to make the trip to Chicago might buy tickets on the steam roads to Aurora and then patronize the electric road from Aurora in to Chicago, the electric road being able to offer lower rates, equally quick time, freedom from smoke and cinders, and a new and more pleasant route than the steam roads.

The folder when folded is the standard 4 ins. x 9 ins. timetable folder size. The full size of the sheet is 18 ins. x 24 ins. On one side is a map of the road and also in one corner a map of the down town district of Chicago, showing the Union Elevated loop and the principal buildings. These maps are in black with the exception of the route of the road and the names of the stopping

folder under discussion timetables are not given, because at the time the folder was published a new branch of the road was about to be opened and further changes in the timetable were soon to occur, so that the timetable was kept on a separate card.

The object of this folder was mainly to advertise the fact that the road was in operation and offered a desirable means of transit. Under a more settled condition, of course, it would be advisable to put a timetable on such a folder as this. However, as the cars were at the time running at half-hour intervals the necessity for timetables was not as great as it would have been had the intervals between trains been greater. The pages of the folder which are here reproduced present a much better appearance in the original because about half of the matter was in red ink, the other half being in black.

Specifications for Road Bed and Overhead Construction

The requirements of all large railway systems include special features of construction in the overhead work, road bed and distribution to meet local conditions, and this general rule may be said to apply even to the smaller properties, although, of course, not as distinctively as in the more important undertakings. Many projects now under consideration and others that have been in operation several years, and are now entering the reconstruction period, will undoubtedly gain by the experience of other roads and adopt the general features incorporated in systems of about the same size, when the conditions are similar. Several requests, indeed, have been made lately for specifications by promoters and investors who have been contemplating the construction of small roads in different parts of the country, and to meet this demand and supply similar data to other managers who are in the same position the following specifications are herewith presented as examples of work covering both city and suburban service:

SPECIFICATIONS FOR OVERHEAD CONSTRUCTION AND BONDING OF THE DEADWOOD-LEAD CITY BRANCH, CHICAGO, BURLINGTON & QUINCY RY.

The intention of this specification is to cover everything necessary for the complete overhead construction and bonding of the road. If any small details have been omitted which are necessary to make the system complete, so far as the work covered by these specifications is concerned, they will be furnished by the contractor without additional cost to the railway.

The accompanying map, marked Exhibit "A," shows the location of the line, the turn-outs, cross-overs, switches, the terminals and the distance between stations. This drawing is hereby made a part of these specifications.

The line is a narrow 3-ft. gage branch, and operates from Deadwood, S. D., to Lead City. From Deadwood to Pluma the line uses one track of a standard gage branch, over which locomotives are being operated.

The length of line to be equipped at present is nearly 4 miles.

The power house is located at Deadwood, approximately as shown on the map.

RAILWAY, CONTRACTOR AND ENGINEER

Where the word "railway" is used it is understood to mean the Chicago, Burlington & Quincy Railway. Where the word "contractor" is used it is understood to mean the party who undertakes to build the work in accordance with these specifications. Where the word "engineer" is used it is understood to mean a duly authorized engineer or technical representative of the company.

CHANGES

No changes will be allowed in the construction of the electrical work, except such as are approved by the engineer of the railway, and at a price agreed upon in writing before the work is done.

DAMAGES

The contractor shall repair, at his own expense, any and all temporary damages that may accrue to public or private property during the construction of the road, and these repairs shall meet the approval of the engineer. In case suits for damages are brought against the railway, caused by the contractor's workmen during the construction, the contractor shall pay all costs, damages, fees, etc., accruing therefrom. He shall keep at all times where pole holes or other excavation work make dangerous openings, proper guards for preventing teams from driving into these openings, and keep red lights in proper position near these openings at night. It is understood that the contractor will not be held liable for damages caused to property on account of the location of the poles.

TRANSPORTATION

The railway company will furnish free transportation over its line for men, tools and material used in this work.

TIME OF COMPLETION

The road is to be ready for operation not later than _____, and the contractor shall have his entire work completed by that date.

Should the contractor be obstructed or delayed in the prosecution or completion of his work by the actual neglect or default of the railway company, or by any other contractor employed by the railway company upon the work, or by any damage which may happen by lightning, fire, earthquake or cyclone, or by the abandonment of the work by the employees through no default of the

NOTE.—For obvious reasons the maps and sketches referred to throughout these specifications are not reproduced here.

contractor, then the time herein fixed for completion of the work shall be extended for a period equivalent to the time lost by reason of any or all of the causes aforesaid, but no such allowance shall be made unless a claim therefor is presented in writing within forty-eight hours from the occurrence of such delay.

Should the contractor at any time refuse or neglect to supply a sufficiency of properly skilled workmen, materials or apparatus of the proper quality, or fail in any respect to prosecute the work with promptness and diligence, or fail in the performance of any agreement herein contained, such refusal, neglect or failure being certified by the engineer for the railway company, the railway company shall be at liberty, after ten days written notice to the contractor, to provide any such labor, materials or apparatus, and deduct the cost thereof from any money then due, or thereafter to become due the contractor under his contract.

The contractor shall plan his work so as not seriously to interfere with the regular operation of the road. It is understood that the railway will co-operate with the contractor in the delivery of poles and material along the line; the contractor to pay for all labor required for the actual unloading of this material.

ACCEPTANCE OF WORK

When the contractor shall have finished his work in accordance with the specifications he shall notify the engineers in writing, and they will proceed as quickly as possible to examine his work, and if found in accordance with the specifications then the contractor shall be given an immediate acceptance.

If the work is not in accordance with the specifications then the engineers shall make a written list of such faults as exist, and the contractor shall immediately correct the same, and again notify the engineers in writing when he is again ready for an inspection and acceptance.

TERMS OF PAYMENT

The contractor shall be paid by the railway company the fifth of each month, on the engineer's estimates, made the first of each month. The contractor shall receive 90 per cent of the cost of all materials delivered and work performed. The railway company shall retain 10 per cent of these estimates until the contractor has completed his contract, and had same accepted by the engineers. When the engineers accept his work then the contractor shall be accorded a full and final settlement thirty days from his notification of acceptance, and the contractor shall be paid in full all money due him on the contract, less such amounts as may have been adjudged against him as liquidated damages or for claims unpaid.

OVERHEAD MATERIAL

The overhead material shall be guaranteed for two years, and shall be equal to Anderson's or Ohio Brass Company's. Whenever the number of a certain type of material is given it refers to the Ohio Brass Company's catalogue No. 5.

POLES

All poles will be Idaho or Michigan cedar, with a diameter of 7 ins. or a circumference of 22 ins. at the top end. Poles must be reasonably sound at the top end, cut from live timber and peeled. Twenty per cent butt rot will be allowed on all poles, and a crook one way not exceeding 1 in. for every 5 ft. of the full length of the pole, measured from a point 6 ft. from the butt end. The specifications of the Western Cedarman's Association shall apply to these poles.

LOCATION OF POLES

The location of each pole is shown upon the map* L-3-C. This map indicates approximately the location and length of each pole, and also shows where the side-pole cross-suspension method is to be used, and where the bracket method of suspension is to be followed.

SETTING OF POLES

The holes for at least 90 per cent of the poles from Deadwood Street to Main Street and Mill Street, Lead City, must be blasted out of rock. The remaining, or 10 per cent, of the holes will be excavated in dump or dirt. Beyond Main Street and Mill Street, in Lead City, to the terminus of the line, all the holes will be excavated in dirt. Holes for all poles shall be excavated in dirt. Holes for all poles shall be excavated to the following depths:

For 40-ft. poles in rock,	6	ft. deep.
" 40-ft. " dirt,	7	ft. "
" 35-ft. " rock,	5½	ft. "
" 35-ft. " dirt,	7	ft. "
" 30-ft. " rock,	5	ft. "
" 30-ft. " dirt,	6	ft. "

All poles shall be set in the center of a body of concrete, at least 24 ins. in diameter. The concrete shall consist of one part, by measure, of cement, equivalent to the best Louisville brand; three

parts of clean, sharp sand, and five parts of stone broken to a size to pass through a 2-in. ring.

There shall be a bottom layer of concrete at least 3 ins. in depth, and concrete surrounding poles shall be thoroughly tamped to place, and capped with a neat cement-faced coned water-table with drip above ground.

All poles within the corporate limits of Deadwood and Lead City shall be shaved and painted two coats, color of final coat to be selected by engineer. All poles shall be so set on span construction as to leave 12 ins. of rake in each pole after spans are pulled up.

All poles on bracket construction shall be set with a 6-in. rake. Poles on curves, ends of turn-outs, trolley anchor poles, and trolley dead-end poles shall be anchored by a $\frac{5}{8}$ in. x 6 ft. galvanized anchor rod passing through a 6 in. x 8 in. x 4 ft. block of wood, or "dead man." From anchor rod run a 5-16-in. galvanized iron cable secured with two turns about top of pole, inserting a wood-break insulator in each cable guy approximately 4 ft. from poles.

In the face of a cliff where a $\frac{5}{8}$ in. x 6 ft. anchor rod cannot be set there shall be set a special $\frac{3}{4}$ in. x 3 ft. eye bolt, firmly expanded into the rock (see sketch No. 1) by driving in on the wedge at end of bolt, and finally filling the whole with neat cement. A wood break is to be inserted in all spans or guys attached to such special eye bolt.

In two or three places where poles come on bridges they shall be attached to the bent by bolting 3 in. x 10 in. planking on either side of bent about 6 ft. apart, and setting pole between such planking, and bolting same by $\frac{3}{4}$ -in. bolts, using cast washers.

TROLLEY WIRES

Two No. 000 B. & S. gage, Fig. 8, copper trolley wires will be used and must be erected taut, without kinking or cutting same. Trolleys are to be spaced about $6\frac{1}{2}$ ins. apart over single track, and over centers of double tracks. Trolley must be anchored on each side of the joints, using four of the riveted double-strain ears No. 2472, carrying four $\frac{1}{4}$ -in. double galvanized seven-strand steel cable, diamond fashion to opposite poles on each side of track, midway between the two sets of strain ears, on span construction, and on bracket construction, erecting one extra pole opposite the pole nearest the joint, and anchoring said opposite poles, and carrying the four $\frac{1}{4}$ -in. steel cables diamond fashion to said opposite poles from the strain ears. Four wood-break insulators are to be cut into the $\frac{1}{4}$ -in. pull-off wires, 4 ft. from the strain ears. Ends of trolley shall be fastened together with splicing sleeves No. 2509.

Trolley shall be 23 ft. above track from Deadwood to Pluma, and 19 ft. above track from Pluma to the Lead City terminus.

SPAN WIRES

Span wires are to be 5-16-in. double galvanized seven-strand steel cable, fastened (with friction clutch tie) to $\frac{5}{8}$ in. x 14 ins. plain eye bolts, having 6-in. thread, nut and washer on all construction Deadwood to Lead City, but within the corporate limits of Lead City the 5-16-in. span wires are to be fastened to insulated eye bolts similar to No. 2557, but $\frac{3}{8}$ in. x 14 ins. long.

GUARD WIRE

There will be no guard wire furnished except as an extra.

POLE BRACKETS

Brackets are to be of flexible suspension type, either Richmond or Craighead, with over-support $\frac{1}{2}$ in. diameter; the flexible suspension to be 5-16-in. seven-strand double galvanized steel cable; the tubing to be a tubing $1\frac{1}{2}$ ins. in diameter, and length of bracket 7 ft. 6 ins. The eye bolt at end of bracket arm to have solid welded eye.

HANGERS

Straight line hangers are to be of the round top galvanized type, Nos. 3147 and 3144. Curve hangers are to be galvanized, Nos. 4014, 4013, 4012, 4011.

Straight line hangers are to be used in all spans on straight line or curves from Deadwood to Pluma, but the No. 4014 double-curve pull-over is to be used at all curve brackets from Pluma to Lead. Intermediate pull-overs, Nos. 4012 and 4011, are to be used where single trolley is over double tracks, and intermediate curve pull-over No. 4013 is to be used where double trolley is over single track, and spaced approximately 6 ins. apart.

GUYS

All bridles, head guys and pull-off wires are to be $\frac{1}{4}$ -in. seven-strand double galvanized steel cable.

All slugs, anchors and heavy guys are to be 5-16-in. seven-strand double galvanized steel cable.

TROLLEY CLAMPS.

Bronze trolley clamps No. 2232 are to be used with the No.

3147 S. L. hanger. Trolley clamps No. 2225 are to be used with Nos. 4014, 4013, 4012, 4011 types of curve pull-overs.

FEEDING TROLLEY

Carry a 350-M. C. M. bare-stranded copper cable from the power house on a separate line of 30-ft. poles. These poles are to be provided with two pin cross arms, fastened to the poles with two $\frac{1}{2}$ in. x 7 ins. galvanized lag screws. Each cross arm to have two $\frac{1}{4}$ in. x $1\frac{1}{4}$ ins. x 24 ins. galvanized braces fastened with galvanized lags, and each cross arm to be provided with two pins and two cable glass insulators. Poles are to be double cross-armed near power station and trolley line. The feeder is to be dead-ended over the trolleys, having its end made up into a Brooklyn insulator, fastened to the opposite pole by a piece of 5-16-in. double galvanized steel cable. This pole is to be anchored in a manner similar to curve poles. Two 000 jumpers are to be soldered on the feeder and carried into the bronze trolley feeder clamps No. 2376.

LIGHTNING ARRESTERS

Nine Garton pole lightning arresters or others of make approved by engineer are to be erected approximately every half-mile of track, and on pole near power house. Use a No. 6 bare-solid copper wire, running same from the two No. 2376 trolley feeder clamps, as per sketch 5, to the lightning arrester, and continue wire to ground by soldering same to a $\frac{5}{8}$ in. x 7 ft. galvanized iron pipe, previously pointed and driven in the earth, and further connect to the track by soldering to the cross-bond or drilling rail and attaching wire by means of a bonding cap. On bracket construction carry the No. 6 wire from the feeder clamps alongside the bracket pipe through two feed-in insulators, No. 4462, to the lightning arrester.

NEGATIVE RETURN

Run from the power house one 350-M. C. M. bare-stranded copper negative return cable (to main line track) on the pole line previously mentioned under feeding trolley. Anchor this cable to pole on opposite side of track, inserting a Brooklyn in its 5-16-in. guy wire, then continue cable down pole on power house side to the track, running same beneath ties and between rails for six rail lengths, and connect to each rail by means of a 0000 cross-bond, as per sketch No. 3, thoroughly soldering all joints.

The contractor is to carry the positive and negative feeder leads into the power house and to the switchboard.

TREES

The contractor shall trim all branches of trees which interfere with the trolley poles. It is understood that the railway is to secure all permits for trimming trees.

BARN TRACK WIRING

The wiring to car houses and in the structure is not covered by these specifications.

ADJUSTING OVERHEAD CONSTRUCTION

If during the construction period, or within thirty days after the completion of the entire circuit, it should be pulled out of place on account of defective workmanship or material, the contractor shall renew all defective parts and furnish all labor for putting it in first-class condition. If trolley is strung during hot days a slight sag is to be allowed to provide for contraction during the cold weather.

BONDING

The double track through the Deadwood yards and the single track from the yard limits to the Lead terminus is to be bonded by means of one 0000 protected and concealed flexible bond placed beneath the angle-bars at each rail-joint.

All rail is of 30-ft. lengths with approximately 10 per cent short lengths.

The contractor is to remove and replace bolts, rail-joint plates and spikes holding same.

The ends of rail are to be drilled for the bond terminals, the holes thoroughly cleaned and the bonds applied by means of a compressor.

One 0 cross-bond is to be applied to track every 500 ft.

All special work, as frogs and "boot-jack" switches are to be bonded around by means of a 0000 stranded copper cable, carried beneath the ties to two 12-in. one terminal 0000 bonds, inserted in the rail ends adjacent on each side of switch or frog. The cable is to be spliced to the bonds, and the joints thoroughly soldered. (See sketch No. 4.)

Sketch Nos. 6 and 7 shows the section of rail and the details of joint. The contractor is to leave the track in as good condition as he finds it.

Extra precautions are to be taken with all bonds, cross-bonds and ground connections to prevent possible theft, and the bonds are to be installed to prevent exposure to view.

WORKMANSHIP AND MATERIAL

All workmanship throughout is to be strictly first class, and all work, methods of construction and material must receive the approval of the railway engineer before acceptance. The contractor shall employ workmen competent to perform the various kinds of work, and in case the technical representative of the railway is dissatisfied with the work of any workman the contractor shall at once replace workman with a more competent man.

BILL OF MATERIAL

The bill of material attached hereto has been carefully drawn off, and is supposed to be correct, but the bidder upon the overhead construction will check the same carefully, and will become responsible for the omission of any material required to make the work complete, as specified.

[Attached to the specifications is a list of material required for overhead construction and bonding of this road, but as the requirements of all roads are different it is not reproduced here.—EDITORS.]

GRADING SPECIFICATIONS FOR DEKALB & SYCAMORE ELECTRIC RAILWAY

1—IN GENERAL

The work to be done under these specifications will consist of a grade complete and ready for a single track railway between DeKalb, Ill., and Sycamore, Ill., and a small stretch lying west of DeKalb.

The contractor shall furnish all material and labor necessary to construct the grade complete. The work is to be done in accordance with these specifications and contract, and accompanying drawing, but if anything necessary to make the grade complete is omitted it is to be furnished by the contractor.

2—DESCRIPTION OF ROAD

The road will be a single track road, with three turnouts, extending from DeKalb to Sycamore. The grade of the road follows rather closely the contour of the wagon road. There will be a short stretch of private right of way just outside of DeKalb, but the remainder of the distance will be run to one side of the wagon road. In the city of DeKalb the grading will commence where the brick pavement ends, leaving the tearing up and replacing of pavement to the track contractor. The profile, line of road, and cross section of roadbed are shown in drawing 1001-3. The material to be encountered along the route will be mostly black loam and some clay, though the contractor is expected to inspect the road himself.

3—ENGINEER TO HAVE CONTROL OF WORK

The work shall be at all times subject to the approval of the engineer, by whose measurements and calculations the amount of work performed under these specifications shall be determined, and shall have full power to condemn and reject any or all work which in his opinion is unsatisfactory or does not fully conform to the spirit of this agreement.

The engineer shall decide all questions which may arise relative to the work or its execution, and his decision shall be final and binding on both parties.

Lines, grades, and specifications may be changed by the engineer at his discretion, and the engineer shall advise the contractor in writing of such changes; and for such changes the injury or advantage to the contractor shall be estimated by the engineer, but no claim for an increase in price will be allowed unless made in writing to the engineer before work is begun.

If the engineer shall be at any time of the opinion that the contractor, after having been notified of the same by the engineer, is not proceeding rapidly enough with the work, he may, at his discretion, increase the force or take such means as he sees fit to hasten the work—the expense of same to be paid by the contractor. Upon the failure or refusal of the contractor to comply with such order and direction, the engineer shall have the authority to declare the agreement forfeited. In case of forfeiture all money then due the contractor shall be retained and kept by the company.

4—SUB-CONTRACTORS

No contracts are to be sublet without the written consent of the engineer. If contracts are sublet the contractor shall in all cases be held responsible for the work, just as though no sub-contracts were let.

If, in the opinion of the engineer, any workmen are incompetent, the contractor, upon written notice from the engineer, shall discharge said workman and not hire him again.

5—LITIGATION

The contractor agrees to pay and hold the company harmless from all debts or dues of, or demands or claims against the con-

tractor or sub-contractors for debts, liabilities, or damages of any kind. If any claim devolve upon the company, the engineer may at his option settle them and deduct same from money due the contractor.

6—ROAD CROSSINGS, FENCES

All public road crossings and highways must be kept open by the contractor and replaced in good condition by the contractor at his expense.

The contractor will not be expected to furnish fence for private right of way, except as "extras."

7—SUSPENSION OF WORK

If for any reason the company shall wish to suspend work before completion, and to terminate this contract, it shall have the right to do so by giving, through the engineer, a written notice thereof. Immediately after the service of such notice the said engineer shall make an estimate of the whole work done. The contractor agrees to accept the payment of such estimate, after deducting all moneys previously paid and after deducting all claims against the contractor.

8—ENGINEER TO BE UMPIRE

The engineer is hereby constituted the sole arbiter of all matters, and to determine same in respect to work done or material furnished in the performance of this contract, and his certificate shall be final. The engineer shall have the power to appoint any assistants to represent him upon the work and to vest in them all the powers conferred upon him.

9—CONTRACTOR'S RISK

The contractor takes the work solely upon the contractor's own information as to the character of the country, and the location and amount of the various kinds of material to be encountered, and without reliance upon the profile or representations of the engineer or any agent of the company.

The contractor is to be responsible for any work done until the final acceptance.

10—CHARGE OF COMPLETED PORTIONS

The company may take charge of any completed section of the road in order to prosecute its own work, but the taking charge of same shall not signify an acceptance of same.

11—CLASSIFICATION

It is agreed that there shall be but two kinds of excavation, viz., earth and rock.

Rock shall consist of rock in place, which can only be removed by blasting, and all detached masses or boulders containing more than one cubic yard.

Earth shall consist of all material not classed as rock.

12—SECTIONS—MEASURE OF WORK

The work shall be divided into sections of 200 ft. each, starting at the termini of the pavement in DeKalb.

The embankments of each section shall be made from the necessary excavation on that section, as staked out by the engineer, provided that excess or deficiency of excavations, if any, shall be wasted or borrowed, as the case may be, but both waste and borrow will not be paid for on the same section. No material will be paid for twice—that is to say, both in excavation and embankment, and no allowance will be made for haul on excavated material.

13—FINAL ACCEPTANCE

Whenever, in the opinion of the engineer, these specifications and contract shall have been satisfactorily completed, said engineer shall make a final estimate of the work done and material furnished by the contractor, together with a statement of the amount then due him, and the company shall within fifteen days of receipt of said statement pay the contractor in full.

14—DIMENSIONS

All dimensions of the grade, drains, slopes, and other dimensions entering in the work are to be determined by the engineer.

The roadbed is to be 12 ft. wide on top and have sides which slope $1\frac{1}{2}$ ins. to 1. A 6-in. berme is to be left in the bottom of the cuts.

The grade is to be carried at elevation as shown in profile No. 1001-3.

Side ditches and ample drains are to be placed wherever necessary to drain the roadbed.

15—STAKES AND BENCH MARKS

The contractor must preserve stakes and bench marks, and in case of neglect he shall be charged with the expense of restoring them.

16—BORROW PITS—SPOIL BANKS

Earth, gravel and other materials taken from excavations (except when otherwise directed by the engineer), shall be deposited

in embankments, the cost of removing which will be included in the price paid for excavation. All material necessarily procured from without the road and deposited in the embankment will be paid for as excavation only. In procuring materials for embankment from without the line of the road, the place will be designated by the engineer in charge of the work; and in excavating and removing it, care must be taken to injure or disfigure the land as little as possible. The embankments will be formed in layers of such depth (generally one foot), and the material disposed and distributed in such manner as the engineer may direct, the required allowance for settling being added.

No borrow pits will be opened nearer than 4 ft. from base of embankment slope, and will receive same slope as corresponding embankment. All borrow pits will be excavated in a regular manner, and so as to leave no holes for standing water, generally with a descent at bottom to allow free passage of water.

Wherever the excavations furnish more material than is required for embankments, the surplus will be used to increase width of embankment, or deposited in spoil banks or waste piles, as and where the engineer may direct.

The roadbed, in cuts and on banks, to be made in a workmanlike manner; to be perfectly even and regular according to grade stakes as set from time to time by the engineer, and to be exactly of the width directed.

All slopes to be formed even and straight, according to slope stakes, and to such incline as directed in each case.

All ditches in cuts or along banks to be made of such width and grade as the engineer may direct.

If the contractor shall make excavations or embankments in excess of the directed width, then such excess shall not be paid for.

11—WORKMANSHIP, FINISH AND MATERIAL

All workmanship and finish is to be first-class. The grade is to have a smooth finished appearance and slopes are to be finished to a true plane.

TRACK SPECIFICATIONS FOR DEKALB & SYCAMORE ELECTRIC RAILWAY

1—IN GENERAL

The work to be done under these specifications will consist of the complete track equipment for an electric road between DeKalb, Ill., and Sycamore, Ill., and a short stretch lying west of DeKalb.

The contractor shall furnish all material and labor necessary to construct the track complete. The work is to be done in accordance with these specifications and contract, but if any thing necessary to make the track complete is omitted it is to be furnished by the contractor.

2—DESCRIPTION OF ROAD

The road will be a single-track road, with three turnouts, and one terminal switch, extending from DeKalb to Sycamore. In DeKalb there is a short stretch of brick pavement which is to be torn up and replaced by the track contractor. See drawing No. 1001-3.

A steel bridge with concrete floor must be crossed just west of DeKalb.

There are two single-track railroad crossings in Sycamore.

3—ENGINEER TO HAVE CONTROL OF ROAD

The work shall be at all times subject to the approval of the engineer, by whose measurements and calculations the amount of work performed under these specifications shall be determined, and who shall have full power to condemn and reject any or all work, which, in his opinion, is unsatisfactory or does not fully conform to the spirit of this agreement.

Said engineer shall decide all questions which may arise relative to said work or its execution, and his decision shall be final and binding on both parties.

Dimensions may be changed by the engineer at his discretion, and the engineer shall advise the contractor in writing of such changes; and for such changes the injury or advantage to the contractor shall be estimated by the engineer, but no claim for an increase in price will be allowed unless made in writing to the engineer before work is begun.

If the engineer shall be at any time of the opinion that the contractor, after having been notified of the same by the engineer, is not proceeding rapidly enough with the work, he may, at his discretion, increase the force or take such means as he sees fit to hasten the work, the expense of same to be stood by the contractor. Upon the failure or refusal of the contractor to comply with such order and direction, the engineer shall have the authority to declare the agreement forfeited. In case of forfeiture all money then due the contractor shall be retained and kept by the company.

4—SUB-CONTRACTORS

No contracts are to be sublet without the written consent of the engineer. If contracts are sublet the contractor shall in all cases

be held responsible for the work, just as though no sub-contracts were let.

If in the opinion of the engineer any workman are incompetent, the contractor, upon written notice from the engineer, shall discharge said workman and not hire him again.

5—LITIGATION

The contractor agrees to pay and hold the company harmless from all debts or dues of, or demands or claims against the contractor or sub-contractors for debts, liabilities, or damages of any kind. If any claims devolve upon the company the engineer may, at his option, settle them and deduct same from money due the contractor.

6—ROAD CROSSINGS, FENCES

All public road crossings and highways must be kept open by the contractor and replaced in good condition by the contractor at his expense.

The contractor will not be expected to furnish fence for private right of way, except as "extras."

7—SUSPENSION OF WORK

If for any reason the company shall wish to suspend work before completion, and to terminate this contract, it shall have the right to do so by giving, through the engineer, a written notice thereof. Immediately after the service of such notice the said engineer shall make an estimate of the whole work done. The contractor agrees to accept the payment of such estimate, after deducting all moneys previously paid, and after deducting all claims against the contractor.

8—ENGINEER TO BE UMPIRE

The engineer is hereby constituted the sole arbiter of all matters, and to determine same in respect to work done or material furnished in the performance of this contract, and his certificate shall be final. The engineer shall have the power to appoint any assistants to represent him upon the work, and to vest in them all the powers conferred upon him.

9—CONTRACTOR'S RISK

The contractor takes the work solely upon the contractor's own information as to the character of the country, and the location and amount of the various kinds of material to be encountered, and without reliance upon the profile or representations of the engineer or any agent of the company.

The contractor is to be responsible for any work done until the final acceptance.

10—CHARGE OF COMPLETED PORTIONS

The company may take charge of any completed section of the road in order to prosecute its own work, but the taking charge of same shall not signify an acceptance of same.

11—FINAL ACCEPTANCE

Whenever, in the opinion of the engineer, these specifications and contract shall have been satisfactorily completed, said engineer shall make a final estimate of the work done and material furnished by the contractor, together with a statement of the amount then due him, and the company shall within fifteen days of receipt of said statement pay the contractor in full.

12—MATERIAL

The material used in constructing the railroad shall be of the following description:

The rail shall be 60-lb. 4 7-16-in. steel rail of the section designated by the American Society of Civil Engineers, or other equally satisfactory, in 30-ft. lengths, first quality.

The ties for the standard T-rail work shall be No. 1 standard railroad ties; they must be of white oak and of the dimensions as follows: Eight feet long, square ends, not less than 6 ins. or more than 7 ins. thick; to have a face not less than 6 ins. at the narrowest part between barks and to average 8-in. face, and to be spaced 2640 to the mile, but yellow pine, of size hereinafter mentioned, may be substituted in case the oak cannot be obtained.

The ties for the railway work in pavements shall be sawed oak, strictly first-class quality, and of the dimensions as follows: Six inches thick, 8 ins. wide and 7 ft. long, square ends.

Ties for curves must be of oak, either hewn or sawed, and of the dimensions as above described.

Joint fastenings shall be four-hole, 24 ins. long, and of the kind known as "continuous rail joints."

Bolts shall be 3/4-in. diameter, with hexagon nuts and long enough to take a nut lock.

Nut locks shall be used, and to be the Verona, National, or other equally satisfactory.

Spikes shall be the standard railroad spikes, 5 1/2 ins. x 9-16 in.

Copper bonds shall be the Invisible "Z" bond No. 0000, or other equally efficient and satisfactory.

Cattle guards to the number of two shall be furnished and put

in; they shall be metal surface guards, either of the National surface guard, or of other acceptable design.

Switches shall be the T-rail spring split switch, and spring rail frog; they shall be of standard design of steam railroad construction.

Track braces on curves and switches shall be the Ajax brace, or other equally satisfactory, and spaced 10 ft. apart.

Guard rails for curves may be of No. 2 rail, but must be the same section as used in other parts of the track, where necessary. Iron separators with bolts through the rail must be used; these to be of a design satisfactory to the engineer.

All material must be subject to inspection by the authorized agent of the railroad company, and any material which fails to meet all requirements of the specifications will be rejected and shall not be used in the work.

TRACK-LAYING AND SURFACING

The track is to be spiked to ties with four spikes to each tie. The outer rail of curved track shall be braced with brace blocks. Rails for curves must be bent to the proper curvature as required before laying in place, and any rails that have become kinked must be straightened out before being placed in track. Rails shall be brought to true alignment and gage, and the proper elevation of the outer rails on curves shall be given. All bolts shall be thoroughly tightened. The spikes on the inner side of the rail shall be on the same side of ties, and those on the outer side of rail shall be on the other side of ties. Ties shall be laid 2640 to the mile, or fifteen ties to a 30-ft. rail, spaced at joints as hereafter directed by the engineer; the center of the tie shall be laid on the center line of track. Ties shall be thoroughly tamped and spaced between, filled in, and surfaced to the top of same, unless otherwise ordered by the engineer. Inside guard rails shall be used, one for each track on curves where required.

BALLASTING

The contractor shall not be required to furnish or put in place any ballast, and the contractor shall not be required to move any ballast from one point to another without extra compensation therefor.

BONDING

The entire length of the track, together with the turnouts, is to be bonded by means of one 0000 protected and concealed flexible bond placed beneath the angle-bars at each rail-joint.

The contractor is to remove and replace bolts, rail-joint plates and spikes holding same, leaving the joints in the same condition as he finds them.

The ends of the rails are to be drilled for the bond terminals, the holes thoroughly cleaned, and the bonds applied by means of a compressor.

One single-o cross bond is to be applied every 500 ft.

All special work, such as frogs and railroad crossings, are to be bonded by means of 4-0 stranded copper cable attached to two 12-in. terminal bonds inserted in the rail ends adjacent to each side of the special work.

Extra precautions are to be taken with all bonds, cross bonds and ground connections to prevent possible theft, and the bonds are to be installed to prevent exposure to view.

UNIT PRICE

The bidder is to name a unit price per joint, which unit price is to be used as a basis for additions or deductions, in case the line is extended or shortened.

OVERHEAD CONSTRUCTION OF DEKALB & SYCAMORE ELECTRIC RAILWAY IN GENERAL

The purpose of this specification is to cover everything necessary for the complete overhead construction and bonding of the road, but if anything has been omitted which is necessary to make the system complete so far as the work covered by these specifications is concerned, it will be furnished by the contractor without additional cost to the railway.

The road consists of 8 miles of single-track road, with three turnouts and two switches, as shown upon the accompanying map and profile.

If any changes are required after the contract to be finally entered into between the successful bidder and the company they will be made at a price agreed upon in writing before the work is done.

POLES IN PLACE

There are at present — poles in place in the city of DeKalb, but the contractor will be expected to retamp these poles, and if required, to reset a limited number.

OVERHEAD CONSTRUCTION

The overhead material shall be guaranteed for two years and shall be equal to Anderson's or the Ohio Brass Company's.

Whenever the number of a certain type of material is given it refers to the Ohio Brass Company's catalogue No. 5.

POLES

All wooden poles will be round, live Idaho or Michigan cedar, with a diameter of 7 ins. or a circumference of 22 ins. at the top end. Poles must be reasonably sound at top end; cut from live timber and peeled. Twenty per cent butt rot will be allowed on all poles, and a crook one way not exceeding 1 in. for every 5 ft. of the full length of the pole, measured from a point 6 ft. from the butt end in accordance with the standard specifications of the Northwestern Cedarman's Association.

There will be required in DeKalb thirty iron poles, each to have 5-in. tops, 6-in. centers, and 7-in. bottoms, and to weigh not less than 700 lbs., and to have an ornamental iron cap. Suspension bands to be at least 3 ins. wide.

SETTING OF POLES

Inside the corporate limits of DeKalb and of Sycamore cross suspension method to be followed. Along highway and over private right of way bracket construction is to be adopted.

The normal height of trolley line above the tops of the rails will be 18 ft. 6 ins., except at railroad crossings, where it will be 22 ft.

Arrangements to be made for a cross-arm to be added in the future on all poles above bracket or suspension bolt.

All poles to be located as directed by the company's engineer in charge of the work. The poles to be an average distance of 100 ft., center to center on tangents, and as required for curves.

All poles shall be set in the earth at least one-fifth of their length, and the earth about the base of the poles is to be thoroughly tamped; tamping to be done in proportion of three tampers to one shoveler. After trolleys are in place the poles are to be re-tamped. The cross suspension poles shall be set with a rake outward from the center of the street about 24 ins., and are to be pulled up by span wires nearly straight. All guy poles are to be especially secured and set with an extra amount of rake. Where there is an extra strain put on any pole it shall be suitably guyed or anchored, preferably to a guy rod of the Stromberg type or equal. The location of guy stubs or rods shall be in accordance with the permits secured by the company. All poles are to be set in perfect alignment, and the tops of all poles, on either side of track, to be an equal distance above top of rails. Side suspension poles to have heel and toe keys which shall be equal to a 24-in. x 3-in. x 12 in. board at lower end of pole, and 48-in. x 3-in. x 12-in. board just below the ground.

All iron poles shall be set in the center of a body of concrete at least 24 ins. in diameter. The concrete shall be a one-three-five mixture, with cement equal to the best Louisville brand. There shall be a bottom layer of concrete at least 3 ins. thick, and the concrete surrounding the poles shall be thoroughly tamped to place and capped with a cement faced, coned, water table with drip above ground.

All poles shall be peeled and coned, and cones painted one coat of good quality paint. All wooden poles within the corporate limits of Sycamore and DeKalb shall be shaved and painted two coats of good mineral paint; one to be applied before setting, and one after poles are erected, and the line construction placed upon them. Quality and color to be approved by the engineer before being applied. Iron poles are to be painted two coats of approved paint.

Poles on curves, ends of turnouts, and trolley dead ends shall be anchored by 5/8-in. x 6-ft. galvanized anchor rod. From the anchor rod run a 5-16-in. galvanized iron cable secured with two turns about the top of pole, inserting a wood break insulator in each cable guy approximately 4 ft. from the poles.

SPAN WIRES

Span wires are to be 5-16-in. double galvanized seven-strand steel cable, fastened with friction clutch tie to 5/8-in. x 12-in. insulated eye bolts having 6-in. thread with nut and washer to protect the pole.

GUARD WIRE

There will be no guard wire furnished, except as an extra.

TROLLEY WIRE

Two No. 000 B. & S. gage, Fig. 8 copper trolley wires will be used, and must be erected taut without kinking or cutting same. Trolleys are to be spaced about 6 1/2 ins. apart over the single track and over the center of the tracks at turnouts. Trolley must be anchored on each side of the joints, using four of the riveted double strain ears, carrying a 1/4-in. double galvanized seven-strand steel cable to adjacent poles on each side of track, on span construction and on bracket construction erecting two extra poles opposite the two adjacent poles and anchoring said opposite poles. Wood break insulators to be inserted in the pull-off wires 4 ft.

from the strain ears. Ends of trolley shall be fastened together by means of splicing sleeves.

POLE BRACKETS

Brackets are to be of the flexible suspension type, equal to Richmond or Craighead, with over support $\frac{1}{2}$ -in. in diameter; the flexible suspension to be 5-16-in. seven-strand double galvanized steel cable, and tubing to be $1\frac{1}{2}$ ins. in diameter. Length of bracket 8 ft. 6 ins.

HANGERS

Straight line hangers are to be of the round top galvanized type, with curve hangers of similar type.

Straight line hangers equal to No. 4013 are to be used where double trolley is over single track, and equal to No. 4014 double curve pull-over to be used on all curve brackets. Intermediate pull-overs, equal to 4011-12, are to be used where single trolley is carried over turnouts.

GUYS

All bridles, head guys and pull-off wires are to be $\frac{3}{4}$ -in. seven-strand double galvanized steel cable.

All slugs, anchors and heavy guys are to be 5-16-in. seven-strand double galvanized cable.

TROLLEY CLAMPS

An approved form of malleable iron line clamp is to be used.

CURVES

All curves shall follow the track, but in general shall be constructed so that the greatest length of cord between hangers shall not exceed 10 ft. All pull-off wires shall be insulated, and all sharp curves are to be carried in ears of ample length, which shall be bent to conform to the curve, so as to allow no sharp turns in the wire.

ANCHORS

At the end of each curve, and as often as 2000 ft. in the tangents, the trolley wire is to be anchored in both directions. The terminals of the line shall be thoroughly anchored and insulated. No anchor, guy, or other wires shall be attached to trees or property of parties other than the company, except where absolutely necessary, and then only upon permit furnished by the company.

FEEDING TROLLEY

Two 350,000 C. M. bare stranded copper cables will be installed, both at DeKalb and at Sycamore, from the power house switchboard to the trolley line. These are to be used for feeding the trolley and they will be carried upon a separate line of poles. These poles are to be provided with two pin cross-arm fastened to the poles with two $\frac{1}{2}$ in. x 7 in. galvanized lag screws. Each cross-arm to have two $\frac{1}{4}$ in. x $1\frac{1}{4}$ in. x 24 in. galvanized braces fastened with galvanized lags, and each cross-arm is to be provided with two pins and two cable glass insulators. Poles are to be provided with double cross-arms near the power station, and the trolley line and at one railroad crossing. At the latter the poles must be of extra length.

Each feeder is to be dead-ended over the trolleys, and have its end made into a large Brooklyn insulator fastened to the opposite pole by a piece of 5-16-in. double galvanized steel cable. This pole is to be anchored in a manner similar to curve poles. Two No. 3-0 jumpers are to be soldered to the feeders and carried into bronze trolley feeder clamps.

The 350,000 C. M. negative return cable carried upon these pole lines is to be anchored to the pole on the power house side of the track by means of the Brooklyn strain insulator. This cable is to be attached to at least four-rail lengths, and is to be connected to each rail by means of a 0000 cross bond, thoroughly soldering all joints.

The contractor is to carry the positive and negative feeder leads into the power house and to the switchboard, suitably insulating same, and is to make the switchboard connection.

TREES

The contractor shall trim all branches of trees which interfere with the trolley poles. It is understood that the company is to secure all permits for trimming trees.

CAR-HOUSE TRACK WIRING

The wiring to the car houses and in the structure is not covered by these specifications.

ADJUSTING OVERHEAD CONSTRUCTION

If during the construction period, or within thirty days after the completion of the entire circuit, it should be pulled out of place on account of defective workmanship or material, the contractor shall renew all defective parts and furnish all labor for putting it in first-class condition. If trolley is strung during hot weather a slight sag is to be allowed to provide for contraction during the cold weather.

FEEDERS

There will be no feeders required under these specifications except the power-house connections.

WORKMANSHIP AND MATERIAL

All workmanship throughout is to be strictly first-class, and all work, methods of construction and material must receive the approval of the company's engineer before acceptance. The contractor shall employ workmen competent to perform the various kinds of work, and in case the technical representative of the company is dissatisfied with the work of any workman, the contractor shall at once replace workman with a more competent man.

UNIT PRICE

The bidder is to state a price covering the complete installation of 100 ft. of double trolley construction, which price is to be used as a basis for additions or deductions from the length of the line as shown upon the map.

The Franchise Situation in Chicago

Public opinion on the franchise question in Chicago seems to be veering in favor of the companies and against the obstruction policy adopted by the Mayor and some of his adherents. This was clearly exemplified at a meeting of the Chicago Council on Monday evening, Nov. 17. A resolution was introduced into that body favoring delay of action on the franchise question until the State Legislature passes acts enabling the city to own the street railway systems. On motion this bill was referred to the local transportation committee, which, it is well known, is hostile to the resolution and opposed to the municipal ownership ideas of the Mayor. The vote to refer the resolution to the committee was almost unanimous, showing that the sentiment of the present council favors an early settlement of the franchise question. The large vote by which the motion was passed shows that the party in favor of an early settlement of the question is strong enough to override the Mayor's veto.

Further Delay on the Pennsylvania Tunnel Franchise

The Board of Aldermen has interposed further obstacles in the way of the adoption of the Pennsylvania tunnel franchise by ordering a public hearing on Nov. 26. The conference committee presented the new franchise to the board Tuesday, and the report was referred to the railroad committee, with the understanding that the public be given an opportunity to express their views upon it. It is expected that a minority report will be presented later.

The majority report which was signed by four out of the six members of the conference committee answers the objections which have been made to the terms. It says:

"The economic evil of perpetual franchises is found in those grants of public privileges where the compensation to the grantor is based on a present valuation instead of being subject to readjustment from time to time as the privilege enhances in value. This evil is obviously not present here. Another objection obtains in grants of franchises to serve the local public (such as operating a street railway in city streets) which are practically exclusive, as there the main consideration for the grant is an efficient public service which can only be assured by subjecting the grantee to a termination of its privileges at a definite time. In this case the franchise is not local in character, nor is it exclusive (the city being free to grant any number of similar franchises under its many transverse streets) and such an objection to the proposed grant under consideration is, therefore, untenable.

The report accepted the contention of the Pennsylvania officials that as the space required for the tunnel was underground and could not be used by the city for any practical purpose, and that as the city would benefit financially and commercially by the tunnel, the compensation of \$2,000,000 fixed for the first twenty-five years was sufficient. Regarding the controversy concerning the insertion in the franchise of the eight-hour day and prevailing rate of wages clauses the report says:

The railroad representatives declined to accept the franchise if conditioned upon the performance of any obligation as to hours of employment or payment of particular wages, alleging that such a provision would be illegal; that it is unnecessary because the peculiar and hazardous character of the work to be done would necessitate the employment of the highest grade of labor, which inevitably demands and receives the highest wages; that in tunneling, which will be by far the greater part of the work, the hours of employment must, of necessity, owing to the character of the work, be less, rather than more, than eight hours. They further said that any concession of this character in this instance would inevitably cause dissatisfaction among their employees engaged in their numerous other enterprises now under way or contemplated, which could only result in endless embarrassment and serious disorganization of their company; that if the city authorities were unwilling to rely on the excellent record of the railroad in dealing with its employees, the railroad must decline to proceed further in the premises.

Your committee, responding to their personal inclination to secure for our laboring classes every advantage practicable and proper, endeavored to secure some modification of the certificate in this regard, but without success, realizing that under the decisions of our highest courts such a condition would be at best of doubtful validity, and that even if technically legal it would be incapable of practical enforcement, as a breach of the contract in this regard would obviously result in no damage to the city as a corporation, we cannot but believe that the city authorities will better serve the real interests of labor by granting the franchise without this condition than, by unfavorable action on the franchise, exclude from the labor market of this city an employer proposing to expend many millions in the employment of labor.

The Schenectady "Boycott"

The attempt of the Trades Assembly of Schenectady to boycott the Schenectady Railway Company has resulted in a most dismal and merited failure. On Sunday last at midnight the boycott was declared in operation, but it was not respected at any time by the union men or business interests; in fact, the high-handed policy of the Trades Assembly was openly and vigorously denounced by all classes of men.

It appears that the Schenectady Railway Company employs about 250 motormen and conductors, who do not care to join a union and are perfectly satisfied with the conditions of their employment. The effort to induce them to become members of a union having failed, an appeal was made to the company to compel them to join. This the company naturally and very properly declined to do. It was perfectly willing that the men should form or join a union if they wanted to; but if they did not want to it had no right to ask them to subject themselves to a control seeking the enforcement of rules they deemed inimical to their interests. The executive committee of the Trades Assembly then took the matter in hand and a decision was reached to punish the company by placing a boycott upon the railroad. It was decreed that every workman who rides on one of the cars would lose his union card and become a "scab;" every business man who rides once would be warned not to repeat the offense or he would be subjected to a boycott in his business; if an employee of anyone doing business in Schenectady rides after being warned his discharge would be demanded on penalty of the boycott. An effort was made to compel the Union Traction Company, over whose tracks the cars of the Schenectady Railway Company run for part of their service, to withdraw this privilege, on penalty of a general strike of its own employees. As the gas and electric lighting interests of Schenectady are closely allied with the railroad interest, members of unions and business men were forbidden to use either gas or electric lights, and the general public was requested not to do so. The Common Council was petitioned to cancel the contract for street lighting. And all of this because the motormen and conductors of the electric railway have deemed it to their interest not to affiliate with the union.

A special meeting of the Trades Assembly was held behind closed doors Tuesday evening to discuss the "differences" between the company and that body. Fully two-thirds of the delegates present were strongly in favor of lifting the boycott, but they were prevented from taking action by the filibustering tactics of the minority. The point was raised by the latter that as the boycott resolution was passed at a regular meeting it could not be rescinded at any but a regular meeting, except by unanimous consent.

The next regular meeting will be on Wednesday evening. In the meantime, many of the individual unions are expected to repudiate the boycott. Action of this kind has already been taken by the masons' union, and the local typographical, the brass workers' and polishers' unions are likely to follow suit.

But one individual union thus far has indorsed the boycott. At a meeting of Carpenters' Union, No. 146, it was decided to impose fines on all members found riding on the trolley cars. The fine was fixed at \$1 for the first offense and \$5 for the second offense. A third offense means expulsion from the union.

Increased Assessments of New Jersey Corporations

Mayor Fagan, of Jersey City, has signed the resolution of the Board of Tax Commissioners fixing the tax rate at \$27.80 per \$1,000, on an assessed valuation of \$100,360,437. This action has led to considerable complication between Jersey City and Hoboken, as well as the large corporations doing business in those cities. Among the companies whose valuation have been increased are the North Jersey Street Railway, from \$593,500 to \$1,043,500, and the Jersey City, Hoboken & Paterson Street Railway from \$373,450 to \$543,950. Various small companies found their property correspondingly increased in value. All the corporations at once decided to dispute the valuations and appeal to the State Board of Taxation, but before they had time to act they found an unexpected ally in Mayor Lankering, of Hoboken.

He asserted that if the Jersey City valuations were allowed to stand, Hoboken would not receive its fair proportion of the franchise tax collected by the State from railroad, trolley and telegraph companies using public streets. The Hoboken Mayor was granted a rule to show cause why a writ of certiorari should not issue removing to the Supreme Court for review the valuations fixed by the Jersey City Tax Board. The Hoboken officials have begun presenting testimony before Theodore Rurode, a Supreme Court Commissioner, under this rule.

Increase of Wages at Philadelphia, Syracuse and Atlanta

The Philadelphia Rapid Transit Company, the Syracuse Rapid Transit Railway Company and the Georgia Railway & Electric Company have recently announced that the wages of their employees are to be increased, because in each case the employees, by the faithful performance of their duties, have aided materially in the general prosperity of the companies.

The announcement of the increase in the wages of the employees of the Philadelphia Rapid Transit Company was made Nov. 17, after a meeting of the stockholders of the company had adjourned. The increase will date from Dec. 1, and will be from 19 cents to 20 cents an hour. Twice within a year the company has made an advance of a cent an hour, which, together, make a total increase in wages of a trifle more than 11 per cent. Last Christmas announcement was made of an increase from 18 cents to 19 cents an hour. Within five years the company has advanced the wages of its conductors and motormen from 16 2-3 cents an hour to 20 cents. Three advances, aggregating 20 per cent, have been made since 1897. The first took effect in 1900, the second was the advance decreed last Christmas, and the third was that which is to be effective on Dec. 1.

The announcement of the increase for the employees of the Syracuse Company was made by E. G. Connette, general manager of the company, at a recent meeting of the Employees' Mutual Benefit Association, composed of employees of the company. Mr. Connette said that when he assumed the management of the company, about two and a half years ago, he met with the employees of the company in the association rooms and stated that he desired the co-operation of every employee of the company; that the success of the management depended upon the loyal support of every employee from the smallest to the greatest, and that the employees should share in the success of the company. In proof of this declaration the company advanced wages on Jan. 1, 1901, and on Christmas Day of the same year presented each employee a cash present of from \$3 to \$5. Continuing their excellent work, the employees so aided the company that its floated indebtedness has been considerably reduced, and there have remained surplus earnings which have been used for improvements. It is in recognition of this excellent work, and the desire to secure a continuance of it, that the increase just announced is made.

The new advance is a decided one, and will make the aggregate increase in operating expenses about \$15,000 per annum. Men who have been in the employ of the company for a year will receive 16 cents per hour; those who have served two years will get 17 cents an hour, and those who have served three years are to receive 18 cents per hour. Men who have served over three years are to get 19 cents, while all conductors who have been in the company's employ over five years are to be given 20 cents an hour. There are eighty-three men who have been employed between three and five years, and about eighty-four who have been employed for five years. The latter will receive a maximum rate of \$2 per day or 20 cents an hour. When Mr. Connette assumed the management of the company the minimum rate of wages was \$1.35, and the maximum about \$1.60. The new scale of wages will make the minimum rate \$1.60 and the maximum \$2. There are about 300 conductors and motormen in the employ of the company at present.

The increase in the wages of the employees of the Georgia Railway & Electric Company will date from Dec. 1. Announcement of the increase was made to the men through a general letter from the company signed by D. A. Belden, vice-president and manager of the company. In this letter attention was called to the excellent manner in which the employees perform their duties, and to the desire of the company to have men remain with the company permanently. Attention was also called to the material increase in operating expenses that is involved in putting into effect the new wage schedule, and an appeal was made for the continuance of the excellent standard of service that has made the increase possible. First year men in the employ of the company now receive 13 cents an hour; second year men, 14 cents per hour; thereafter, 15 cents per hour. The new schedule of wages will be: First year, 14 cents; second year, 15 cents; third, fourth and fifth years, 17 cents; after five years, 18 cents.

COMMUNICATION

Car Mile or Car Hour

Nov. 15, 1902.

EDITORS STREET RAILWAY JOURNAL:

At the Kansas City convention of the Street Railway Accountants' Association, in 1900, a select committee presented a report upon the subject, "Is a Standard Unit of Comparison practicable?" The question was between the "car mile" unit and the "car hour" unit as a standard of comparison for earnings and expenses. The discussion developed quite a difference of opinion, and although the advocates of the "car hour" unit appeared to be in the majority there was quite a respectable minority that seemed to cling to the idea that the "car hour" unit was not much, if any, better than the "car mile" unit for comparing one line on one system with another. At the close of the discussion the association adopted a resolution recommending "the use of the car hour as a standard unit of comparison, with the understanding that it be put to a practical test by each company represented in the membership of the association, either in connection with the car mile or not, as they may see fit, and that the committee report back at the 1901 convention."

At the New York convention in 1901 the committee reported back that it had been shown conclusively that the "car hour" unit had demonstrated its practicability and its value, and by resolution the association recommended its adoption as a standard unit of comparison.

I had hoped that the report of the 1902 convention would show how many roads had followed the recommendation of the association, and that there might be some expression of value from them as to their experience. The road with which the writer is connected has, for satisfactory reasons, waited a year to learn from the many advocates of the "car hour" unit whether after a year's trial they have had any reason to change their views or whether they have discovered any additional evidence that the "car mile" unit is worthless, and the "car hour" unit the correct unit of comparison. I shall look to your paper with considerable interest for specific information on the subject.

It has always seemed to the writer that, whether it be one unit or another, a unit of some kind may be more or less desirable for comparing one line or system or one period with another, but its principal value to the railroad manager is not as a unit of comparison. What he wants to know primarily is what each particular line is actually doing, what net results it is accomplishing, and he wants the information in the simplest, most graphic form. The unit wanted by the manager is one that will be a correct gage of the net results, a unit that will show in concrete form the actual commercial value of the work done. The comparing of one line or system, or one period with another is a secondary but nevertheless interesting consideration. It would seem that too much stress is being put on the desirability of comparison and not enough on the getting of a correct unit of measuring the value of the results accomplished. The whole question, as between the "car mile" and the "car hour" units, would seem to be: First, which is the better gage of the results accomplished? Second, which is the better for purposes of comparison?

It has been shown that the question of speed has a marked effect on the "car mile" unit, and that a difference in speed between two lines (other conditions being similar) will render the figures per car mile valueless for purposes of comparison. In like manner is it not true that a difference in the length of run, or the length of haul per passenger, has a marked effect on the "car mile" unit, and the "car hour" unit as well? For instance, how would you compare a short line (thirty minutes each half trip) with a long line (one hour each half trip) on either the car mile or the car hour basis? Suppose the short line has an average earning of \$4 per round trip, and shows 36 cents per car mile and \$4 per car hour, while the long line has an average earning of \$6 per round trip, and shows 20 cents per car mile and \$3 per car hour—the question is, of what value are the figures for comparison? This would seem to be a fair example of attempting to compare on a standard basis two things which are unlike, and shows the difficulty, if not the utter futility, of making a standard unit of comparison. Without a thorough knowledge of the local conditions there seems to be no unit of comparison that will accurately tell the story of the relative results. Another instance might be cited of where 53 per cent of the business of a certain line is free transfer passengers, and it would be folly to attempt to compare on either suggested basis the earnings and expenses of such a line with some other line where only 10 per cent is transfers. If, as in Philadelphia, a road charges 3 cents for each transfer how could there be any basis of comparison with another road that issues

free transfers? One road pays its conductors and motormen 17 cents per car hour, and another pays 23 cents or 25 cents per car hour, and there is again no equitable basis of comparison without a full knowledge of the details.

While I might be willing to concede that the "car hour" unit is a better measure than the "car mile" unit of the results on any particular line, I am still far from being convinced that either the "car hour" or the "car mile" units are of any especial value for comparing one line or system with another. The comparing of one line or system with itself for two different periods may be done more intelligently.

Railroad managers are not wedded to the car mile unit provided it can be shown that there is a better gage of work done. There is, however, more or less natural conservatism to overcome before a new basis can be universally inaugurated. It is well known that Wall Street has been accustomed for many years to look upon earnings per car mile as the concrete unit of results accomplished, and a campaign of education may be necessary to bring about a change of view. As this is written with the object of learning something of the experience, after a year's trial, of the "car hour" unit as a measure of value I trust that some of its advocates will reply.

MANAGER SEEKING INFORMATION.

An Important Decision in Pennsylvania

Additional information is at hand concerning the decision of Justice Dean, of Pennsylvania, which declares unconstitutional acts of Assembly permitting rival passenger railways to use 2500 ft. of an existing road for a connection. The decision, as was stated in the STREET RAILWAY JOURNAL for Nov. 15, was rendered in the case of the Philadelphia, Morton & Swarthmore Street Railway Company against the Chester, Darby & Philadelphia Railway Company, the Union Railway Company, of Chester, and the Chester Traction Company. The former company was organized by Philadelphians, and by demanding 800 ft. of the latter's tracks secured the right for such use in the Delaware County courts, and viewers were appointed to assess damages. The Chester Company denied the right of the court to grant the use demanded, and declared that the legislation by which it was expected to do so was unconstitutional. The Chester Company was enjoined from preventing the occupation of the track, and the appeal to the Supreme Court was taken. This was the first time the matter had ever been carried up, although lawyers all over the State had said the act would not hold water. Section 14 of the act of 1889 says in part and substance:

"Any passenger railway incorporated under this act shall have the right to use such portion of the tracks of any other company already laid down, as may be necessary to construct a circuit upon its own road at the end thereof."

The section limits the distance to 500 ft., but the act of 1895 extended the distance of 2500 ft., the first section stipulating single track and the amendment making no limit as to the number of tracks. Justice Dean says:

"We are in no doubt as to just what power the Legislature intended to confer by these acts. It was a clear grant of a right to the younger to enter upon the easement of the older company and take possession of 2500 ft of its tracks, poles and wires and thereafter to use them for its corporate purposes. It was not material that this possession was not to be exclusive. In whatever light it is viewed it was an authority to appropriate to a certain extent the franchise and property of the older company."

Justice Dean goes on to say that it is a well established principle of law that all property may be taken for public use, and that the right of the Legislature to confer on a corporation the right to take the franchise and property of an older corporation for public use cannot be questioned; but in searching the decision of other States he has been unable to find a judicial judgment upholding the right of one corporation for profit to appropriate the property of another for exactly the same uses merely for the convenience and profit of the younger corporation. He says the public receives no benefit, and the transaction is simply one for the advantage and profit of the new company.

Justice Dean holds that expectation of public patronage always tempts investment of capital, but that with property in constant peril by the demands of new corporations upon the property of the older the public would suffer by refusal of capital to invest in improvements for public use. He argues that if it is right to allow the use of 2500 ft. there is no limit to the distance or to the number of future companies which demand the right except the cupidity of the new corporation or corporations and the will of the Legislature.

The contention that if Section 14 is unconstitutional the whole act is so, and that the companies organized under it hold an illegal

existence is denied by Justice Dean, who holds that the act stands completely outside of the section killed.

The general opinion on the decision seems to be that the already impregnable position held by the Philadelphia Company in the local traction field at Pittsburgh is strengthened. Owing to the topography of Pittsburgh, Allegheny City and surrounding suburbs, it is practically impossible for a new traction line to gain an entrance to either city.

"In the opinion of a prominent Pittsburgh banker," says the Philadelphia News Bureau, "the Pennsylvania Railroad may become the greatest beneficiary of the new decision. Several county, State and national politicians are interested in various traction enterprises which parallel Pennsylvania Railroad and Pennsylvania company lines. The constituents of these enterprises are small electric railways, which it is proposed to connect, forming a comprehensive system. Where this competition threatens to become serious to the steam railroads, all the Pennsylvania Railroad would have to do would be to buy control of one of the connecting links. With this control, under Justice Dean's decision, the Pennsylvania could emasculate any network of trolley roads by preventing the use of its particular link."

The Widener-Elkins and Pomeroy-Mandelbaum Deal

The "community of interests" between the Widener-Elkins syndicate and the Pomeroy-Mandelbaum syndicate for control of lines in the vicinity of Cincinnati, mention of which has been made several times in the columns of this paper, has been consummated, and W. Kelsey Schoepf, president of the Cincinnati Traction Company, has been elected to the directorate of the Cincinnati, Dayton & Toledo Traction Company, with the new title of chairman of the board. The agreement, as previously outlined, provides for a desirable entrance into Cincinnati for the Cincinnati, Dayton & Toledo, an equal partnership in a terminal company, which will provide entrances for other interurban roads to Cincinnati, the sale to the Widener-Elkins interest of 5,000 shares of Cincinnati, Dayton & Toledo stock, and 3000 shares of Miami & Erie Canal stock, and 300,000 of canal bonds. It is stated that the Widener-Elkins syndicate now holds 10,000 shares and \$1,000,000 in the stocks and bonds of the two Pomeroy-Mandelbaum projects. It is also understood that the Pomeroy-Mandelbaum syndicate has secured large holdings in the Cincinnati Traction Company. The amount of the holdings is not given, however. On account of the differences in gage of tracks, the Cincinnati Traction Company will furnish eight double-truck cars to be painted in the Cincinnati, Dayton & Toledo color, and these will meet the cars of the traction company and convey passengers direct to Fountain Square, reducing the present running time to this point by twenty minutes.

Power for Baltimore

The purchase of the \$2,000,000 of common stock of the United Electric Light & Power Company from the United Railways & Electric Company, of Baltimore, Md., by a syndicate, acting through the Continental Trust Company, has been concluded. For the stock, which constitutes the entire issue, \$900,000 is to be paid on or before January 15, 1903. The purchase of the control of the light and power company practically assures the launching of the great Susquehanna River electric power development project by the syndicate. There are to be three development plants that will cost between \$10,000,000 and \$12,000,000, and two years' will be required to complete the work, the purpose being to supply motive power for the street railway system of Baltimore, to supply electricity for lighting the streets and for general power and heating purposes.

Alleged Conspiracy

The Peoria & Pekin Terminal Railway, of Peoria, Ill., which stands unique among railways, inasmuch as it combines under one management a street railway, an interurban electric railway and a steam railroad, all using the same tracks in common, and constituting a single road, has commenced suit against the Peoria & Pekin Union Company and the railroad companies which jointly own the Union Company's stock, alleging that there is a conspiracy on the part of the railroad companies to keep it from getting its share of business. The Peoria & Pekin Union operates about 20 miles of road between Peoria and Pekin, and the stock is owned in common by the various railroads entering Peoria. It is used as a belt line, and has been operated in this way for about 20 years. The Terminal Company operates what is practically a parallel line. Failing to get any considerable amount of business, it has, as stated, applied to the courts for relief on the ground that the roads delivering freight to the Union Company have made an exclusive

contract which is in restraint of trade and in violation of law. The question which the court will have to determine is whether the owners of the Union shall be compelled to give up their business to a competitor.

Northwestern Elevated Report

Directors of the Northwestern Elevated Railroad, of Chicago, have made a report to the State Railroad and Warehouse Commission, showing the operations of the road for the year ended June 30, 1902. The net surplus for that period was \$151,631, or about 3 per cent on the preferred stock, against a surplus of \$255,428 for the preceding year, a decrease of \$103,797. This decrease was due largely to the increased taxes which the company was called upon to pay, the total taxes and compensation to the city amounting to more than 3 per cent on the preferred stock. According to the statement, the Union Loop did not earn enough money during the eight months in which it has been under the control of the Northwestern to meet the interest on the bonds issued for its purchase.

During the year \$365,000 was expended for permanent betterments, including \$187,000 for new cars and \$91,000 for power house extension. All of these betterment expenditures were met out of accumulated surplus earnings. The accumulation of earnings since the road was opened amounts to \$417,113, all of which has gone back into the property.

Following are income account and balance sheet of the company as of June 30, 1902:

INCOME ACCOUNT			
Year ending June 30	1902	1901	Increase
Operating earnings:			
Northwestern proper	\$1,088,267	\$947,465	\$140,802
Loop division	376,177	376,177
Totals	\$1,464,444	\$947,465	\$516,979
Rent and miscellaneous	34,570	31,301	3,269
Gross earnings	\$1,499,014	\$978,766	\$520,248
Operating expenses:			
Maintenance way	\$15,980	\$6,500	\$9,480
Maintenance cars	45,166	15,472	29,694
Reserve for maintenance	33,000	33,000
Transportation	285,196	261,148	24,048
General and legal	45,719	39,525	6,194
Total operating	\$425,061	\$322,645	\$102,416
Net earnings	1,073,953	656,121	417,832
Charges:			
Bond interest	\$742,386	\$280,630	\$461,756
Other interest	5,355	5,535	*180
Rental	15,241	94,657	*79,416
Taxes	159,340	19,871	139,469
Total charges	\$922,322	\$400,693	\$521,629
Surplus	151,631	255,428	*103,797
* Decrease.			
ASSETS			
Cost of road and equipment			\$28,208,733
Cash on hand			217,338
Accounts receivable			279,498
Materials			3,267
Lands and buildings			455,587
Sundry			181,318
			\$29,345,747
LIABILITIES			
Capital stock			\$10,000,000
Funded debt			18,387,000
Real estate mortgages			119,000
Interest accrued			241,504
Taxes accrued			55,359
Sundry			61,635
Accounts payable			64,075
Profit and loss			417,113
			\$29,345,747

Meeting of the New England Street Railway Club

The next regular meeting of the New England Street Railway Club will be held at Wesleyan Hall, 36 Bromfield Street, Boston, on Tuesday evening, Nov. 25 at 8 o'clock. William Pestell, superintendent of the motive power and machinery of the Worcester Consolidated Street Railway Company, will speak on "Labor Saving Appliance in Car House Operation," and J. P. Conway, assistant superintendent of the Old Colony Street Railway Company, branch of the Massachusetts Electric Companies, will speak on "Snow Equipment and Organization for the Proper Handling of Snow—Rotary vs. Shear Plows."

Manhattan Railway Earnings

The changes in the Manhattan system have attracted as much attention among investors as in the engineering world, and the reports of operating expenses since the electrical equipment was installed have been very closely scrutinized. An indication of the extent of the interest shown in this subject may be gained from the fact that a prominent Wall Street expert has prepared for the benefit of investors a careful analysis of the conditions affecting the values of these securities, and presented it in the form of an elaborate circular. The financial condition of the property is pronounced excellent, and it is pointed out that, owing to the policy of the company to make ample provision for all emergencies and possible claims against it, the outlook is very encouraging.

Regarding the effect of the electrical equipment upon the earning value of the property, attention is directed to the fact that, although only a part of the system has been electrically operated during the last year, the operating expenses consumed only 50.10 per cent of the gross earnings, against 55.38 per cent the previous year. For the current year it is estimated that the operating expenses will be 46 per cent of the gross earnings.

The circular continues: "The following consideration of the matter on a car mile basis will show that this estimate is conservative; the report for 1902 shows that the receipts per car mile were 23.70 cents, and the operating expenses 12.26 cents per car mile. It was estimated, at the time the decision was made to install electricity, that the saving in operating expenses therefrom would be between 2 cents and 2½ cents per car mile. In our estimate of the earnings for 1903, if the receipts per car mile are taken at 23.70 cents, the operating expenses per car mile prove to be 10.90 cents, a reduction of 1.36 cents from the cost for 1902. Inasmuch as there was an increase of 20 passengers per train in 1902 over 1901, we believe that the receipts per car mile in 1903 will be at least 24 cents, instead of 23.70 cents. In this case our estimated operating expenses would be at the rate of 11.04 cents, a decrease of only 1.21 cents. From this it will be seen that the estimated saving from electrical operation will not be fully reached during this year. How nearly these estimated results will eventually be attained it is impossible to say, but, roughly speaking, a reduction of 1 cent per car mile in operating expenses is equal to 1 per cent additional earned on the capital stock. While there is no basis on which to forecast the gross earnings for 1904, or for subsequent years, it is reasonable to expect that the operating expenses will, after the current year, be decreased substantially in accordance with the original estimates. We feel that an operating cost of 10 cents per car mile for the Manhattan is not too low to expect, when it is considered that the Metropolitan West Side Elevated Railway, of Chicago, operates for 8 cents per car mile.

"We estimate that the result of operation for the year ending June 30, 1903, will be as follows:

Cross earnings	\$12,479,116
Operating expenses (46 per cent of gross).....	5,740,393
Net earnings	\$6,738,723
Other income	210,000
Surplus	\$6,948,723
Taxes, interest and rentals	2,800,000
Applicable to dividends	\$4,184,723

which is equal to 8.6 per cent on the capital stock."

New Cars for St. Louis

The St. Louis Transit Company has just added fifty new cars to the equipment of its Olive Street division. These cars were manufactured by the Laclède Car Company, of St. Louis, and will give the Olive Street line its full complement of 140. The new cars will be 4 ins. wider than the old ones, and in length measure 48 ft. over all. The body is 34 ft. long. The rear double platform, with rail partition, measures 6 ft.

The seating capacity is forty-eight persons, there being eight more seats than in the old cars. The interior of these cars is finished in solid cherry, with ceiling in birdseye maple. The rattan-covered spring seats are not reversible, but have stationary backs, which are considered more comfortable. As the cars travel head-on all the time the swinging seat is no longer necessary.

The new cars are mounted on a special type of truck, designed by Vice-President Dupont, of the company. The wheels of these trucks are all of the same size, the present pony wheel being abandoned. The rear platform is dropped 10 ins. from the floor of the car, and the first step is just 14 ins. from the ground, as

against 17 ins. to 19 ins. of the present car step. The number of motors is increased from two to four. The cars will be heated with stoves of the latest pattern, which the company considers a better method for heating than the electric heaters now in use on some of the cars, and are provided with fifteen lamps, distributed at intervals of 2 ft. The cars are equipped with power brakes.

The Rolling of Solid Steel Car Wheels

A representative of the STREET RAILWAY JOURNAL recently had opportunity to visit the plant of the American Car & Foundry Company in Chicago (formerly the Wells-French plant), where a part of the establishment has been set aside for the rolling of solid steel car wheels by a new process. Wheels turned out by this process have the advantage of being as tough as steel-tired wheels and at the same time have the advantage not possessed by those wheels of being in one piece as are cast-iron wheels, so that trouble from the heating, expanding and loosening of steel tires under the brake-shoes is done away with. This new department of the American Car & Foundry Company promises to be a very important one, especially for interurban electrical lines, because the price of a solid steel-rolled wheel is far below that of any built-up wheel with the steel tire, so that interurban lines heretofore hesitating to adopt steel-tired wheels on account of the expense can equip with solid rolled-steel wheels, and secure the safety of the steel tire without its cost and other disadvantages. Although for high-speed work wheels with steel tires have always been admitted to be the safest, the high cost and the rapid wear of soft steel as compared with chilled iron has heretofore prevented their use in many places where they would be desirable.

The steel wheel department of this company is under the management of H. W. Fowler, a man well known in the car-wheel business, who began his experiments along this line and put a few thousand solid steel car wheels with rolled treads into use on some twenty different steam railroads between 1887 and 1890.

They were made from blanks of cast steel with treads and flanges compressed and hardened by rolling, under patented processes of Mr. Fowler's, by the Fowler Steel Car Wheel Company. The main reason these wheels were not a success was because of the porous character of the steel castings from which the wheels were rolled. The best steel castings obtainable at that time were used, but these frequently had serious defects. Another cause for the failure of this early attempt was that the rolls employed in forming the tread and flange of the wheel operated only against the periphery. This worked and compressed the steel in the rim upon the surface only. Notwithstanding the defects which developed in many of the wheels, there were others which gave exceptionally good results. Some of them have been in continuous service under the passenger cars of one prominent steam road for the last twelve years, and they are claimed to have already made over 8000 miles each. This only served to indicate what might be expected if these defects could be overcome.

The present wheel is an evolution of the old Fowler wheel. The cast steel blank is still used. The advance in the art of steel casting within the last few years now makes it possible to secure a solid and reliable production. The cast steel blanks from which the car wheels are rolled are of the same shape as the finished rolled wheels as far as the hub and plate of the wheel are concerned. The rim of the cast steel blank, however, is thicker than the finished rim of the car wheel, as is also the flange. In the manufacture of these wheels from the cast steel blanks, the blanks are heated in an oil furnace to a temperature which will soften them enough for rolling. They are then put in a rolling machine, in which the rim is compressed by three rolls, two of which press under the rim and one on the top and sides. A wheel makes about eighty revolutions in the process of rolling the rim, and the metal of the rim is reduced in cross section from 15 per cent to 20 per cent, which goes to show the remarkable amount of compression of the metal produced by the rolls. The plate and hub of the wheel remains untouched and unaltered in cross section. The compression secured by the rolling invented by Mr. Fowler is even more complete than is secured in the making of open tires. It is claimed that since the tire is one piece with the rest of the wheel, that the wheels can be safely worn down much thinner than any tire mechanically held on a center. One feature of the rolling process which cannot escape an intelligent observer is the great amount of power taken in the rolling of a rim, even though the amount of reduction in cross section of the casting by one revolution be extremely small, all of which shows that a great amount of compression of the metal is taking place. But the fact that the cross section of the rim is reduced so much demonstrates this even more forcibly. The amount of rolling necessary to compress the metal of the rim is judged by the amount of rolling the

rim will stand without forming a fin between the rolls. Just before this fin begins to form the rolling is stopped, and the wheels are taken out and delivered to a closed pit, where they cool gradually and evenly for several days.

Between Boston and Lowell by Trolley

Through car service between Boston and Lowell, Mass., was inaugurated on Nov. 17, when vestibuled cars of the Lexington & Boston Street Railway Company began running from the Sullivan Square Elevated Railway Station, in Charlestown, over the surface tracks of the Boston Elevated Railway Company to Arlington Heights, and thence to Lowell via Lexington, Bedford and Billerica. The distance is about 22 miles, and is covered in approximately two and one-quarter hours, at a schedule speed of about 10 miles per hour, including stops. Cars leave Sullivan Square at 15 and 45 minutes past the hour, and the fare between Boston and Lowell is 25 cents. The fare by the Southern Division of the Boston & Maine Railroad (steam) is 60 cents; the distance 26 miles, and the average running time about one hour. On coming to Boston from Lowell, the crews are changed at Arlington Heights, where the Boston Elevated Railway Company takes the cars in charge, and gives them right of way over its own cars, running them over its own tracks into Medford, Somerville and Charlestown, and up the surface car incline at Sullivan Square into the terminal station of the elevated division, and the end of transferring surface lines to West Somerville, Malden and Everett. The extra length of the cars over those operated by the Boston Elevated necessitates special care in their operation, particularly over the incline approach interlocking switches of the Sullivan Square terminal, there being no detector bars on the surface line switches.

The new cars seat forty-two passengers each, and have cross seats. The body length is about 34 ft., and the length over all about 40 ft. Each car is equipped with four G. E. "67" motors rated at 38 hp each on the hour basis of temperature rise. The cars are painted blue and present a fine appearance, with vestibuled ends. There are two trolleys, and 33-in. wheels are used, with Taylor trucks, "Consolidated" car heaters, New Haven registers with rod attachment, and Kilbourn sanders. Two registers are used, one for cash fares, and the other for transfers. Each car has 20 16-cp lights. Free transfer to any part of Boston and its suburbs is effected by the arrangement to run the cars into the terminal at Sullivan Square, and when the Boston & Worcester Street Railway Company's cars are run into the Park Street subway station, it will be possible to travel from Lowell to Worcester via Boston, with but two changes of cars, both of these changes being made in stations entirely protected from the weather. Christensen "straight air" brakes are used.

New York's New Street Signs

It will be a matter of general interest, not only to the people of New York, but also to visitors in the Metropolis, to learn that the designs for the new street corner signs have been accepted by the Municipal Art Commission, and it is to be hoped that they will be supplied as soon as possible. Comment is commonly made that it is remarkable what a long time such a simple reform has taken under a reform administration. It is to be hoped that the proposed signs will permit patrons of street cars to read them without dislocating or straining their necks.

Street Railway Patents

[This department is conducted by W. A. Rosenbaum, patent attorney, Room No. 1203-7 Nassau-Beekman Building, New York.]
UNITED STATES PATENTS ISSUED NOV. 11, 1902

713,162. Fender for Vehicles; E. Sherwood, Brooklyn, N. Y. App. filed May 14, 1901. A vertically movable fender supported below the dashboard of the car and adapted to fold against the dashboard so that two cars may be coupled together without removing the fender.

713,163. Car Fender; E. Sherwood, Brooklyn, N. Y. App. filed May 8, 1902. Provides for automatically locking the fender frame against detachment in both its elevated and depressed positions.

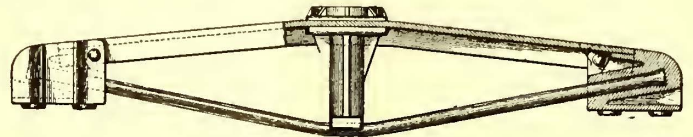
713,183. Side Bearing; J. C. Wands, St. Louis, Mo. App. filed Oct. 16, 1901. Consist of a casting forming an endless way composed of a high and low side, a continuous row of balls confined in said way, and a removable plate under the casting to support the balls on the low side of said way.

713,211. Mounting for Electric Heaters; E. E. Gold, New York, N. Y. App. filed Oct. 16, 1901. The pedestal of a movable car seat is cut out to receive the heater which is protected by guards extending out from the pedestal.

713,311. Railway Construction; L. C. Kendall, Boston, Mass. App. filed Jan. 4, 1902. Stringers support cross timbers which sustain sleepers connected to said cross timbers at their central portions, and adapted to support rails on their free ends, said free ends of the sleepers being unconnected with the ends of, and separated by a space from, the ends of the cross timbers, whereby the vibration passes through the sleepers to the construction on which the sleeper rests.

713,340. Electromagnetic Brake; W. T. Pember, Toronto, Canada. App. filed March 4, 1902. A bar extending between the wheels has shoes attached to its ends, the bar being obliquely set and so arranged that the shoe at one end is below the center of the axle of the wheel and at the other end is above the center of the axle, the bar being wound with insulated wire, the ends of which are connected to a source of current for magnetizing the bar, thus creating a magnetic and frictional brake and a magnetic pull of the wheels on the rails.

713,357. Emergency Brake; A. L. Von Steuber, Allentown, Pa. App. filed June 14, 1902. Drop-arms pivoted to a supporting frame carry at their free ends a contact plate adapted to be forced down upon the rails at right angles thereto by a hand wheel and screw shaft.



PATENT NO. 713,543

713,368. Car Truck Bolster; J. C. Wands, St. Louis, Mo. App. filed Aug. 11, 1902. Comprises a compression member, head blocks cast on the ends thereof, a tension member and a strut.

713,499. Car Brake; J. Runnoe, Crested Butte, Col. App. filed June 10, 1902. Relates to the construction of the slack adjuster.

713,510. Truck Side Frame; C. S. Shallenberger, Milwaukee, Wis. App. filed July 12, 1902. Comprises a casting having a recess at its center, primarily open at the top, adapted to receive the springs and end of the bolster and a compression member removably inserted in said recess above the bolster.

713,543. Car Truck Bolster; J. C. Wands, St. Louis, Mo. App. filed Aug. 11, 1902. Consists of a tension member having its ends shaped for permanent attachment in a casting, head blocks cast on the ends of said tension member, a compression member and a strut.

PERSONAL MENTION

MR. GEO. F. McCULLOCH, president of the Union Traction Company, of Indiana, has returned from an extended trip through Europe. Mr. McCulloch was accompanied by Mrs. McCulloch, for the benefit of whose health the trip was made. Both have been greatly benefited by the trip.

MR. EDWARD H. RICHARDS has been appointed assistant to Mr. Arthur C. Ralph, general superintendent of the Boston & Worcester Street Railway, of Worcester, Mass., and began his new duties Nov. 10. Mr. Richards is a young man, but has had considerable street railway experience. He has lately been with the Old Colony Street Railway, at Brockton, Mass., and was before that located at Bridgewater.

MR. C. N. DUFFY, auditor and assistant to the president of the Chicago City Railway Company, suffered a sad bereavement on Nov. 8 in the death of his wife. Mrs. Duffy was a lady of exceptional social attainments and attractive personality, and was held in the highest esteem by all who knew her. She had been sick for some time and was thought to be improving, but the end came suddenly. Mr. Duffy has the sincerest sympathies of all his friends in his loss.

MR. JAMES S. HEMINGWAY has been elected president of the Fair Haven & Westville Railroad, of New Haven, Conn., to succeed Mr. Henry S. Parmelee, deceased, and Mr. John B. Carrington has been elected vice-president of the company, succeeding Mr. Samuel Hemingway, who was first chosen for the presidency, but declined because other business claims a large share of his time. Mr. James S. Hemingway is a young business man of New Haven, and for a number of years has been a leading spirit in the Second National Bank. He has also been identified with several other enterprises, including that of the Fair Haven & Westville Railroad, of which he has been a director. Several years ago Mr. Hemingway was a member of the city government.

LEGAL DEPARTMENT

CONDUCTED BY WILBUR LARREMORE OF THE NEW YORK BAR

LIABILITY FOR NEGLIGENCE

INDIANA.—Street Railroads—Crossing Accident—Contributory Negligence—Trial—Judgments—Judgment Notwithstanding Verdict—Special Findings—Conflict in Findings.

1. A judgment notwithstanding the general verdict should not be granted by reason of special findings, unless the findings, construed strictly against the moving party, are in such conflict with the general verdict, construed with every reasonable intendment in its favor, that the two can not exist together or be reconciled.

2. A judgment can not be rendered on special findings in opposition to a general verdict, unless the findings are sufficient, when strictly construed, to warrant a judgment within the issues for the moving party.

3. The fact that special findings contradict each other only affects the findings, and does not impair the general verdict.

4. Where plaintiff was injured at a street railroad crossing, a finding that plaintiff was voluntarily driving across defendant's track when the accident occurred, can not be construed as a finding that plaintiff voluntarily encountered the danger.

5. Where plaintiff was injured at a street railway crossing, findings that plaintiff, having average capacity to see and hear, and knowing that his horse was afraid of cars, and that cars frequently ran on a certain track, attempted to drive across the track without stopping, though his view was obstructed by buildings and trees, but that he looked and listened, but did not see the car till his horse was going on the track, which was 15½ ft. from the curb, do not show contributory negligence authorizing judgment for defendant, notwithstanding a general verdict for plaintiff.

6. In an action for injuries received at street railway crossing, where the complaint avers that defendant's car was operated at a high and dangerous speed, such fact will be assumed, on motion by defendant for verdict on special finding, notwithstanding a general verdict for plaintiff, in the absence of a finding as to the speed of the car, as the court, in passing on the motion, can not consider the evidence received, but will assume that all issuable facts not included in the findings were established in plaintiff's favor.—(McCoy vs. Kokomo Ry. & Light Co., 64 N. E. Rep., 92.)

IOWA.—Evidence—Competency—Review on Appeal—Specific Objections—Limitation of Actions—Estoppel to Plead.

1. Where the pleadings in another action against the same defendant were properly admitted in evidence upon a certain issue, over the objections of defendant, the action of the court in admitting these pleadings can not be reviewed on appeal, on account of immaterial matter in one of them prejudicial to the defendant; no specific objection on this account having been made below.

2. Where an officer of a railway company negotiated with one who had been injured on its cars, and, acting for the company, assured her that the statutory limitation would not be interposed, intending that she should rely on such assurance, and she, doing so, postponed the bringing of her action until after the expiration of the statutory period, the company was estopped from pleading the statutory bar.—(Holman vs. Omaha & C. B. Ry. & Bridge Co., 90 N. W. Rep., 833.)

LOUISIANA.—Injury to Employee—Contributory Negligence—Assumption of Risk.

1. There was great danger of accident in carrying on the work of reconstruction of the overhead electric lines and the railway track.

2. It was not made satisfactorily to appear that plaintiff's husband, a laborer employed by defendant, was guilty of contributory negligence.

3. Whatever special patrol or warning party there may have been, it is not shown that it sought to warn defendant of the danger by which he was surrounded.

4. The risk was not one assumed by the employees.—(Thompson vs. New Orleans & C. R. Co., 32 Southern Rep., 177.)

LOUISIANA.—Municipal Improvements—Street Railroads—Paving Roadbed.

1. The difference between plaintiff and defendant grows out of the measurement of defendant's roadbed in order to fix proportion of cost of paving due by defendant to plaintiff.

2. The statute looks only to the roadbed in fixing the amount. Plaintiff's contention is that this roadbed is 7 ft. wide; the defendant's that it is less. When ties are used, the rail rests on the inside and outside of the track the length of the ties. When girders or sleepers are used, the width of the roadbed is less. The roadbed consists of the foundation on which the superstructure rests. The rails are the superstructure, and rest on the girders.

3. The proportion of the space being limited to the roadbed, the court holds that it is without authority to take the outside of the track into account, on the ground that the road is benefited by the adjacent pavement. Roadbed owes the proportion of cost of paving. This does not include part of the adjacent roadway on which rails do not rest.—(City of Shreveport vs. Shreveport Belt Ry. Co. (No. 14,408), 32 Southern Rep., 189.)

MASSACHUSETTS.—Street Railway—Personal Injuries—Contributory Negligence.

In an action for personal injuries caused by being struck by a street car, plaintiff testified that he judged the car to be a safe distance away when he attempted to cross the track. The evidence as to the distance and as to the speed of the car was conflicting. Held, that the question of contributory negligence was properly left to the jury.—(Coleman vs. Lowell, etc., St. Ry. Co., 64 N. E. Rep.)

MINNESOTA.—Street Railroad—Injury to Intending Passenger.

1. Plaintiff signaled the motorman in charge of one of defendant's street cars of his wish to take passage thereon, then started on a moderate run toward the track and the point where the car would come to a stop. When within about 6 ft. of the same, he stumbled by reason of some obstacle in the street, and fell upon the track, and was struck by the car and injured. Held, that the motorman was not bound to anticipate the possibility that plaintiff might fall upon the track, and was not guilty of negligence in not having his car under such control that he could stop the same in time to avoid such an accident.

2. Evidence examined, and held insufficient to support a finding of actionable negligence on the part of defendant.—(Winchell vs. St. Paul City Ry. Co., 90 N. W. Rep., 1050.)

MISSOURI.—Street Railroads—Frightening Horse—Negligence in Ringing Gong—Contributory Negligence—Instructions—Evidence.

1. Where a runaway horse enters a street on which a street car line is operated, and the driver and horse both know of the approach of a car, it is useless and negligent for the motorman to violently ring his bell, and his act can not be justified as being to assist the driver in keeping the horse from the car.

2. The question whether a street-car motorman used ordinary care in the management of his car when a horse in front of the car became frightened at it is for the jury.

3. Negligence of a street-car motorman in violently ringing his bell as his car approached a frightened horse, thus causing the horse to run away was not justified, though the driver had knowledge, when he drove on the street, that the horse was liable to become frightened at the car and run away.

4. The contributory negligence of a person on the street, injured through negligence in the management of a street car, does not preclude a recovery unless it enters directly into and forms a part of the efficient cause of the accident.

5. In an action against a street railroad for frightening a horse, evidence that the horse was frightened a week before by a dummy engine does not authorize an instruction that plaintiff can not recover, if the real cause of the accident was the disposition of the horse to frighten at cars.—(Oates vs. Metropolitan St. Ry. Co., 68 S. W. Rep., 906.)

MISSOURI.—Street Railways—Injury to Passenger—Instructions—Damages.

1. In an action against a street railway company for injury to a passenger due to the sudden stopping of the car, an instruction that if "the said accident could have been prevented by the exercise of the utmost human skill, diligence, and foresight on the part of defendant's employees," defendant was liable, was erroneous, because imposing too high a degree of care.

2. Rev. St. 1899, section 687, provides that where an application for a continuance is defeated by the opposite party's admitting that the absent witness would testify as alleged, such party "may disprove the facts disclosed or prove contradictory statements made by such absent witness, in relation to the matter in issue."

Held, that an instruction that such party "may disprove the matters disclosed in said statements, or disprove any contradictory statements made by such absent witnesses in relation to the matters in issue," was error, because, in effect, telling the jury that the absent witnesses have made contradictory statements.

3. In an action against a street railway company for damages claimed for injury to plaintiff's wife, through defendant's negligence, an instruction "that the husband is entitled to the society, health, strength, and usefulness of the wife, unimpaired by injury as the result of the negligence of another," is erroneous, when the fact of injury is disputed, and the evidence on that point is conflicting.

4. In an action against a street railway company for damages claimed for injury to plaintiff's wife, through defendant's negligence, an instruction that he could recover "for loss of his own time in nursing and care of the injured wife," without limiting such recovery to the reasonable value of his time as a nurse, was error.—(Freeman vs. Metropolitan St. Ry. Co., 68 S. W. Rep. 1057.)

MISSOURI.—Passengers—Personal Injuries—Trial—Instructions.

Instructing that if the sudden stop of defendant's street car which injured plaintiff was caused by defendant's negligence or want of skill or diligence, and that if said accident could not have been prevented by the utmost skill and foresight, plaintiff was entitled to recover, was prejudicial error.—(Freeman vs. Metropolitan St. Ry. Co., 68 S. W. Rep., 1060.)

MISSOURI.—Street Railways—Personal Injuries—Stopping Cars at Street Corner—Prospective Passenger—Duty of Carrier—Warning—Instructions—Modification.

1. Where plaintiff claimed that she was injured by the negligence of defendant street-car company in suddenly starting its car while she was boarding it at a crossing, a charge submitting to the jury whether the street corner was a regular station for receiving and discharging passengers was not erroneous, on the ground that there was no claim that the corner was a "station"; that word being used in the instruction in the sense of "place."

2. Where a street car stops at a street corner in response to the signal of a person desiring to board it, the street-car company is liable for injuries to such person caused by the sudden starting of the car while he is boarding it, though the car stopped for the purpose of discharging, and not receiving, passengers, if such person is not warned by the conductor not to board the car.

3. Where defendant denied its negligence and alleged contributory negligence, an instruction to find for defendant if the injuries were the result of an accident was improperly modified by adding the words "that was not caused by defendant's negligence," since, as modified, it impliedly authorized a verdict for plaintiff, though guilty of contributory negligence.

4. Plaintiff alleged negligence, in that the servants of defendant street railway negligently started a car as plaintiff was boarding it. Defendant claimed that the car was stopped only to discharge passengers. Held, that defendant was not liable if the car was not stopped to allow plaintiff to board it, and the conductor warned plaintiff not to do so, in a tone of voice sufficiently loud to be heard by an ordinary person, though plaintiff did not, in fact, hear.

5. Where a requested instruction is modified, it ceases to be the instruction of the party requesting it; and he may complain of any part of it, as though it had been offered by the opposite party, though it was improper as originally offered.—(Maxey vs. Metropolitan St. Ry. Co., 68 S. W. Rep., 1064.)

NEW JERSEY.—Street Railroad—Injury to Pedestrian—Negligence.

A motorman is not chargeable with negligence because he fails to apprehend that a boy who is riding on the back of a wagon will jump from the wagon and run under his car while he is engaged in looking at the wagon, in order to pass it without a collision.—(Baier vs. Camden & S. Ry. Co., 52 Atlantic Rep., 215.)

NEW JERSEY.—Verdict—Setting Aside—Incapacity of Juror.

1. That one of the jurors in the trial of a cause does not understand the English language is no legal ground for setting aside the verdict, where the right of challenge existed.

2. The only remedy is by challenge, and it is immaterial whether the incapacity of the juror was known or not.—(Dickerson vs. North Jersey St. Ry. Co., 52 Atlantic Rep., 214.)

NEW YORK.—Street Railways—Personal Injuries—Negligence—Questions for Jury—Instructions—Inapplicability to Facts—Wrongful Death—Damages—Instruction.

1. Whether or not a motorman of a street car was negligent in turning his face away from the front of the car was a question for the jury.

2. Where a boy attempted to run across a street-car track, and

was struck by a car, it was error to charge that, even if contributory negligence was assumed, the question remained whether the company, by reasonable care, could have avoided the consequences of the injured party's negligence, the facts not giving opportunity for the creation of a new situation after the boy had come into the position of danger, and the request being, therefore, inapplicable.

3. In an action by an administrator of an infant for his wrongful death, it was error to charge that, "If the jury find that the plaintiff is entitled to a verdict, a verdict for more than nominal damages must be given," as the measure of damages, under Code Civ. Proc. section 1904, is the pecuniary loss, which must be shown.—(Sciurba vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 772.)

NEW YORK.—Street Railroads—Crossing Accident—Negligence—Question for Jury—Contributory Negligence—Pleading—Damages Provable—Loss of Earning Capacity—Evidence—Sufficiency—Instructions.

1. Evidence that a street car was going at a very rapid rate at a crossing when plaintiff was struck, coupled with evidence that the car was some distance away when plaintiff attempted to cross, and the testimony of the motorman that he did not see plaintiff in front of the car, was sufficient evidence of the company's negligence to go to the jury, though the motorman testified that he saw plaintiff standing on the side of the track when the car was about 15 ft. away; the motorman on approaching a crossing being bound to have his car under reasonable control.

2. When a party injured in a street car crossing accident testifies that he saw the car just as he was leaving the track, but there is evidence that the car was some distance away when he started to cross, mere proof that he was thrown on the fender is not sufficient, as a matter of law, to show that he was struck on first going on the track, or before he reached the middle of the track, and was therefore guilty of contributory negligence in going on the track at all; but the question is for the jury.

3. A complaint which alleges that by reason of defendant's negligence plaintiff was severely and seriously injured, bruised and wounded, and suffered and still suffers great physical and mental pain, and became sick, sore and disabled, and so remains, and on information and belief is permanently injured, and has been and will be prevented from attending to business, authorizes proof that as a proximate result of such injury he has suffered fracture of the skull, destruction of the ear, paralysis of one side, deafness, loss of eyesight, loss of memory, a mild form of insanity, loss of sexual powers, and that his injuries are of a progressive character, and will result in his death, and that his earning capacity is injured as a result thereof.

4. Evidence, in an action for personal injuries, by physicians and others, showing that plaintiff suffered fracture of the skull, destruction of an ear, paralysis on one side, deafness, loss of eyesight, loss of memory, a mild form of insanity, and loss of sexual power, and that his injuries are progressive, and that he is unable to do his work with the same help as formerly, was sufficient to authorize the submission to the jury of the issue of damages for loss of earning capacity, though he was receiving the same wages from the same employer at the time of the trial as at the time of the injury, and his employer testified that plaintiff was doing the same kind of work satisfactorily.

5. An instruction in a personal injury case that reasonable compensation may be awarded if the injury is permanent, taking into consideration the probable loss of earnings which will be sustained, but that the conclusion must be based on the evidence, and that the jury must follow the evidence and reasonable inferences drawn therefrom, is a sufficient statement of the rule that, in order to authorize a recovery for future consequences of such an injury, it must appear reasonably certain from the evidence that they will occur.—(Hoyt vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 832.)

NEW YORK.—Street Railways—Car Jumping Track—Negligence—Question for Jury—Burden of Proof.

1. In an action for personal injuries sustained by plaintiff by being thrown from a street car on its jumping the track, where there was evidence that the car at the time was going at a "pretty good rate," and that the accident happened at a point where there were side tracks leading into the car stables, the question of defendant's negligence was for the jury.

2. In an action for personal injuries sustained by plaintiff by his being thrown from a street car on its jumping the track, though plaintiff made a prima facie case by proof that the car was going at a "pretty good rate," and that the accident happened at a point where there were sidetracks leading into the car stable, the burden nevertheless remained on him, when the proof was all in, to show negligence on the part of the defendant.—(Hollahan vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 751.)

NEW YORK.—Injunction Pendente Lite—Discretion of Court—Review on Appeal.

The appellate division cannot interfere with the discretion of the special term in refusing to continue an injunction pendente lite, restraining corporations from delivering or carrying into effect an agreement of lease executed between them where it appears to have been approved by the unanimous vote of the stock holders of one of the corporations and by over 80 per cent of the stockholders of the other, and it is shown that the lease has, in fact, been delivered and possession taken thereunder.—(Content et al vs. Metropolitan St. Ry. Co. et al, 76 N. Y. Supp., 749.)

NEW YORK.—Action for Personal Injuries—Successive Verdicts—Power of Court to Set Aside.

Where four successive juries in an action for personal injuries have brought in verdicts for the plaintiff the last verdict should not be set aside as against the weight of evidence, unless the circumstances are extraordinary and the verdict clearly outrageous.—(McCann vs. New York & Q. C. Ry. Co., 76 N. Y. Supp., 684.)

NEW YORK.—Coupon Bonds—Payment—Delivery of Coupon—Purchase Before Maturity—Negotiable Instrument.

Where coupons from bonds promise the payment of a certain sum on a certain date, and the mortgage securing the bonds provides that coupons shall always be transferred by delivery, the purchaser of a coupon before maturity is entitled to payment as provided in the coupon, notwithstanding any limitation or condition of the bond and mortgage, the provision as to delivery of the coupons making them in law negotiable instruments.—(Haskins vs. Albany & H. Ry. & Power Co., 76 N. Y. Supp., 667.)

NEW YORK.—Appeal—Evidence—Streets—Negligence—Questions for Jury.

1. On appeal from a judgment dismissing an action for negligence in placing an obstruction in a street on the ground that there was not sufficient evidence to connect defendant with the act complained of, plaintiff is entitled to the most favorable inferences that may be drawn from the evidence.

2. In an action for an injury resulting from defendant's negligence in placing an obstruction in a street it is for the jury to determine whether the act of placing an iron bar in the street in such a position that plaintiff came in contact therewith was negligence.—(Parkes vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 983.)

NEW YORK.—Appeal—Conflicting Evidence.

A judgment for plaintiff in an action for personal injuries will not be disturbed on appeal where the evidence was conflicting and no objections made to the charge.—(Lauck vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 977.)

NEW YORK.—Street Railways—Personal Injuries—Collision with Pedestrian—Contributory Negligence.

Plaintiff was pushing a hand cart between defendant street railway company's track and the sidewalk. On seeing a car approaching he called to the driver to stop, but made no effort to do so himself, continuing to push his cart toward the car, until he collided with it and was injured. Just previously plaintiff had been pushing his cart on the sidewalk, and could have returned thereto. There was no showing as to the width of the cart or the distance between the sidewalk and the track. Held, contributory negligence as a matter of law.—(Thal vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 918.)

NEW YORK.—Appeal—Evidence—Admissibility—Failure to Make Objection.

Where defendant in a personal injury case brought by an infant failed to raise the objection to evidence of plaintiff's emancipation and loss of earnings that plaintiff's emancipation had not been pleaded, the objection cannot be raised on appeal.—(Kenny vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 904.)

NEW YORK.—Preference on Calendar—Waiver.

Where a sole plaintiff, suing as administratrix, in an action triable in the County of New York, serves a notice of trial and a notice of a motion for preference, under Code Civil Procedure, section 791, for the April term, 1902, and they are not withdrawn or acted upon, the failure to make that motion in the April term operates as a waiver of the right to a preference and she cannot obtain it by serving similar papers for the May term.—(Emerick vs. Metropolitan St. Ry. Co., 76 N. Y. Supp., 901.)

NEW YORK.—Carriers—Injuries to Passenger—Evidence.

Plaintiff a passenger, while leaving defendant's car, stepped on a nail, which penetrated his shoe and entered one of his toes, remaining there. No direct proof was given that the nail came out of the floor of the car. Defendant proved that the car had been inspected an hour before the accident and that a matting covered the floor. Held, that, since the evidence was as equally consistent with the absence as with the existence of negligence, plaintiff could not recover.—(Cahn vs. Manhattan Ry. Co., 76 N. Y. Supp., 893.)

CHARTERS, FRANCHISES AND ORDINANCES

MAINE.—Street Railroads—Route—Refusal to Approve—Appeal—Constitutional Law—Streets—Public Use—Control by Towns.

1. In an appeal, based upon the alleged neglect or refusal of municipal officers to approve the proposed route of an electric railroad company, under the provisions of chapter 268, section 6, Public Laws 1893, as amended by chapter 119, section 2, Public Laws 1899, relating to the organization of street railroad companies, it is necessary that enough should be alleged to show that the court has jurisdiction and that the appellant had the right to apply to the municipal officers for an approval of its route. But it is not necessary to allege all the steps by which the appellant obtained that right. The statute gives that right to every "corporation organized" thereunder. Under the statute as it existed when the appellant company was organized, as preliminary to the organization, it was necessary that the railroad commissioners should determine that public convenience required the construction of the railroad. But it is unnecessary to allege specifically, in an appeal like this one, that the railroad commissioners had so determined, for it is necessarily implied in the expression "corporation organized," or in any expression meaning substantially the same, as in the one used in this appeal.

2. It being argued that section 1, chapter 119, Laws 1899, is unconstitutional, the court, without considering that question, holds that whatever might be the construction of that section, with respect to the mooted question of constitutionality, section 2 of the same chapter, upon which the application and appeal in this case are based, stands in full force.

3. The court holds that chapter 119, section 2, of the Public Laws of 1899, relating to the route and location of street railroads in the ways and streets of a town, to the approval thereof by the municipal officers and to appeals from their action or refusal to act, is not unconstitutional, as being beyond legislative authority or as being arbitrary and unjust, or as permitting the property of towns to be taken for street railroad purposes without just compensation. The public has a mere easement in land taken and condemned for a highway or townway. It has the right to use it in certain ways. Within the scope of the easement the public, which acts through the Legislature, may regulate and control. may extend or diminish the public uses as it sees fit.

4. The Legislature has authority even to regulate and control towns themselves. For towns are but subdivisions of political government created by the Legislature. The operation of a street railroad is an appropriate public use of a street.

5. While a town is charged with the performance of many duties with respect to roads, and possesses a qualified control over them, it does not own them. When the Legislature authorizes a new method of use of the public easement in a way a town has no such property interest in the way as will entitle it to pecuniary compensation, nor has an injury been done to it of which it can properly complain. (Appeal of Milbridge & C. Electric R. Co., 51 Atlantic Rep., 818.)

MASSACHUSETTS.—Street Railroads—Location—Permit—Conditions—Validity—Excuse for Non-Performance—Deposit—Forfeiture.

1. A town granted a permit to construct a street railroad to a company whose road, as located in its articles of association, extended from another town to and through the town granting the permit, on condition that it would forfeit a certain deposit if it did not construct 10 miles of the road within one year. Held, that, it appearing that the 10 miles of road could be built, the refusal of the other town to grant the company a permit was not such an excuse for non-compliance with the condition to build such 10 miles as would avoid a forfeiture of the deposit.

2. A street railroad company which, as a condition to the granting to it of a permit to construct its road through a certain town, made a deposit with the selectmen of such town, to be paid over to the town treasurer if the company did not have 10 miles of its road in operation within one year, could not, after having failed to construct such 10 miles within the year, recover the deposit, whether the condition was a proper one or not.—(West Springfield & A. St. Ry. Co. vs. Bodurtha et al., 64 N. E. Rep., 414.)

NEW JERSEY.—Municipal Corporations—Grant of Franchise—Revocations—Passage of Ordinance.

1. In a proceeding to take away rights granted by an ordinance or otherwise possessed by an individual or corporation a municipality can only act after notice and opportunity to be heard has been given to the person or corporation whose property rights are to be affected.

2. When an ordinance is stayed in its progress to a final passage through a failure of proper continuances by the Council or

other municipal body it dies with the end of the last vitalizing action. There must be a continuity in such municipal action.—(State (Jersey City, H. & P. St. Ry. Co., Prosecutor) vs. City of Passaic, 52 Atlantic Rep., 242.)

NEW JERSEY.—Municipal Improvements—Paving Street—Assessment on Street Railroad.

1. Where a city street has been paved and improved under chapter 217, Laws 1895 (P. L. 1895, p. 407; 1 Gen. St., p. 487), authorizing the board or body having control of the streets and highways of any city of the first-class of this State to pave or otherwise improve any street, avenue or public highway in such city, and to cause so much thereof as shall equal the amount of benefits to be assessed by its proper officers upon the property specially benefited thereby, it was held, on review, that an assessment of such benefits made upon a street railway constructed and operated along the street in question under the authority of a municipal ordinance was unauthorized and should be set aside.

2. The decision is based upon the ground that the right of the railway company to locate its tracks in the street and operate its railway therein was not a lot or parcel of land, within the meaning of the statute, which, inter alia, directs the commissioners, in making their assessment, to make therewith a report and map showing the benefit to each lot or parcel of land specially benefited by the improvement.

3. An ordinance of the city requiring the railway company to pave the space within its tracks and two feet outside the same gives no authority in support of such an assessment made against the company under the statute named.—(North Jersey St. Ry. Co. vs. Mayor, etc., of Jersey City, 52 Atlantic Rep., 300.)

NEW YORK—Street Railroads—Acquisition of Street Rights—Damages Recovered by Abutting Owner—Trust in Favor of Former Owner—Reservations in Deed—Procedure to Enforce Trust—Deed by Owner to Railroad.

1. A deed reserved to the grantor all claim or right of action against an elevated railroad company for damages to the property conveyed by reason of the construction, etc., of its road. The grantee obtained a judgment for such damages, and the grantor thereafter sued the grantee, and obtained a decision that such recovery was impressed with a trust for his benefit, but not determining his and the grantee's respective interests therein. Held that the grantee having an interest in the recovery to the extent of the costs of obtaining it, and possibly being entitled to it all, and being well worth any judgment which might be rendered against him in the grantor's action, the grantor was not entitled to an order restraining the railroad company from paying the grantee his recovery, and requiring such recovery to be paid into court to abide the decision in the grantor's action, but on giving a bond conditioned to indemnify the grantee for loss of the use of his recovery, etc., the grantor might apply for an injunction to restrain the payment of the money to the grantee.

2. Where a deed reserved to the grantor all claim or right of action against an elevated railroad company for damages to the property conveyed by reason of the construction, etc., of its road, and the grantee thereafter obtained a judgment for such damages, and a controversy resulted as to who was entitled to the recovery, the grantee, having the legal title to the property, could make the usual conveyances, releases, etc., to the railroad company as fully and completely as though there were no controversy about the recovery.—(Shepard vs. Manhattan Ry. Co. et al., 76 N. Y. Supp., 269.)

OHIO.—Eminent Domain—Interurban Railroad—Use of Highway—Injunction.

1. The construction and operation of an interurban railroad laid with T-rails entirely on the side of a public highway next to the abutting improved farms owned and occupied by the plaintiffs, and entirely between their lands and the traveled part of the highway—the company having authority to run an unlimited number of cars and trains for the carrying of passengers and the transportation of freight, express matter and government mail—is an additional burden on the public highway and obstruction to and interference with the plaintiffs' easements and rights therein, not substantially different from those that are imposed by the construction and operation of steam railroads under like conditions.

2. The construction and operation of an electric plant in connection with such railway, and on the same side of the traveled public roadway, for supplying heat, power and light to consumers for profit, constitutes another additional burden, which is an invasion of the plaintiffs' property rights.

3. The plaintiffs are entitled to injunction in such case to prevent the construction and operation of such railroad and of such electric plant, or either, until compensation and damages shall be assessed them in a proper appropriation proceeding and paid or

secured to be paid.—(Schaaf et al. vs. Cleveland M. & S. Ry. Co. et al., 64 N. E. Rep., 145.)

PENNSYLVANIA.—Street Railways—Duty to Pave—Recovery by City.

1. A street railway company which has been allowed by a city to occupy a macadamized street, by ordinance requiring it to pave its right of way with cobblestones, and keep said paving in good repair, thereby acquires no contract rights which will relieve it from complying with demand of the city that it replace the pavement on its right of way, which is in fact out of repair, with pavement corresponding with an improved pavement adopted for the rest of the street.

2. Under a provision in a street railway company's charter that the City Council may establish such regulations in regard to the railway as may be required for the purpose of grading streets and to prevent obstructions, the company may be required, at its own expense, to lower its tracks to conform to a change in grade of street.

3. Where a city has done paving on a street railway's right of way which the company was bound, but neglected, to do, the sum expended thereon is prima facie the amount the city is entitled to recover of the company.—(City of Reading vs. United Traction Co., 52 Atlantic Rep., 106.)

GEORGIA.—Negligence—Electric Wires—Corporations—Notice to Servant—Imputed Negligence.

1. When a street railway company with reasonable promptness discovers the sagging of one of its trolley wires, which had been unexpectedly caused by the falling of a wire belonging to another, and immediately takes proper steps to prevent its wire from causing injury to travelers in the street over which the same is suspended, the company meets the legal requirements as to diligence under such circumstances.

2. Notice to the servant of a corporation with respect to a matter over which he has no authority, and as to which he has no duty to perform, is not notice to the corporation.

3. Every person must exercise ordinary diligence in protecting himself from danger, and, failing to do so, must take the consequences.

4. The negligence of a servant in failing, while driving his master in a vehicle, to avoid danger, is imputable to the latter.—(Read vs. City & Suburban Ry. Co., 41 S. E. Rep., 629.)

VIRGINIA.—Street Railroads—Right to Occupy the Public Highways—Power of Road Trustees.

1. Acts 1889-90, page 26, authorizing a street railway company to maintain and operate a railroad in the city of Norfolk and to "such other points in the counties of Norfolk and Princess Anne not exceeding 20 miles in length from the limits of the city," as the company's directors may determine, but providing that no work shall be commenced within the city without first obtaining the council's consent, and Acts 1893-94, page 17, providing that the company may acquire by condemnation proceedings the right of way of any extensions and branches of the railroad, do not confer upon the company power to operate upon the public highways outside of the city of Norfolk a street railroad for the transportation of passengers without first acquiring the right by purchase or condemnation proceedings.

2. Under Acts 1893-94, page 127, as amended by Acts 1895-96, page 846, providing that the board of road trustees of Norfolk County shall have authority to work and keep the roads of the county in repair, the board cannot confer upon a street railway company the right to operate upon the highways a street railway. (Norfolk Railway & Light Co. vs. Consolidated Turnpike Co., 40 S. E. Rep., 897.)

WISCONSIN.—Street Railways—Eminent Domain—Streets—Actions—Joinder—Equitable Remedy—Damages.

1. Under Rev. St. 1898, Sec. 1863a, as amended May 2, 1899, authorizing the exercise of the right of eminent domain by street railway companies, but providing that such right should not extend to any public thoroughfare in a town or village, a street railway company is without authority to condemn a right of way through a street, so that, where a street railway was constructed through a street, the owners of the servient estate are not restricted to condemnation proceedings under Sec. 1852, providing that the landowner may institute such proceedings if the railroad fails to, but are entitled to damages and abatement.

2. Adjoining owners of the servient estate in a street in which a street railway has been unlawfully constructed have a right to sue jointly for abatement.

3. The owners of lots of various widths and locations abutting on a street in which a street railway has been unlawfully constructed cannot sue jointly for damages in a gross sum.—(Younkin et al. vs. Milwaukee Light, Heat & Traction Co., 87 Nor. Rep., 861.)

FINANCIAL INTELLIGENCE

THE MARKETS

WALL STREET, Nov. 19, 1902.

The Money Market

The money market is feeling the good effects of the recent tremendous liquidation of speculative holdings in securities. Just how far this liquidation has reduced outstanding bank credits will not be immediately known. The record of national bank operations outside New York City is only published once a quarter, the trust company statistics only once a half year. Inasmuch as by far the greater part of last summer's speculative purchases were financed by these outside institutions, the recent return of speculative credits has affected their position much more than the position of the central national banks of New York City. Consequently no idea can be had through the regular Clearing House statement of how much the stock market decline has improved the money conditions of the country. Last Saturday's report showed a decrease in loans of only \$5,000,000. But even this sum would have been considerably greater had proper account been taken, under the average system, of the very heavy selling of Friday and Saturday on the Stock Exchange. This coming week's figures will doubtless make a fairer representation by showing another good-sized decrease in the loan column. Yet, while last Saturday's credit contraction was far less than seemed reasonable under the circumstances, it was enough to offset the loss in cash at the Sub-Treasury and allow a small increase in the surplus reserve. The Treasury problem, now that the Secretary has withdrawn his temporary remedies, is once again quite serious. The market apparently must reconcile itself to this disturbing factor, and look forward to the time, near at hand, when it will be counterbalanced by the inflow of currency from the interior. In fact, there were some indications even last week that the return movement of money had begun. Gold exports, with demand sterling very firm around 4.87, and with Paris exchange at the lowest of the season, must still be reckoned one of the probabilities. But each week that they are postponed during the trying period between now and Christmas, means a great gain for the local money position. Were money rates to ease off at all the only barrier to gold shipments would be removed. This is the best reason for believing that there will be no concession yet awhile from the prevailing interest rates.

The Stock Market

The precipitate decline in the stock market reached what, to all appearances, was its climax on Friday afternoon. Since that time sharp recoveries have occurred among the active shares, and confidence has in some measure been restored. The decline was checked not so much because the unsound banking conditions which caused it have been surely relieved, as because prices reached a level where they became attractive to investors. Investment purchases on a very extensive scale were what rallied the market from its extreme demoralization, which on several occasions came perilously near the stage of panic. The speculative community has safely passed through the violent shock, but it will be a long time before the wounds are healed, and convalescence is complete. The experienced observer cannot well expect, therefore, anything more than a moderate recovery, such as regularly occurs when the first urgent liquidation is over. An advance of any magnitude is quite out of the question. The most that can be hoped for is that the market will quiet down, the fever of the last few weeks subsiding, and that normal fluctuations, within a comparatively small range, will be resumed. Had not the financial and commercial situation been sound at bottom the market would certainly have had a far more serious time of it. As it was the collapse in speculative circles went far enough to do considerable damage, and this will take a long time to repair.

The feature of the entire market has been the movement in Manhattan Elevated, which, after yielding less than the other stocks in the general break, was bid up with great rapidity on Monday and Tuesday almost to the high level of a year ago. The usual rumors of a lease to the New York Central have been revived, but the reason which appeals most forcibly to well-informed persons is that the rapidly increasing earnings of the property have attracted investment buying in such quantity as to reduce the amount of the stock in the open market to a comparatively small total. Under these circumstances it has not been a difficult matter for a strong pool to lay hold of the floating supply and to force up the price sharply, the movement being favored, whether openly or not, by the capitalists identified with the management.

The old prediction that Manhattan would cross Metropolitan in price has been verified in an interesting manner. Brooklyn Rapid Transit was offered down by a "bear clique" to the lowest figure it has touched in a year and a half. But on the decline supporting orders from inside sources were met in quantity, and the stock, during the last few days, has been decidedly firm.

Philadelphia

There is not much to be said of the movement of the traction securities in Philadelphia during the week. Business in them has been curtailed by the general market depression, but prices have scarcely suffered. The indications are, as often observed before, that the floating supply of the principal shares that might be dislodged by such a break, is very small. Besides this the securities are low-priced, which renders them less susceptible to a money market disturbance. Philadelphia Rapid Transit dipped to 15½ last Thursday, but quickly rebounded to 16½, and Union Traction has shown similar steadiness at a range between 46 and 47. American Railways has not gone below 53 nor above 54, but the market for the stock continues to reflect a steady absorption. Small lots of Philadelphia Traction have brought 98, and small sales of Railways General are reported at 4¾, and of Consolidated Traction of New Jersey at 69¼.

Chicago

Chicago stocks have been dull and depressed during the week, especially in the case of the elevated securities. Northwestern common, under pressure, sold down to 31½, regaining subsequently only a fraction of the loss. The preferred sold at 81. It is a fact, now conceded, that the universal transfer decision is taking a good deal of traffic away from the Northwestern, in favor of the Union Traction surface lines. This has stimulated the negotiations with the St. Paul Railroad for an interchange of the Evanston business. The transfer decision does not seem to have had any similar adverse effect upon Metropolitan's traffic, for the earnings of the company are said to be maintaining an average gain of 20 per cent over last year. Nevertheless, Metropolitan shares have been pressed for sale along with the rest, the common sinking as low as 37½, and the preferred 85. Lake Street has also been weak, at a decline to 9. City Railway dropped 2 points to 210, but Union Traction, with scarcely anything doing, held steady around 15½. According to present plans the question of extending the franchises of the surface roads will be settled during the next sixty days.

Other Traction Securities

Boston traction stocks have been very irregular, but with a rather firmer undertone than in the case of last week. After selling at 154½ Boston Elevated dropped again to 153. Massachusetts Electric was strong, at one time the common getting up to 36½. Later, however, the price fell back to 35. The preferred, on scattering transactions, held well around 96¼. West End sold at 94¾, and later at 93¾. In Baltimore the United Railway securities have held their own, the stock at 13¾, the incomes around 68, and the generals around 95. Nashville securities are unchanged, at 4 for the shares and 77¾ for the 5 per cent certificates. Other sales in the Baltimore market include Lexington Railway 5s at 104¾, Charleston Street Railway 5s at 106¼, Atlantic Street Railway 5s at 106¼, Anacostia & Potomac 5s at 98½, and Second Avenue, of Pittsburgh, 5s at 118¼. On the New York carb the week's sales of traction Traction common at 35¾ to 37, the preferred at 90 to 93, Camden & Trenton at 4½ and 4, New Orleans Street Railway common at 15½ to 14½, the preferred at 49, St. Louis Transit (400 shares) at 28, United Railways, of St. Louis, 4s at 85, and 84¾, and New Orleans 4½s from 80 to 79½. There has been another very quiet week on the Cleveland Exchange. Sales numbered only 728 shares. Aurora, Elgin & Chicago receipts ranged from 35 to 35¼, sales 280 shares; Miami & Erie Canal sold at 33 and 33½ for 370 shares, and Syracuse Rapid Transit sold at 32 for a small lot. Monday a small lot of Western Ohio receipts sold at 26½, a drop of 3 points from last sale. There are plenty of bargain hunters on the Cleveland Exchange, but the traction stocks appear to be in strong hands, and there is very little forced liquidation.

Iron and Steel

In the main, the iron situation continues favorable. Reduction in prices in certain finished products is more than offset by the abundant evidence in other parts of the industry that consumption is still running well ahead of output. The entire steel rail-making capacity of the country is contracted for for practically

the whole of next year. Pig-iron production, on account of the difficulty in getting fuel, has fallen off from 345,000 tons weekly on Oct. 1 to 337,560 tons on Nov. 1. Consumption has not, meanwhile, diminished in any line. Quotations are \$21.75 to \$22.50 for Bessemer pig iron; \$30 to \$31.50 for steel billets, and \$28 for steel rails.

Metals

Quotations for the leading metals are as follows: Copper, 11½ cents; lead, 4¼ cents; tin, 25.90 cents, and spelter, 5.35 cents.

Security Quotations

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

	Closing	Bid
	Nov. 11	Nov. 18
American Railways Company.....	53½	53
Aurora, Elgin & Chicago	a37	a37
Boston Elevated	152½	155
Brooklyn R. T.	59	58¾
Chicago City	210	210
Chicago Union Tr. (common)	15	15
Chicago Union Tr. (preferred).....	a49	45
Cleveland Electric	85	84
Columbus (common)	57	58½
Columbus (preferred)	106	106
Consolidated Traction of N. J.	68½	69
Consolidated Traction of N. J. 5s.....	110¼	110¼
Detroit United	86½	86
Electric People's Traction (Philadelphia) 4s.....	98¼	98¼
Elgin, Aurora & Southern	a60	a51
Indianapolis Street Railway 4s.....	86¾	86½
Lake Shore Electric	12½	12
Lake Street Elevated	9¾	9
Manhattan Railway	133	142
Massachusetts Elec. Cos. (common)	36¼	35¾
Massachusetts Elec. Cos. (preferred)	96	96
Metropolitan Elevated, Chicago (common)	38	36
Metropolitan Elevated, Chicago (preferred).....	85½	85
Metropolitan Street	136	137
New Orleans Railways (common)	15¼	14¾
New Orleans Railways (preferred)	50	48
North American	120	119
Northern Ohio Traction (common)	—	a67
Northern Ohio Traction (preferred)	93½	92½
North Jersey	32¾	32¾
Northwestern Elevated, Chicago (common)	34	31½
Philadelphia Rapid Transit	17¾	16¾
Philadelphia Traction	98	98
St. Louis Transit (common)	28	28
South Side Elevated (Chicago)	106	105
Syracuse Rapid Transit	31½	31
Syracuse Rapid Transit (preferred).....	76	76
Third Avenue	125	123
Toledo Railway & Light	a38	30
Twin City, Minneapolis (common)	113	114
United Railways, St. Louis (preferred)	—	—
United Railways, St. Louis, 4s.....	84¾	84¾
Union Traction (Philadelphia)	46½	46½
Western Ohio Railway	28¾	26

a Asked.

BALTIMORE, MD.—The Continental Trust Company has closed the deal with the United Railways & Electric Company for the purchase of the \$2,000,000 of common stock of the United Electric Light & Power Company, and the stocks and bonds of the Mount Washington Electric Company. The trust company, acting as a syndicate, is to pay \$900,000 for the entire issue of the common stock of the Electric Light & Power Company, and \$150,000 for the stocks and bonds of the Mount Washington Electric Company, on or before Jan. 15 next. The purchase is a step in the scheme for development of electric power from Susquehanna River.

BALTIMORE, MD.—The recent purchase by the Railways & Light Company of America of street railway and lighting properties at Macon and Augusta, Ga., calls attention to the operations of this company in purchasing and consolidating street railway and lighting properties in the South. The company, as a result of its purchases, now controls the Lexington Railway Company, Lexington Gas Company, of Lexington, Ky.; the Knoxville Traction Company; Knoxville Electric Light & Power Company, of Knoxville, Tenn.; Macon Railway & Light Company, of Macon, Ga.; Augusta Railway & Electric Company; Augusta & Aiken Railway Company, of Augusta, Ga.; Portsmouth, Berkeley & Suffolk Water Company, of Portsmouth, Va. The executive office of the company is at Baltimore, and the office of the general manager of the company is at Richmond, Va. The officers of the company are: J. Wm. Middendorf, president; R. Lancaster Williams, vice-president; H. P. Page, secretary; A. H. Rutherford, treasurer; E. L. Bemiss, general manager.

BOSTON, MASS.—The Boston *Financial News* says: "It is understood that gross earnings of the Boston Elevated Railway Company for the fiscal year ended Sept. 30 amounted to about \$11,200,000, showing an increase over the previous year of about \$400,000. The ratio of increase is stated to be about \$1,000 a day per year. The Boston Elevated Company did not suffer a very serious decrease in earnings on account of the cold summer, as, while

the surface travel fell off, the increase on the elevated section was very nearly large enough to offset it."

WORCESTER, MASS.—The Worcester & Southbridge Street Railway Company has filed its report for the year ending Oct. 1 with the Massachusetts Railroad Commissioners. The report covers only two months and eleven days, operation of the road having begun July 21. During that period 675,337 passengers were carried, which is 32,213 passengers for each mile of road operated. The gross earnings were \$32,165. The operating expenses, taxes, etc., were \$13,595, making the net earnings \$18,570. The number of car-miles run was 103,833.

WORCESTER, MASS.—Confirmation of the statement that the Worcester & Connecticut Eastern Railway Company is closely allied with the New York, New Haven & Hartford Railroad is found in a prospectus of the former company, which says: "The railway company has no competition from other electric roads in its territory, and will be operated in harmony with the New York, New Haven & Hartford Railroad, whose control and ownership of the majority of the stock assures full co-operation in developing the resources of the country." An estimate of the probable earnings of the company for the coming year shows: Gross earnings, \$310,000; operating expenses and taxes, \$175,000; net earnings, \$135,000. The company is to issue \$2,050,000 of first mortgage 4 per cent and 4½ per cent gold bonds. This issue of bonds will care for these items: Thirty thousand of Webster & Dudley first mortgage bonds; \$150,000 of the first mortgage bonds of the Worcester & Webster, or so much of that amount as can be secured; 4000 shares of the People's Tramway Company's; 500 shares of the Danielsonville & Norwich Street Railway, and the floating indebtedness, amounting to not less than \$250,000 of the Worcester & Webster. All these securities will be deposited as collateral to secure the mortgage. Also 1408 shares of the total issue of Worcester & Webster stock and 500 shares of the total issue of the Webster & Dudley Street Railway.

DETROIT, MICH.—The Jackson & Battle Creek Traction Company has been formed, with a capital stock of \$1,500,000, by the merger of the Jackson-Albion-Calhoun County Railway and the Marshall & Battle Creek Railway. The officers of the new company are: C. M. Spitzer, of Toledo, president; A. L. Spitzer, of Toledo, vice-president; W. A. Fotte, secretary; S. N. Potter, treasurer. The above, with S. C. Rorick, W. A. Bolland, Wm. Robertson, W. H. Thompson and J. R. Nutt, are the directors. The Savings & Trust Company, of Cleveland, has been made trustee for \$1,200,000 of bonds issued by the company. The line is 45 miles in length.

MUSKEGON, MICH.—The report of the Muskegon Traction & Lighting Company for the seven months from March 1 to Oct. 1, shows: Gross receipts, \$101,869 for 1902, against \$83,658 for 1901; operating expenses, \$62,400 for 1902, against \$55,847; net earnings, \$39,469 for 1902, against \$27,811 for 1901.

NEW YORK, N. Y.—The Manhattan Elevated Railroad Company reports earnings as follows:

	1902	1901
Quarter ended Sept. 30		
Gross receipts	\$2,495,112	\$2,093,277
Operating expenses	1,338,941	1,312,130
Earnings from operation	\$1,156,171	\$781,147
Receipts from other sources	81,283	191,287
Gross income	\$1,237,459	\$972,434
Fixed charges	644,769	632,350
Net earnings	\$592,690	\$340,084
Cash	270,743
Profit and loss surplus	6,372,418

DUNKIRK, N. Y.—The Dunkirk & Fredonia Street Railroad Company has given a mortgage for \$100,000 to the Fidelity Trust Company, of New York, to take up all outstanding obligations. The mortgage covers the plant of the Fredonia Gas Company, now merged with the Dunkirk & Fredonia Street Railroad Company.

GLENS FALLS, N. Y.—The report of the Hudson Valley Railway Company for the year which ended June 30, 1902, shows: Gross earnings from operation, \$321,068; operating expenses, \$226,790; net earnings, \$94,277; other income, \$36,108; gross income, \$130,386; fixed charges, \$126,923; net income and total surplus, \$3,463. The number of passengers carried during the year, including transfers, was 4,408,761. The total car mileage was 1,655,461.

CLEVELAND, OHIO.—The Cleveland bankers and capitalists who financed the Northern Texas Traction Company are preparing to issue the securities of the road. The property will be bonded for \$2,500,000, with stock of like amount. The Prudential Trust Company, of Cleveland, will be the trustee for the bonds.

CONNEAUT, OHIO.—The Conneaut & Erie Traction Company, now building a road, has increased its capital stock from \$10,000 to \$50,000.

WARREN, OHIO.—The Western Reserve Traction Company has been incorporated, with \$10,000 capital stock, by T. A. Willard, M. A. Lander, E. Jay Pinney, C. W. Noble and E. H. Gebert. The company proposes to build an electric railway from Warren through Trumbull County.

PHILADELPHIA, PA.—The earnings of the American Railways Company for October were \$95,874, an increase of \$13,684 over the same month last year. From July 1 to Oct. 1 the earnings were \$353,193, an increase of \$90,252 over the same period last year.

RICHMOND, VA.—It is again reported that the deal for the purchase of the Richmond & Petersburg Electric Railway by the Virginia Passenger & Power Company has been arranged. The Richmond & Petersburg Electric Railway operates between Petersburg and Manchester and was built by the Cleveland Construction Company, in which Messrs. Mandelbaum, Christy and other Ohio capitalists are interested.

STAUNTON, VA.—Control of the Staunton Street Railway, Electric Light & Gas Company has passed into the hands of local capitalists.

TABLE OF OPERATING STATISTICS

Notice.—These statistics will be carefully revised from month to month, upon information received from the companies direct, or from official sources. The table should be used in connection with our Financial Supplement "American Street Railway Investments," which contains the annual operating reports to the ends of the various financial years. Similar statistics in regard to roads not reporting are solicited by the editors. * Including taxes. † Deficit. ‡ Comparison is made with 1900 because in 1901 the earnings were abnormal on account of the Pan-American Exposition. § All capital stock owned by Detroit United Ry.

COMPANY	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Avail-able for Dividends	COMPANY	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Avail-able for Dividends
AKRON, O. Northern Ohio Tr. Co.	1 m., Oct. '02	65,627	36,333	29,294	12,603	16,692	ELGIN, ILL. Elgin, Aurora & Southern Tr.	1 m., Oct. '02	33,648	21,041	12,607	8,333	4,274
	1 " " '01	51,479	28,769	22,710	12,438	10,272		1 " " '01	28,578	16,964	11,614	8,333	3,280
	6 " June '02	318,937	185,362	133,575	77,556	56,018		10 " " '02	341,890	200,165	141,725	83,333	58,391
	6 " " '01	268,967	164,458	104,510	63,494	41,016		10 " " '01	304,144	170,289	133,855	83,333	0,522
	12 " Dec. '01	617,011	* 350,845	266,166	136,162	130,004							
	12 " " '00	513,735	* 317,475	196,249	141,133	55,117							
ALBANY, N. Y. United Traction Co.	1 m., Sept. '02	132,606	81,990	50,616	23,866	26,750	FINLAY, O. Toledo, Bowling Green & Southern Traction Co.	1 m., Aug. '02	24,340	12,033	12,307	-----	-----
	3 " " '02	414,635	251,739	162,897	71,598	91,299		1 " " '01	16,849	9,025	7,824	-----	-----
								6 " June '02	111,972	60,838	51,134	-----	-----
								6 " " '01	80,340	51,464	28,876	-----	-----
BINGHAMTON, N. Y. Binghamton St. Ry. Co.	1 m., Sept. '02	18,432	10,460	7,972	-----	-----	HAMILTON, O. The Cincinnati, Dayton & Toledo Trac. Co.	1 m., Oct. '02	41,747	22,648	19,099	16,512	2,587
	1 " " '01	18,456	9,986	8,470	-----	-----		5 " " '02	226,249	113,854	112,395	81,753	30,642
	3 " " '02	65,253	33,983	31,270	18,021	13,246	LONDON, ONT. London St. Ry. Co.	1 m., Oct. '02	11,645	7,408	4,237	1,911	2,326
	3 " " '01	63,160	31,024	32,136	14,988	17,148		1 " " '01	10,105	6,356	3,749	1,357	1,792
BOSTON, MASS. Boston Elev. Ry. Co.	12 m., Sept. '01	10,869,496	7,336,597	3,532,899	2,896,359	636,539		10 " " '02	127,377	78,220	49,086	22,195	26,891
	12 " " '00	10,236,994	6,828,110	3,408,884	2,932,839	476,044		10 " " '01	116,814	72,274	44,539	19,800	24,739
Massachusetts Elec. Cos	12 m., Sept. '01	5,778,133	3,915,486	1,862,648	937,206	925,442	MILWAUKEE, WIS. Milwaukee El. Ry. & Lt. Co.	1 m., Oct. '02	239,853	114,902	124,951	67,814	57,137
	12 " " '00	5,518,837	3,659,337	1,859,500	994,294	865,206		1 " " '01	206,812	99,249	107,563	63,409	44,154
								10 " " '02	2,254,794	1,061,410	1,193,383	664,625	528,758
								10 " " '01	1,992,060	977,589	1,014,471	624,810	389,661
								12 " Dec. '01	2,442,342	1,185,534	1,256,808	755,139	501,669
								12 " " '00	2,220,698	1,129,787	1,090,911	824,665	266,247
BROOKLYN, N. Y. Brooklyn R. T. Co.	1 m., Sept. '02	1,124,384	607,581	516,802	-----	-----	MINNEAPOLIS, MINN. Twin City R. T. Co.	1 m., Sept. '02	339,659	130,611	209,059	60,233	148,825
	1 " " '01	1,080,158	664,611	415,548	-----	-----		1 " " '01	308,394	123,131	185,263	57,875	127,386
	3 " " '02	3,587,739	1,881,774	1,705,965	-----	-----		9 " " '02	2,667,095	1,191,320	1,475,775	550,733	945,042
	3 " " '01	3,411,101	2,032,245	1,378,855	-----	-----		9 " " '01	2,340,165	1,068,846	1,271,318	503,273	768,044
	12 " June '02	12,789,705	* 8952,214	3,837,490	-----	-----	MONTREAL, CAN. Montreal St. Ry. Co.	12 m., Sept. '02	2,046,209	1,135,176	911,032	-----	-----
	12 " " '01	12,101,198	* 7970,635	4,130,563	-----	-----		12 " " '01	1,900,680	1,105,267	795,413	-----	-----
BUFFALO, N. Y. International Tr. Co.	1 m., Sept. '02	321,355	161,525	159,831	77,502	82,329	NEW YORK CITY. Manhattan Ry. Co.	12 m., Sept. '02	11,583,546	5,545,395	6,038,151	2,712,089	3,326,062
	1 " " '00	255,322	108,934	146,388	81,931	64,457		12 " " '01	10,455,872	5,328,640	5,127,233	2,683,132	2,444,091
	3 " " '02	1,019,518	506,664	512,854	235,741	277,113	Metropolitan St. Ry.	3 m., Dec. '01	3,887,936	1,723,972	2,143,964	1,151,140	992,824
	3 " " '00	791,470	344,745	446,725	245,793	250,982		3 " " '00	3,786,030	1,699,649	2,086,381	1,138,467	947,914
								12 " June '02	15,866,641	7,385,883	8,480,758	4,815,421	3,665,337
								12 " " '01	14,720,767	6,755,131	7,965,636	4,534,068	3,431,567
CHARLESTON, S. C. Charleston Consol'ded Ry. Gas & El. Co.	1 m., Oct. '02	40,739	27,246	13,494	13,469	25	OLEAN, N. Y. Olean St. Ry. Co.	3 m., Sept. '02	18,401	8,135	10,266	4,062	6,203
	1 " " '01	39,038	24,562	14,476	13,842	634		3 " " '01	6,857	3,465	3,392	4,200	5,285
	8 " " '02	439,007	256,962	182,045	108,062	73,984		12 m., June '02	56,055	29,118	26,937	16,318	10,619
	8 " " '01	324,120	211,870	112,250	110,049	2,201		12 " " '01	52,018	26,228	25,790	16,755	9,035
CHICAGO, ILL. Chicago & Milwaukee Elec. Ry. Co.	1 m., Oct. '02	15,731	6,548	9,183	-----	-----	PEEKSKILL, N. V. Peekskill Lighting & R. R. Co.	3 m., Sept. '02	9,480	5,211	4,269	2,083	2,186
	1 " " '01	15,253	6,312	8,941	-----	-----		3 " " '02	28,674	15,881	12,793	6,250	6,543
	10 " " '02	163,139	66,395	96,743	-----	-----		12 " June '02	86,795	* 56,392	30,402	23,125	7,277
	10 " " '01	147,412	62,430	84,982	-----	-----	PHILADELPHIA, PA. Union Traction Co.	12 m., June '02	14,118,159	6,402,338	7,715,820	* 663,7781	1,078,038
								12 " " '01	13,431,681	5,836,186	7,595,494	* 673,4328	861,266
CLEVELAND, O. Eastern Ohio Traction Co.	1 m., Oct. '02	17,365	10,142	7,224	6,033	1,190	American Railways	1 m., Oct. '02	95,875	-----	-----	-----	-----
	10 " " '02	161,071	89,603	71,468	54,574	16,894		1 " " '01	82,190	-----	-----	-----	-----
								1 " " '02	449,008	-----	-----	-----	-----
								1 " " '01	345,132	-----	-----	-----	-----
								12 " June '02	1,009,509	-----	-----	-----	-----
								12 " " '01	841,298	-----	-----	-----	-----
Cleveland, Elyria & Western	1 m., Oct. '02	28,243	16,030	12,212	-----	-----	ROCHESTER, N. Y. Rochester Ry.	1 m., Sept. '02	93,762	46,063	47,699	24,833	22,866
	1 " " '01	22,736	12,611	10,124	-----	-----		1 " " '01	82,428	45,854	36,573	24,942	11,632
	10 " " '02	248,211	138,081	110,130	-----	-----		9 " " '02	821,852	433,691	388,161	223,361	164,800
	10 " " '01	208,728	113,898	95,330	-----	-----		9 " " '01	758,110	449,253	305,858	222,018	86,840
	12 " Dec. '01	249,260	136,865	112,334	57,023	55,371	SYRACUSE, N. Y. Syracuse R. T. Co.	1 m., Sept. '02	61,164	33,545	27,619	19,025	8,594
	12 " " '00	179,698	102,393	77,304	34,562	42,742		1 " " '01	53,992	29,692	24,300	19,025	5,275
								3 " " '02	184,314	101,224	83,090	57,075	26,015
								3 " " '01	168,368	91,526	76,842	57,021	19,821
Cleveland, Painesville & Eastern	1 m., Oct. '02	16,213	9,655	6,558	-----	-----	TOLEDO, O. Toledo Ry. & Lt. Co.	1 m., Oct. '02	124,488	60,484	64,004	38,833	25,171
	1 " " '01	15,639	8,558	7,081	-----	-----		1 " " '01	114,686	54,617	60,050	37,813	22,237
	10 " " '02	160,677	86,620	74,057	-----	-----		10 " " '02	1,193,546	607,072	586,474	381,541	204,933
	10 " " '01	139,824	71,801	68,022	-----	-----		10 " " '01	1,073,766	515,502	558,264	339,543	178,721
	12 " Dec. '01	161,971	* 87,102	77,869	72,500	5,369		12 " Dec. '01	1,311,084	* 636,407	674,677	415,168	259,509
	12 " " '00	141,112	* 89,592	71,520	72,500	† 980		12 " " '00	1,182,517	* 616,945	565,572	409,051	156,521
COVINGTON, KY. Cincinnati, Newport & Covington Ry. Co.	1 m., Aug. '02	96,118	* 53,295	42,823	22,238	20,585	Lake Shore Elec. Ry. Co.	1 m., July '02	49,122	25,961	23,161	-----	-----
	1 " " '01	74,525	* 45,741	28,784	15,807	12,977		1 " " '01	39,447	21,837	17,610	-----	-----
	8 " " '02	596,156	* 344,026	252,130	131,230	120,899		7 " " '02	237,855	158,911	78,944	-----	-----
	8 " " '01	535,784	* 327,615	208,169	125,328	82,841		7 " " '01	187,270	133,283	53,987	-----	-----
DETROIT, MICH. Detroit United Ry.	1 m., Oct. '02	302,358	174,325	128,063	-----	-----	NEW BRIGHTON, S. I. Staten Island Elec. Ry.	3 m., June '02	56,635	35,622	21,013	25,000	† 3,986
	1 " " '01	267,081	153,504	113,577	-----	-----		3 " " '01	56,936	35,600	22,336	25,000	† 2,663
	10 " " '02	2,881,084	1,623,824	1,257,260	-----	-----	YOUNGSTOWN, O. Youngstown - Sharon Ry. & Lt. Co.	1 m., Sept. '02	89,618	* 22,401	17,217	-----	-----
	10 " " '01	2,512,923	1,382,366	1,130,557	-----	-----		3 " " '02	114,522	* 63,040	51,482	-----	-----
	12 " Dec. '01	2,919,171	* 1596,765	1,322,046	652,277	670,129		6 " June '02	198,050	* 110,391	87,659	-----	-----
	12 " " '00	2,575,277	* 1,439,058	1,136,219	616,468	519,751							
DETROIT and Port Huron Shore Line	1 m., Sept. '02	39,771	23,491	16,281	-----	-----							