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Street railway news, and all information regarding changes of officers, new equipments, extensions, financial changes and new enterprises will be greatly appreciated for use in these columns.

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## Wooden Gear Cases

Difficulties which are necessarily and frequently met in the use of cast-iron gear cases for the protection of reduction gearing of street railway motors have induced the Philadelphia Rapid Transit Company to introduce the use of protecting cases of wood construction. The trouble met was that when the cast-iron case was broken from accidental contact with street or track obstruction, the broken pieces wedged in the motor gearing in such a way as frequently to absolutely prevent the motor from operation. It is found that, as the wooden gear case can be built at such a low cost as compared with that of a new iron case, if damaged by accident it is feasible to scrap the entire case and substitute a new one with a considerable saving over the cost of repairing an iron case. Repairs have, however, been found to be possible upon the wooden gear case with much greater ease than attends repairs upon the cast-iron case, which even further reduces the cost with the use of the wooden case.

This method of providing for gear case troubles is claimed by those who use the wooden case to be a better solution even than that which was tried by a Western street railway

company of placing a light galvanized-iron bottom part upon the lowest portion of the under half of the case in order to withstand the battering effect of stones and street obstructions. This method requires the use of a special lower half of the gear case for bolting the tin bottom piece upon it and, in addition, any accident to the upper part of the case presents the same trouble as heretofore mentioned for the iron case. It is found that not all of the gear case breakages are caused by track obstructions, so that the method of using wood construction throughout seems to be preferable. In cost, also, the wooden gear case has the advantage of that made of cast-iron, or that of the special gear case with the tin bottom.

## Gear Ratios

Although it is a subject that has been harped upon many times in the past seven years, it can do no harm to call attention again to the futility to say nothing of the positive waste in using motor equipments geared for high maximum speeds for service where stops are frequent. Whenever a manager finds that he has cars in city service which do not attain maximum speed between stops in ordinary operation when not in the crowded downtown districts, it is time for him to change either the gear ratio or the armature winding of those equipments so that maximum speed will ordinarily be obtained. If there is any one sure way of wasting money in street railway operation, it is in operating cars geared for such a high maximum speed that they do not easily attain it between stops. Some conspicuous mistakes of this kind were made, both on some of the first elevated lines and on surface lines about the same time, before the subject was thoroughly understood. The reason for the loss in economy, when cars are geared for too high a speed, is easy to find. The work of a street railway motor is very largely acceleration. The current required to produce a certain rate of acceleration varies approximately as the speed for which the car is geared during the initial part of acceleration. Thus, a car geared for 15 m. p. h. maximum will start to accelerate at a given rate with half the current of one geared to 30 m. p. h. The extra current required by the car geared to 30 m. p. h., as compared with the one geared to 15 m. p. h. during acceleration, must, of course, be obtained by wasting the surplus energy in the rheostat. While this makes little difference as to the heating of the motor itself, it does make a big difference with the power station; as not only is the actual energy required much greater, but the maximum demand or peak current is much higher. The mistake of selecting too high speed for city equipments is not as common as it used to be, but there are still some places where reform is possible.

## Transfer Tables for Repair Shops

The transfer table, which was once very common in large car houses, is now seldom found in car houses of recent design. When it comes to the repair shop, however, the case is different. Steam railroad repair shops have apparently found it better to retain the transfer table in many cases, and there is at least one very prominent example of a repair shop served only by a transfer table among recent electric railway repair shops.

Between the transfer table with short repair tracks, as against no transfer table and long repair tracks, the master mechanic is "between the devil and the deep sea." If he makes his repair tracks short, of just sufficient length to hold the longest cars and serves them with a transfer table, he has the assurance that one car can never block another, and that as soon as the repairs on one car are finished it can be taken out independently of what may be happening to any of the rest. The transfer table has one serious objection in the minds of many, which is that when a dead car is brought in (that is, a car upon which the entire electrical equipment is crippled so that the motors cannot be used) it is a slow and painful operation to get the dead car off of the transfer table into the repair shop. The transfer table takes up considerable room, but it is not a worse offender in this respect than the special work, switches and curves which must be put in to take its place. For a small repair shop, where room is plenty, the shop can be arranged so that each car has a track to itself in the shop, and yet all tracks can be reached without a transfer table by means of switches and curves outside the building. When this method is applied to a very large shop the large amount of yard room required in front of the shop, as well as the amount of special work, becomes somewhat alarming. These are some of the questions that will probably come up in connection with shop design at the next master mechanics' convention. Any arrangement which offers the advantages of both kinds of track arrangement without the present disadvantages would certainly find much favor.

### Depreciation

A review of the financial policies of European street railways given in two articles in the *STREET RAILWAY JOURNAL* of May 7 last, shows how much more thoroughly owners of street railway properties in old cities, like those in Germany, provide for depreciation than is commonly done in this country. The question is frequently discussed in this country, but very few companies have made any provision of this kind, and it is needless to say it is not the general rule. There are two ways of considering the matter. In the first place, it must be admitted that provision for such depreciation is of greater necessity in older countries where conditions are more settled, and where rapid growth and increase of business is not, as here, sufficient to make the depreciation on the original investment seem insignificant by the time the original property is worn out. The rapid development of cities in this country has made possible many financial policies which would be out of the question in older communities, although it is possible that the conservatism in some parts of Europe does not permit apparatus being thrown into the scrap heap when really it should be. As conditions become more settled and growth becomes slower in the United States there will be more necessity for providing depreciation funds.

The street railway manager of the present day in the United States frequently finds himself between two fires as regards the setting aside of sinking funds. On the one hand there are the financial interests backing the property to be appeased with dividends at the earliest possible moment, and on the other hand is the certainty that a day will come when the equipment will wear out and perhaps franchises expire with nothing to show to the investors unless provision is made from year to year for these contingencies. Conditions are yearly becoming more burdensome to public service corporations, and while most street railway directors are inclined to put off the evil day of providing sinking funds as long as possible, that day

must come in the future in this country as it has come already in the older countries.

There is no doubt but that part of the municipal ownership agitation and a desire to impose over-burdensome conditions on street railway franchises just now so noticeable, are due partly to failure both on the part of the general public and the directors of street railway companies to recognize the necessity for providing sinking funds. Had such funds been accumulated in years past, at the expense of certain large dividends, many properties would not have got into the public mind as being such extraordinary profitable undertakings. At the same time they would have put themselves on a much sounder and more substantial foundation, and in a better position to secure favorable municipal grants in the future.

### The Fire Protection of Car Houses

It is a matter of congratulation that the insurance interests and the owners of electrical apparatus are coming together on the subject of fire insurance and the protection of street railway properties. Undoubtedly at one time the underwriters attempted to impose what seemed to others unnecessary restrictions upon electrical risks, while on the other hand the limited experience of electrical men betrayed them into grave errors of construction or questionable economy, which might just as well have been avoided. Many disastrous fires, particularly of carhouses, have occurred recently, and have brought the matter to an acute stage. There is no doubt that in view of the immense capital, in the form of expensive cars, which is stored within the walls of the modern street car house, the question is one of the most important ones in railway operation to-day. The underwriters have always claimed that while any car house was not a particularly desirable risk, ninety-nine out of every hundred could easily be made, not fireproof, for that seems impossible, but much more fire resisting than at present, and that the changes required in the construction would, as a rule, be small and would not interfere with the convenience of the structure for storing cars. Even in the case of car houses that are already built, a few changes can often be made at a trifling expense which would result in a great reduction of the fire hazard, and would frequently change a very undesirable or even impossible risk to one in which the chances of destruction of the whole or greater part of the cars stored within the building from a chance fire would be reduced to a minimum.

Briefly stated, the chief defects of most of the existing car houses lie in the immense area enclosed under a common roof, in defective roof construction and in poor wiring. The inflammable nature of the cars themselves is such that if a fire starts in one car it will often spread to those adjoining and to the building, so that the primary consideration in car house building is the division of any large structure into a number of smaller sections by brick walls carried up through and above the roof. The underwriters recommend the cutting up of car houses into fire areas not exceeding 10,000 sq. ft., and believe that by the use of brick fire walls, as proposed, or even by the erection of wooden fire-resisting walls, if none better can be had, the hazard can easily be reduced.

The usual form of car house roof construction, which consists of steel beams or trusses of a considerable span carrying a wooden and gravel roof, is one which experience has shown to be particularly susceptible to destruction. The thin steel girders will very soon become warped when exposed to a hot fire produced under them by a burning car, and in collapsing will bring down the entire roof upon the remaining cars in the

car house, spreading the fire to all of the contents in the building, and making the removal of the cars impossible. The ordinary mill roof which, although of wood, is slow burning, would be much more desirable from a fire standpoint than the so-called fireproof light steel girder roof construction.

The article which appears elsewhere in this issue on the construction and hazards of electric railway car houses points out other prevalent defects in car house construction, and gives the requirements formulated from the experience of an important body of underwriters. For this reason the article is worthy of careful consideration, though the specifications given by the author in his paper have not been accepted as national standards. In the effort to reduce street railway fire risks the aims of the insurance interests are the same as those of the railway companies, for both are equally concerned in the reduction of fire risks, and an association of representative companies has expressed a willingness to examine without charge the plans of proposed or existing car houses, and make any recommendations possible under the circumstances to reduce the fire hazard. If any such plans are sent to us we will submit them to representatives in this city of this association for this purpose. It should not be overlooked that underwriters know from experience the risks they assume and the cost to insure. Electrical interests have suffered from ignoring this fact, as recent losses bear evidence.

### Studies in Locomotive Resistance

A most interesting discussion in the Institution of Mechanical Engineers is reported in a recent number of "The Engineer." It began in a sterile debate over compound locomotives, and then wandered, as discussions often do, into a more fruitful field, that of locomotive resistances and draw-bar pull. The figures which came to light were most instructive, and tended to throw some light on the much-befogged questions of track resistance and air resistance. It is, of course, well known that internal losses by friction of various sorts in a locomotive are rather large compared, for instance, with those in a first-class stationary engine of similar horse-power. There is good reason, too, to believe that the results which are obtained from locomotives on a testing cradle are considerably different from those obtained under ordinary running conditions. In this latter case it is very difficult, indeed, to separate the various sources of loss. This much is certain, that there is a very great discrepancy between the indicated horse-power at the locomotive cylinders and the net horse-power as computed from the draw-bar pull. The total loss thus appearing, of course, varies greatly with the speed and with the type of engine, but the amount varies over a very wide range from 20 per cent or 25 per cent up to 50 per cent or 55 per cent, the latter figures being reached at very high speeds. Of course, in any experiment with trains the locomotive bears the brunt of the air resistance, for which it is difficult to obtain exact figures on account of the irregular shape of the engine front. Undoubtedly a large part of the difference between results at high and low speed must be charged up to air pressure, but this does not account, by any means, for all the observed differences.

Perhaps, the most striking feature of these differences is the variation observed as between engines with few and with many driving wheels and with driving wheels of different diameters. In one series of experiments reported in the discussion a comparison was made between a freight engine with eight coupled drivers and an express engine with a single pair of drivers, and the remarkable fact was brought out that the latter, although unable to show at low speeds a draw-bar pull equal to that of

the former, soon surpassed it as the speed rose. At speeds above 30 m. p. h. the express engine had altogether the best of the argument as to effective power, the general running conditions remaining similar. The engines being dissimilar some small portion of the difference might be charged up to air pressure, but the total difference is altogether too great to be shuffled off in this convenient fashion. The freight engine showed a great relative falling off of tractive power as the speed rose, for which some rational explanation must be sought. Even more curious was a comparison between two engines of the express class having driving wheels differing in diameter by about 6 ins., the one having wheels about 6 ft. 6 ins. the other nearly 7 ft. The engine with the larger drivers was inferior to its mate in draw-bar efficiency up to about 60 m. p. h., and then came to the front. At about 60 m. p. h. it was found that 40 per cent of the power of the locomotive, in this case nearly 1000 hp, is used up in propelling it and its tender. As the engines weighed some 80 tons to 90 tons these figures become fairly comparable with those obtained with the electric cars of similar weight in the Zossen trials, and it is at once obvious that there must be sources of loss in the locomotive that require steady and prompt investigation. These losses are far too large to charge to an increase of the engine friction proper, and appear to be distributed in an unknown manner between the engine and the track.

Two causes have been suggested to account for these somewhat mysterious losses. On the one hand, there is a strong opinion that particularly in the engines with coupled drivers there is some way a grave waste of energy, due to the heavy reciprocating parts. On the other hand the concentrated weight of the engine tends to bear down the track and thereby produce the equivalent of a slight continuous grade. If the losses due to reciprocating weights are considerable the difference between several pairs of small coupled drivers and one large pair would be explained, but it is far from easy to see how the reciprocating parts cause any direct loss of energy. If even a small part of the waste energy to be accounted for were to be located in the reciprocating parts and their supports the engine would have to go out of service at the end of its first run. So far as sagging of the track is concerned the engine with single drivers should have altogether the worst of the game, which it evidently does not. The fact is that the mechanical losses which appear are too large to be localized in the moving parts of the machine without results almost immediately destructive. To some extent the racking of the engine by the strains imposed by the reciprocating parts, must measure the frictional losses all through the mechanism, but we incline to the opinion that the real explanation is to be sought in the actions that go on between the driving wheels and the track. It has been found in tests of electrical trains that aside from differences of air resistance there are signs that the motor cars take an abnormal proportion of the total power, signs which point to the existence of a grinding friction between driving wheels and rails very different from the rolling friction of a mere carrying wheel. In the case of a locomotive with several coupled sets of drivers this grinding effect must be far more marked than in a machine with a single pair of large drivers, and the jarring and hammering of the reciprocating parts must produce an inequality of action very likely to aggravate grinding friction. The uniform rotary effort of the driving wheels on an electric locomotive must, on the other hand, tend to minimize this particular difficulty. Certainly all the tests point to the great advantage of electric locomotives in obtaining highly efficient tractive efforts at very high speeds.

## TRAIN DESPATCHING ON THE ROCHESTER & EASTERN RAPID RAILWAY

In the STREET RAILWAY JOURNAL of Jan. 16, 1904, an account was given of the Rochester & Eastern Rapid Railway Company's new system between Rochester and Geneva, N. Y. The object of the present article is to give some interesting particulars regarding the telephone despatching system used on that road and the apparatus employed in connection with it, which has some features in its design not heretofore used. The despatching line consists of a pair of No. 12 copper wires, carried on porcelain insulators on brackets below the high and low-tension feed wires. The telephone brackets are placed 12 ins. apart, and both brackets are on the same side of the pole. The line has seven transpositions to the mile. The high-tension transmission line above it is 15,000 volts. The brackets are placed low enough on the pole to permit the use of an emergency telephone-connecting fish pole, which is carried in the car, and which is a special feature of this system, to be described later. At switches and other convenient points along the line, jack boxes are fastened to the poles and connected with waterproof wires to the telephone line, these jack boxes being connected in multiple or bridged across the line. Fig. 1 shows a motorman in the act of plugging in connection to one of these telephone jack boxes at a pole. Where connection is desired in case of emergencies between jack boxes, the con-



FIG. 1.—MOTORMAN PLUGGING CONNECTION TO TELEPHONE JACK BOX ON POLE

necting pole is used. This pole is shown in operation in Fig. 2, and its end is shown in detail in Fig. 3. This emergency hook pole can be connected to the line at any point, as shown in Fig. 2. The pole is made of maple and joined so as to be stored away in the car when not in use and at the same time be long enough to hook on to the despatcher's wires. As shown in the cross section of the top of the pole, Fig. 3, the upper hook is mounted on a sleeve, which slides up and down over the end of the pole. This sleeve is held in position by a weak spiral spring. When the top hook is hooked over the wire the weight of the pole is sufficient to pull the pole part way out of the sleeve and bring the bottom hook in contact as well as the top hook. In the bottom of the pole is a spring jack, into which the telephone plug is inserted the same as in the jack box. If anything occurs that causes the car to be blocked the motorman has orders to at once get into communication with the train despatcher without waiting to attempt to repair the trouble or find out what is wrong, and while the car is stopped

one of the crew must keep within hearing distance of the telephone on the car, so that the train despatcher can get the train crew at any moment.

### SWITCHBOARDS

The company has provided two telephone switchboards in its general offices in Canandaigua, N. Y., which is about the center of the line, and where the power plant is located. One of these switchboards, Fig. 4, of fifty-line capacity, is used for connecting the different offices and departments with each other for the general business of the company, and has two trunks from the Inter-Lake Telephone Company's office in Canandaigua connected to it. The object in providing this switchboard is to relieve the despatcher's switchboard of all work other than despatching.

The other switchboard, Fig. 7, is used in the despatcher's office, and is especially designed for this purpose, being what is known as the desk type, with an extra wide table in front of the plugs and cords so as to provide plenty of room for the train sheet directly in front of the despatcher, as he manipulates the switchboard. This switchboard has a capacity for twenty lines, and is equipped at the present time for the operation of five lines. These switchboards are what is known as the magneto call manual restoring drop type.

### TELEPHONE INSTRUMENTS

Four designs of telephones are in use in this system. A

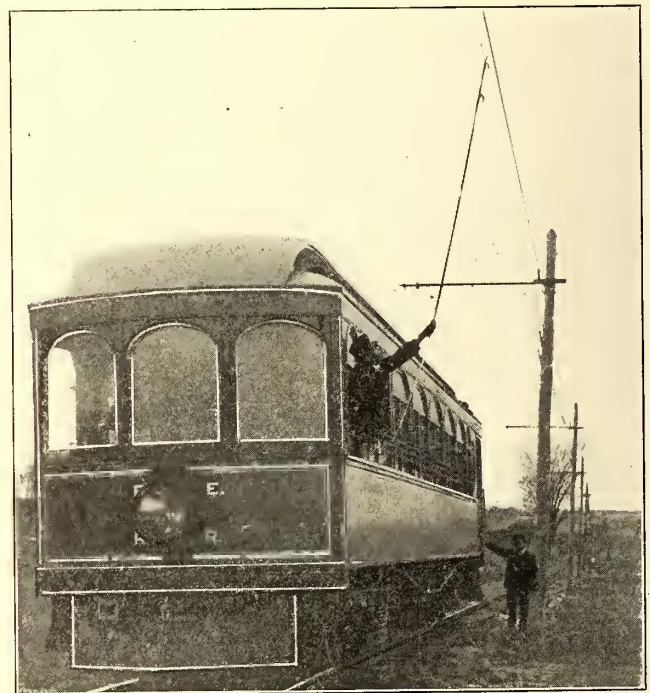


FIG. 2.—EMERGENCY HOOK POLE USED FOR CONNECTING TELEPHONE TO LINE

portable desk type, Fig. 5, is used on the desks in the offices. A compact, or dry battery type, is used in the offices along the line. An iron-box waterproof telephone is used where it is desired to place a telephone in an exposed position. An especially designed type, known as the "Car" telephone, constructed with a reel, which carries a cord and plug for connecting with the emergency pole or jack boxes, is used on each car, as shown in Fig. 6.

These telephones are provided with a generator for calling and local batteries for talking. Each telephone is equipped with its own battery, and what is known as the bridging type, being bridged or connected in multiple to the line.

### OPERATION

The operation of the despatching system is similar to that which is used by steam railways, with the exception that the order known in steam railway systems as No. 19 is not used.

This is an order which is not vitally important, and no harm is done if the operator for any reason fails to get it to the conductor or engineer when his train passes, as it contains information which the train crew has previously received, or that failure to receive would not result in disaster. The dispatcher's train sheet is of the approved type, giving the condition of the weather, the time of day, day of month and year that the sheet is opened and closed, name of motorman and conductor, train number, car number, name of stations and sidings with room at the bottom for remarks and notes of detention and causes, also a summary of regular passenger mileage, special passenger mileage, express mileage, work-train mileage, foreign passenger mileage, foreign express mileage and total of all mileage.

Definite time-tables are used, giving time of arrival and departure of regular trains at regular stops. Express trains stop only at important stations, while local trains stop at road crossings and other points not on the schedule, which may be convenient to the patrons living in the vicinity.

On this road trains in either direction have no superior right over trains in opposite direction, but meet trains as per time-

the orders. In no wise can any train get upon the track without at least clearance orders. All orders are issued in triplicate; the motorman, conductor and operator receive a copy and the dispatcher preserves the original. When it is necessary to re-

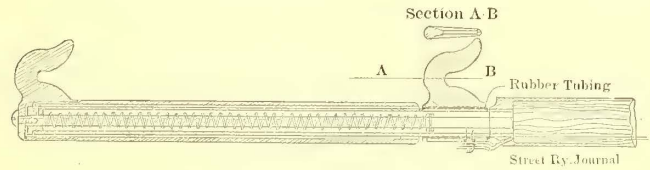


FIG. 3.—DETAILS OF EMERGENCY HOOK POLE

ceive orders at intermediate points, that is, between regular stations, the unique telephone system permits of instant communication between the cars and the dispatcher's office. To avoid the possibility of mistakes the motorman is compelled to take the order from the dispatcher, write it out, and the conductor then repeats the order back to the dispatcher for O. King. Orders issued from the dispatcher's office must be repeated back before they become effective, and all trains are

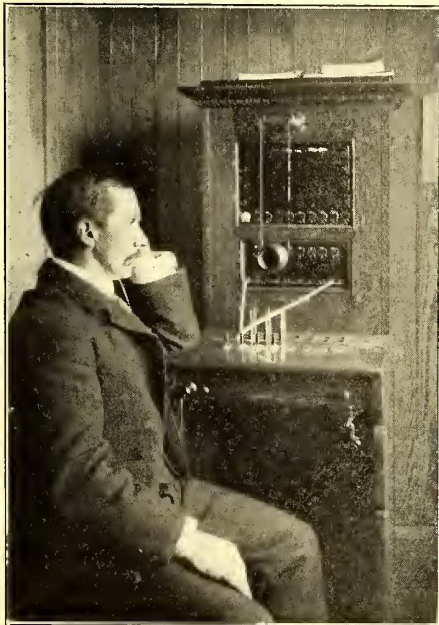


FIG. 4.—THE FIFTY-LINE BOARD FOR GENERAL BUSINESS



FIG. 5.—RECEIVING TELEPHONE ORDERS AT A DEPOT

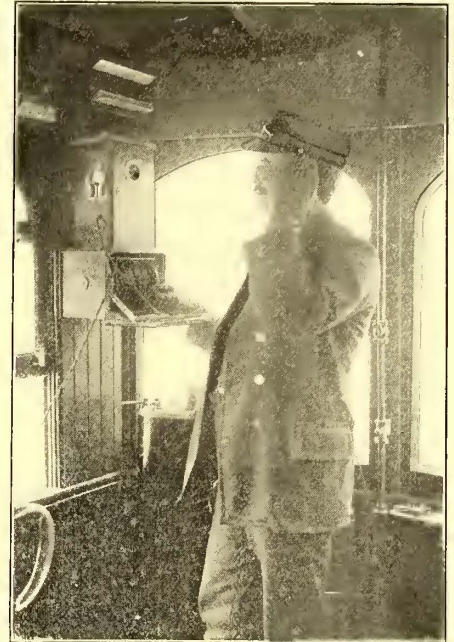


FIG. 6.—TAKING ORDERS ON A CAR, SHOWING CAR TELEPHONE USED

table, unless otherwise ordered by the dispatcher. Work trains must clear all regular trains by 5 minutes. A notice is printed on the time-tables that they are for the information of employees only, and the company reserves the right to vary therefrom as circumstances may require. On the back of the time-tables furnished the employees is published the rules for the government and information of employees, which, in the main, are the standard rules adopted by the American Street Railway Association for interurban service.

In this system but two train order blanks are used. The first blank is the same as is used by steam roads, and known as order No. 31, except that the order is received for by the conductor only, instead of by the conductor and engineer as on the steam roads. This telephone train order blank is used for all meets and special orders excepting clearance orders.

In case of an "extra" this blank is used, and a copy of the order given to the "extra" is given to every train crew that may meet or pass the "extra" in its trip over the road; thus giving due notice to all train crews that an "extra" has started and to look out for it.

Every car, before starting from a terminal point, must report to the dispatcher and receive clearance or other special orders. The conductor must sign a receipt, showing that he received

required to get orders at every station where there is an operator before proceeding, whether running on time or not.

A train is not permitted to leave a station where orders are received without at least receiving and receipting for a clearance order, and all trains are reported to the dispatcher when arriving and leaving these stations.

The passenger cars are of the heavy type, being 52 ft. in length, having a vestibule in one end for the motorman, 4 ft. 6 ins. in depth, in which the car telephone is located to the left of the motorman, being permanently fastened to the car. This telephone, Fig. 6, is designed especially for this work, being of very compact type, using dry batteries and having connected with it a reel which carries about 75 ft. of waterproof cord, at the end of which is attached a plug. This telephone is used at passing points, and in cases of trouble, by connecting with the plug to a jack box, which is fastened to a pole at each siding where there is not a regular station, and placed at intervals of half a mile throughout the length of the road. Besides this there is the connecting pole on each car.

When a train gets to a passing point and the other train is not in sight, the orders are to connect at once the car telephone to the dispatcher's line. The motorman giving his name and train number and location so that if the train he is ordered

to meet is delayed for any reason he can get an order to pass at some other point.

To provide against the possibility of the despatcher's lines being rendered useless for any reason the company has a trunk line from its despatching switchboard direct to the toll switchboard of the Interlake Telephone Company, which, through the independent telephone lines of this locality, connect with all of the stations of the road, so that the despatcher in this way can put himself into communication with all of the train order stations along the road. This pair of trunks is not allowed to be used for any commercial purposes, so that in case of an

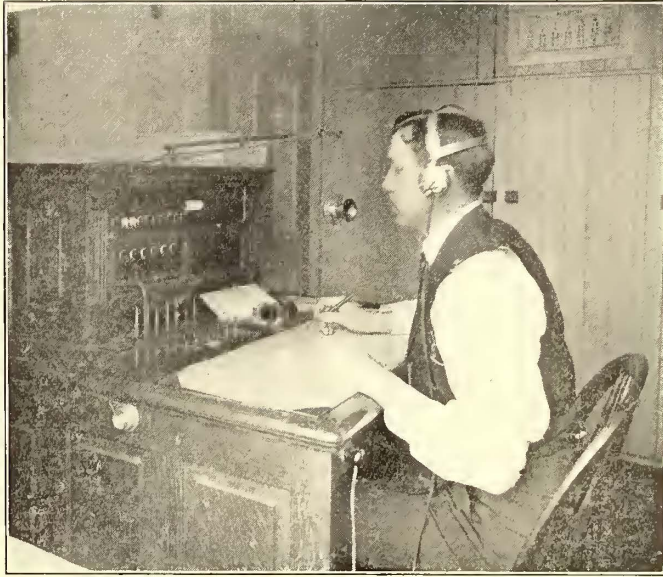


FIG. 7.—THE DESPATCHER'S SWITCHBOARD

accident to the despatcher's lines the despatcher can at once get through to the toll switchboard of the Interlake Telephone Company.

The company has adopted two rules which are appreciated very much by the public. One is that the conductors are required to report when leaving and entering the terminal points the number of passengers they are carrying, so that the despatcher can order out extra cars or additional cars to trains leaving if it looks as though the trains would be overcrowded. The other is that ticket agents at regular stations must keep posted on the entertainments that are being presented at the different theaters, as the company sells return tickets, which entitles the holder to a seat in the theater he desires to attend; the seat being reserved the same as though the ticket was sold at the theater office.

The telephone apparatus used throughout this system is manufactured by the Stromberg-Carlson Telephone Manufacturing Company, of Rochester, N. Y., and Chicago, Ill., and was especially designed for this particular purpose after the Stromberg-Carlson Company had consulted with some of the best electric railway engineers in the country, the object being to eliminate as near as possible faults which have been found in apparatus used for this purpose up to the present time, and the results obtained, as practically demonstrated in this system, show that they have succeeded.

#### NEW YORK OFFICE FOR THE STATE RAILROAD COMMISSION

The New York State Railroad Commission has established a permanent office in New York City, as there are so many questions calling for the attention of the Board in New York City and vicinity. The office is located at Room 406, Whitehall Building, and Charles R. Barnes, expert of the Board, will make his headquarters at this office.

## PRACTICAL HINTS ON INTERURBAN RAILWAY OPERATION

BY A. B. HERRICK

Interurban electric railway construction and practice of to-day is in large part patterned after those of city electric railways, but the question which arises in the minds of many engineers is, Have not many of the methods which are effective in city work been carried beyond their useful limit when applied to interurban work? We do not have to look far for the reason of the great similarity in construction of the interurban roads in this country. Capitalists have been encouraged to build these roads from the results secured in those already in operation, and for this reason engineers have been very loath to introduce anything experimental or depart largely from already accepted practice. But as the methods adopted on the early roads were borrowed largely from city practice they have been applied under conditions very different from those for which they were originally intended. For example, no trolley wheel in city service would often be required to carry from 400 amps. to 600 amps. or over, nor would the manager have to estimate upon a drop between the trolley base and the trolley wire of from 10 volts to 45 volts, depending on the speed of the equipment, the size and type of wheel and trolley wire. These conditions are common in interurban work, and the resultant deterioration of the trolley wire and the line troubles due to arcing at the ear and to variations in the trolley wire alignment, show that we have long passed the economical use of the trolley wheel for this service.

To meet the arduous conditions of current collection, for which the trolley is evidently ill suited, the third rail was devised. But nothing could be more absurd than to use as a conductor a T-rail, whose shape was specially designed for supporting a rolling weight, and which could be used for this purpose only in 30-ft. lengths. If any railroad manager was offered a trolley wire in these lengths, he would immediately refer the salesman to the junk dealer as a more appropriate customer. There also seems to have been no good reason for putting the third rail so close to the ground. This was its location on the early roads, and later engineers have followed the practice because it was operative. A more careful consideration of the problem would have dictated a steel conductor, weighing about 20 lbs. per yard, rolled in convenient lengths, and so supported that the contact-shoe could bear on the bottom and would be protected from rain and sleet by a covering. A copper cable running alongside this structure and soldered to each section of this third rail, would more economically and successfully conduct this current than is at present the case.

An over-running shoe in which the weight of the shoe supplemented by a spring is depended upon for pressure has never been found to be the best form of collector between a movable and stationary collector. This was well demonstrated by the experiments with the over-running trolleys in the early days of electric railroads. The reason for this is that where the shoe is of considerable weight its inertia will prevent it responding rapidly enough to the changes in the surface of the contact-rail where the speeds are high, and at breaks in the third rail at crossings there is a bounding of the shoe when it strikes the slope of the third rail. This not only throws mechanical strain on the shoe hanger and roughens the contact-rail at these points, but these conditions are aggravated by continued use. The same mechanical analogy of under-running and over-running shoe is presented in the case of striking a blow with a hammer in which there is a spring between the head of the hammer and handle and another hammer in which the spring is located between the head of the hammer and anvil. In the first case we get full impact of the weight of the head of the hammer, while in the second we have the impact transmitted through the resilience of the spring. With the under-running shoe we have to deal with nothing but the

resilience of the spring which holds the shoe against the contact, and this is vastly more active than where a dead weight has to be contended with.

The reason for placing the third rail low was evidently so that the shoe hanger could be attached to the truck and thus reduce the sideway oscillation of the shoe to a minimum. But if the weight of the third rail is brought down to only 20 lbs. per yard a structure can be built which need be supported only at intervals of 15 ft., and which will have only a slight flexure. If then the under surface of the rail is of V-shape, and the lateral motion of the body of the car is taken up by springs on the roof of the car, the third rail can be erected 12 ft. or more above the head of the rail and at sufficient distance at the side of the track so that there would be no danger to passengers who should lean out of the windows of the car.

By placing the support for the shoes on the roof of the car and centering it over the pivot of the truck, and by bending the third rail to conform to the curves on the road, no great lateral motion would be required by the contact-shoe in keeping its position on curves of the radius usually employed in interurban work. This construction would permit the use of the third rail on roads paralleling highways, and if each section of the third rail was independently supported and connected to the main feed conductor there would be no strains on the pole line, due to temperature changes.

Passing to the interurban equipment itself, the sizes of wires used in car wiring are usually figured on the mean current taken by the motors, and, as a rule, are too small. The maximum potential that can be obtained across these motors determines the maximum speed of acceleration. Consequently, a wire too small causes a drop in voltage which, if utilized at the brushes of the motor, would decrease the current demand on the line and improve the acceleration condition. In a 45-ft. car body there are nearly 380 ft. of wire between the trolleys and the motors, causing often a drop of from 10 volts to 35 volts, depending upon the type of the equipment and the weight of the car body.

The multiple-unit control was primarily designed for a train control. Several of the interurban roads are using it on single equipments, and have come to its adoption on account of the arcing troubles in the controllers on opening the motor circuit. If the controller was arranged so that it would trip a circuit breaker, one for each motor or pair of motors, and which could be closed only by bringing the controller handle to off position, the controller contact cylinder would be relieved of the function of breaking the circuit. Edwin W. Olds, superintendent of rolling stock of the Milwaukee Railway, has made a very pertinent suggestion along this line—that is to use individual fuses for each motor or pair of motors. This practice automatically cuts out a defective motor and prevents the putting in of new fuses or setting the circuit breaker, and thus further injuring the motor in trouble.

Another cause of trouble with motors and controllers is in raising the voltage on the line at the sub-stations or power stations to between 700 volts and 780 volts, and not tapping back on the trolley wire far enough from the sub-station so the full voltage will not be received by the equipment when adjacent to the stations. At this high voltage motors flash and buck and often the arc, drawn on a controller, cannot be satisfactorily extinguished by a magnetic blow-out device designed for 550 volts to 650 volts service.

It is a common practice in interurban railway work to connect together parallel feeders through the trolley wire, and such length of trolley wire is often interposed between these two feeders that its resistance prevents the full utilization of the multiple feeding effect of the feeders. Where two feeders are connected at the feeder board in the station through the same circuit breaker, they should be joined together at the extremity of the shortest feeder with a circuit breaker having

a semaphore attachment which will show when it is open. This is, of course, useful only where the breaker is between the two feeders, but this arrangement will utilize the total copper overhead to the best advantage, except at the time when there is a ground on one of the feeders.

In order that sub-stations on interurban work divide their loads uniformly it is as necessary to have the bonding between the sub-stations in good condition as to have the copper overhead equally distributed between the sub-stations. I have found that defective bonding adjacent to one sub-station threw a 40 per cent overload normally on the next adjacent sub-station, causing momentary overloads greatly in excess of the capacity of the sub-station, and it cost many thousands of dollars to make good the repairs in the sub-station before the difficulty was located.

Another way in which the road engineer often creates an element of danger is by placing curves at the foot of heavy grades. This is done so often that it does not seem that the risk involved can be realized. A number of serious accidents in Ohio can be attributed directly to this unfortunate combination.

A word now regarding signal systems for short interurban roads. The block-in and block-out system, in which two lights are used at the siding ahead and three lights at the siding from which the signal is given, with a switch to throw the danger signal to the siding ahead, is certainly the simplest and requires only one wire between blocking points. The telephone system is also largely in vogue on interurban lines. The telephone is located either alongside the track in a telephone box, or in the car, and a connection is made by a pole to a telephone line adjacent the track at the signal point. A further improvement can be made by connecting the telephone on the car with an auxiliary trolley pole, and attaching the telephone wires at the signal point to the span wires in such a position that they can easily be connected with this pole. As it is important that both motorman and conductor get orders, a duplicate set of telephones could then be used, one in the motorman's cab and the other on the rear platform, so connected that both will be operated only when both receivers are off. In this way both conductor and motorman will hear the message as originally given, and there can be no confusion in transmission from one to another as where only one receives the message. Where there are only a few sidings between despatching points individual wires could be run to each siding, and in this way any car could be called up while passing a signal point, or the drops in the office would indicate what points had been passed by the cars. It has also been found very useful in emergency cases to have a flexible conductor which will reach from the telephone wires to the ground, so that in case of emergency between sidings the central office can be readily communicated with.

Electric magnetic apparatus for signalling and operating safety devices form a theoretically ideal method for signal systems on interurban roads, but experience indicates that the same troubles would be found with them as exist on steam railroads, and that is the difficulty in obtaining perfect service from any system operated by electromagnetic devices. The reason for this is that the speed at which these magnets are required to work does not allow them sufficient time to saturate and operate their armatures, and if wound to operate at 50 m. p. h., when the car passes them when running, they will be burnt out if the same energy is applied while the car happens to stand over the signaling point. These troubles are not unsurmountable, and it is to be hoped that of the many ingenious magnetic signal devices offered some will prove commercially successful. But the large majority of the interurban roads are equipped with two trolley wires insulated from each other, and I should think that if these trolley wires were individually fed between blocks a system of signals or cut outs could be ar-

ranged so that when a car was taking current from one trolley wire the connection between the other and the feeder would be opened. In this way head-on collisions between signaling points would be impossible.

But no signal system is of use unless the discipline is such that to run by orders inevitably means discharge. In the matter of discipline a large number of the interurban roads can be materially improved. Moreover, it is important to have both the motorman and conductor mutually responsible for the proper fulfillment of the despatching orders and interpretations of the rules of the road.

## DETAILS OF FLOOR OR BOTTOM FRAMING OF MODERN INTERURBAN CARS

BY EDWARD C. BOYNTON

Many decided changes have been made in the bottom framing plans of modern interurban cars during the past four years. These changes have been brought about by the rapid development of interurban roads, and are due to the use of larger and heavier cars, greater power and higher speeds.

In obtaining the necessary increase in weight and strength the practice employed in the design of steam railway coaches has been followed to a large extent. This is undoubtedly a

parent. The writer has seen such a car, with trussed side sills, and with needle beams which cleared everything under the car by about 4 ins., merely resting on top of the queen posts, acting simply as a block to extend their length!

Such examples of curious construction are not infrequent, but the car builders are not responsible, for many cars are designed by the purchasers, and the builders must follow their designs and specifications.

The method of supporting the front and rear platforms shown here is that which has been in use for many years, but is now rarely used on interurban cars. Its weakness is very apparent, the separate platform sills,  $2\frac{1}{4}$  ins. x  $7\frac{1}{2}$  ins., passing under the end sills, and usually secured to them by a strap and bolted to the side sills, are reinforced by  $\frac{5}{8}$ -in. steel plates on the inside, and form the sole support of the platforms. In the interurban car of to-day the dead weights carried on the platforms, such as heavy controllers, and frequently hot-water heaters, together with the necessity for a collision buffer, render a substantial platform imperative.

The plan and side elevation of the bottom frame of a type of modern interurban car is shown in Fig. 2. This car is 40 ft. long over end sills, and 52 ft. over buffers, and has a seating capacity of fifty-four passengers. It is single ended, that is, intended to run in one direction only.

Each side sill is made of one piece of long-leaf yellow pine,

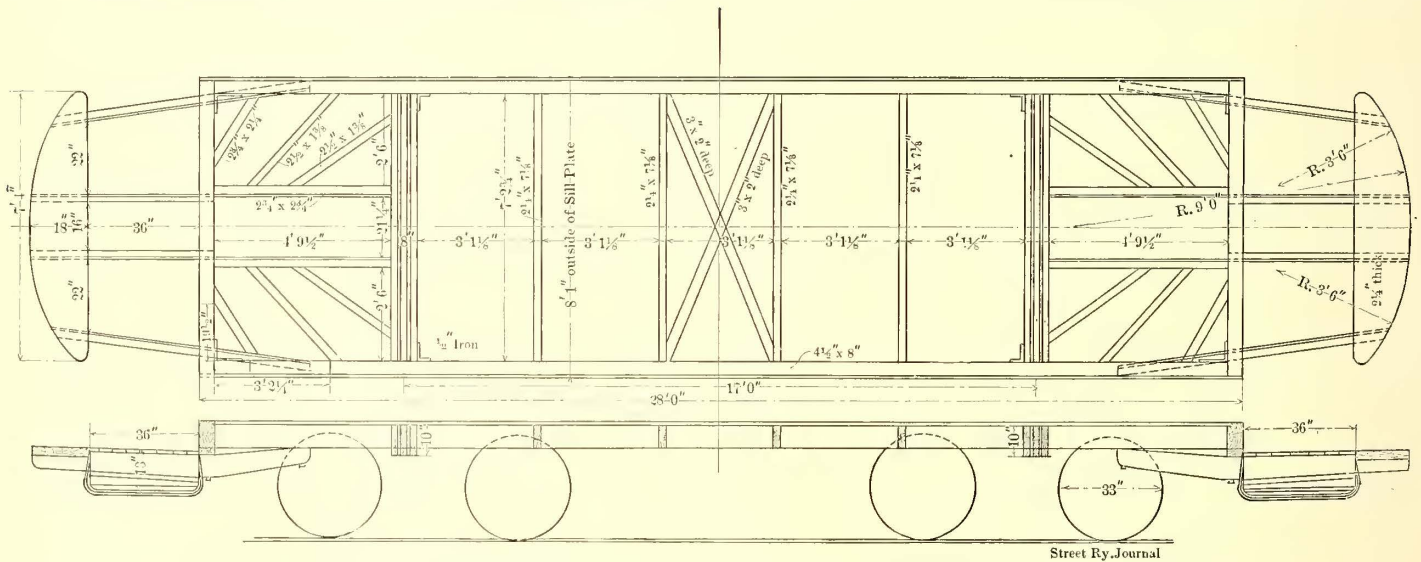


FIG. 1.—PLAN OF FLOOR FRAMING OF 28-FT. CAR, STANDARD CONSTRUCTION FOUR YEARS AGO

move in the right direction, for the service required of the interurban car to-day equals, if it does not exceed in severity, that necessary in the average railway coach.

For purposes of comparison Fig. 1 shows in plan and side elevation the bottom frame details of the usual interurban car of four years ago. This car is 28 ft. long over end sills, has center aisle and cross-seats, with a seating capacity of forty passengers. It will be noticed that the strength of the frame lies almost wholly in the two side sills, which are of yellow pine,  $4\frac{1}{2}$  ins. x 8 ins., with a  $\frac{5}{8}$ -in. x 8-in. steel plate bolted to the outside of each. The body bolsters are 8 ins. x 10 ins., with two  $\frac{7}{8}$ -in. x 10-in. steel plates sandwiched in, and the end sills are  $4\frac{1}{2}$  ins. x 8 ins. There are four cross braces or bridging between bolsters,  $2\frac{1}{4}$  ins. x  $7\frac{1}{2}$  ins., for the purpose of supporting the floor.

As there are no center sills the side sills have to carry the entire load and transfer it through the bolsters to the center plates. The side sills were sometimes, but not always, supplied with truss rods, which added materially to their strength and gave a slight camber to the frame.

This construction is well adapted to ordinary city traffic, where speeds are low, but when used in comparatively high-speed work the weakness of such a frame soon became ap-

5 ins. x 8 ins., and one piece, 2 ins. x 6 ins., enclosing a 6-in. x  $\frac{1}{2}$ -in. steel plate between them, all being securely bolted together. The left-hand side sill is carried from the rear corner post under the front platform to the buffer. The right-hand side sill runs between corner posts only. There are four more longitudinal sills, two center and two intermediate. These consist of 6-in. steel I-beams with yellow pine filling strips on each side, well-bolted together, forming square sills into which the cross sills of wood can be framed. These four sills extend from the rear end sill straight through under the front platform and support the buffer.

The rear platform is supported by four separate sills, each consisting of two 5-in. x  $\frac{1}{2}$ -in. steel plates, which extend from the rear bolster, enclosing each center and intermediate sill, and securely bolted thereto, back to the end sill under which they are offset, and thence under the rear platform, with suitable filling pieces of wood between them, to the rear buffer.

The end sills are 6-in. x 8-in. oak, strongly reinforced by a heavy angle-iron securely bolted to the lower side.

The rear end sill is solid while the center and intermediate sills pass through the front end sill.

All cross sills are made of  $3\frac{3}{4}$ -in. x 6-in. yellow pine, framed in between longitudinal sills, and beside each cross sill is a



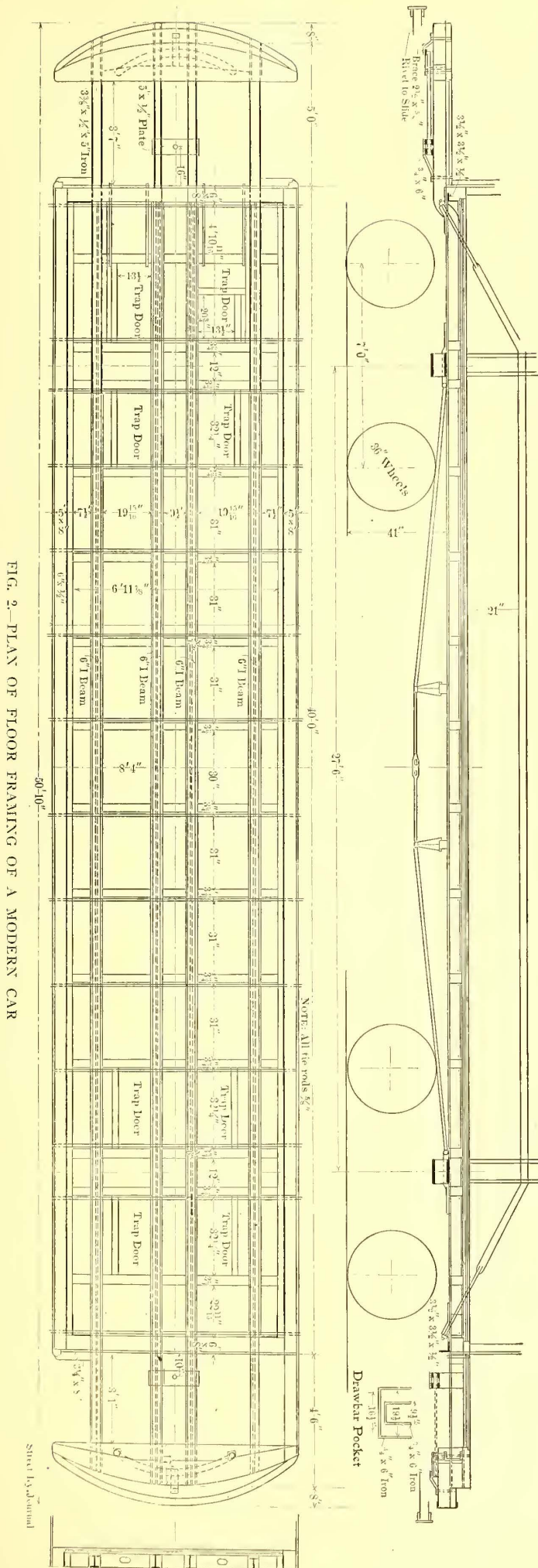


FIG. 2.—PLAN OF FLOOR FRAMING OF A MODERN CAR

5/8-in. tie-rod, extending the full width of the car, with cup washer and nut on each end, which thoroughly ties the frame together. The frame is further strengthened by 1/4-in. truss rods under side sills, carefully anchored at bolsters, with turn-buckle in center, and two needle beams of 4-in. x 6-in. white oak, each trussed by two 5/8-in. rods and supporting all longitudinal sills. The body bolsters are built in the form of a truss of 1-in. and 3/4-in. x 12-in. steel plates, with suitable center plate casting, and bolted together with filling pieces in the form of cast-iron sleeves over bolts between the plates.

This type of bottom frame is one of several recently built which differ slightly in detail. It is evident that the left-hand side of the front vestibule is closed, while there are steps at the other three corners of the car. Those in front are chiefly for use of the motormen, while passengers use both sides of the rear vestibule.

The front platform is at the height of the car floor, while the rear is a step lower, thus saving a side step. There is a marked tendency in later cars, however, to carry both center and intermediate sills straight through from buffer to buffer, making both platforms level with floor, and using the steam railway box-type of steps. This makes the strongest and best construction, for it forms a platform and vestibule which will not sag and is a safeguard in collisions.

The style of buffer shown is now quite generally used. It is made of oak, runs the full width of car and is faced with a heavy steel channel-iron. The buffer projects about 8 ins. beyond vestibule sheathing.

There is one detail which does not seem to have kept pace with the other improvements, through it may not be properly a part of the bottom frame—and that is the draft rigging. By this is not meant the draw-bar and its attachments, but the methods of securing it to the frames. Draft sills are rarely seen on interurban frames, but draw-bars, strong enough to pull a freight train, are attached to center sills by means of a weak iron bracket, which supports the pin through the end of the draw-bar. It might be said that interurban cars are not intended to pull freight trains, which is true, but how often we see their draft gear put to a worse test, especially when trying to pull a derailed car back on the track by a chain. The result in a majority of cases can be predicted—the draw-bar pulls out.

There is no reason why the draft rigging should not be designed somewhat after steam railway practice, and made strong enough to hold any load that the tractive power of the motors can put upon it.

### THE MASTER MECHANICS' CONVENTION

Formal announcement of the convention of the American Railway Mechanical and Electrical Association has been sent out by Secretary Walter Mower. The convention will be held the two days preceding the American Street Railway Association Convention. The Master Mechanics' Convention will be held at St. Louis, Monday and Tuesday, Oct. 10 and 11, 1904, to be followed by the American Street Railway Association Convention the 12th and 13th, and the Street Railway Accountants' Association of America the 14th and 15th.

The Supreme Court of Ohio has recently handed down a decision in a case in which a conductor on the Cincinnati Traction Company brought a damage suit against a party who had reported him to a superintendent for misconduct. The court held that a patron of a street railway company incurs no liability to a conductor by reporting to the superintendent of such company misconduct on the part of the conductor while on duty, even though in making the report the passenger is prompted by ill will and a desire to secure the conductor's discharge from the service of the company.

**TRAIN TESTING**

BY SYDNEY W. ASHIE

It is realized by the writer in the preparation of this article that it is impossible to include in the limited space at hand all that pertains to train testing. It has, therefore, been con-

some variable. Such a curve when applied to a train, representing its performance between the stations, has a zero value at starting, reaches a maximum value after power has been applied to the train and finally becomes zero after braking, at which time the train has arrived at the second station. There may be several applications of power between stations, the number being determined by the profile and the general contour of the road. By referring to such a curve the speed in miles per hour may be obtained at any time interval between stations.

A convenient method of obtaining data for speed time and also power curves is by means of an instrument (Fig. 1) devised by John D. Keiley, of the New York Central Railroad. This testing set was used in preliminary train tests of the Manhattan Railway Company, and subsequently an improved form was employed in similar work on the Rapid Transit Subway. As this instrument affords the only means of obtaining simultaneous continuous records of speed and power, it was decided by the

writer to employ it in train testing. The curves inserted in this article were obtained by one of Mr. Keiley's instruments, and a brief description of the apparatus therefore follows

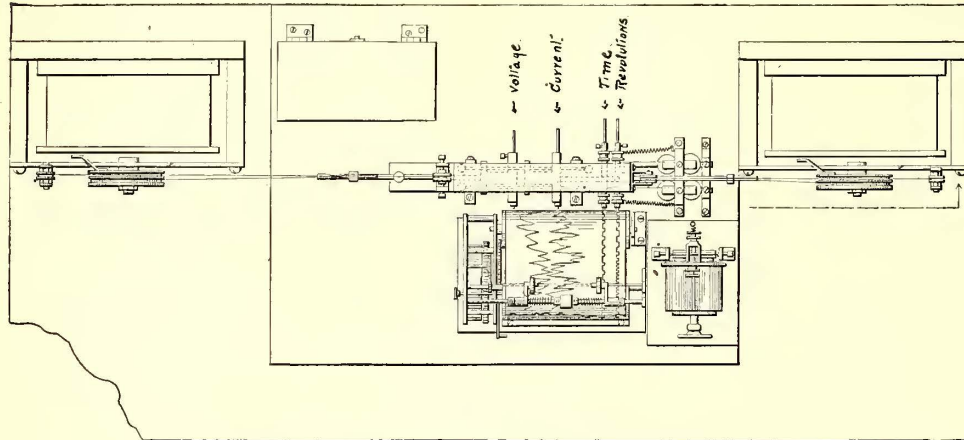


FIG. 1.—PLAN OF RECORDER, SHOWING RECORD SHEET IN POSITION

sidered expedient to omit all methods of tests upon equipment the results of which could be obtained at any time from the respective manufacturing companies. In the case of motors, curves may be obtained from any of these companies, exhibiting all of the principal characteristics, namely, the efficiency and the current, speed, torque, relations. Similarly considering trucks, car bodies, gears, brake apparatus and brake-shoes, all of the data may be secured from their respective manufacturing sources. There are certain tests which it is desirable to make when the car equipment is in an operative condition. These tests are, namely, an insulation test with a high-resistance voltmeter to determine weak points in the insulation and possible future grounds; a test of the capacity of the motors operating normally, determining the rise of temperature of the armature coils and field coils, and, finally, complete speed time curves and power curves should be obtained between successive stations. It is impossible from one series of tests to obtain data which will represent the characteristic performance of a train. With conditions similar in every respect, including the motorman, a difference of power con-

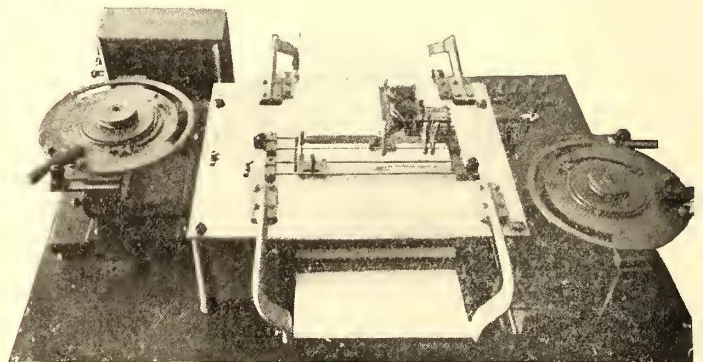


FIG. 3.—LATER TYPE OF RECORDER

The instrument when operative carries a strip of paper in roll form drawn by a spring motor at uniform speed over a drum. The motor was fitted with a delicate governor, by means of which the speed could be changed at will. When operative the paper passes over the drum under three pencils, the pencils pressing the paper against the drum and producing a record of time, current input and wheel revolutions of the car. The pencils recording time and wheel revolutions are actuated by electromagnets, the pencils producing, when the paper is in motion, a serrated line.

A clock mechanism mechanically closes a local storage battery circuit through the time relay magnets at successive half-seconds periods. It is obvious that the length of line produced by the time pencil on the paper will be the same between contacts, providing the paper move at a uniform rate.

Upon one of the axles of the car is fitted a wooden drum containing a metal strip. A brush pressing upon the drum makes contact with the metal strip with each revolution of the wheel, thereby closing a local storage battery circuit through the second pair of magnets. The length of line produced by

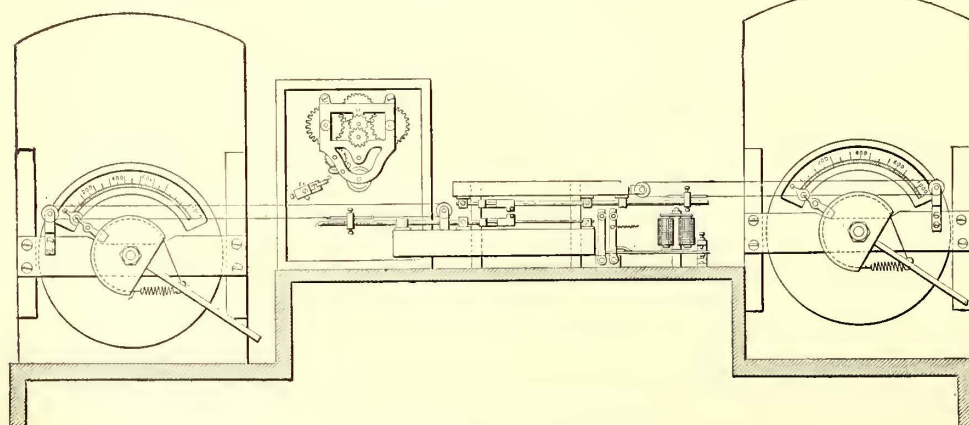


FIG. 2.—SECTION OF RECORDER

sumption amounting to as much as 15 per cent may exist when comparing the data obtained from two tests. Where automatic acceleration is obtained, as with the Westinghouse electro-pneumatic system of control, the personal equation of the motorman is almost eliminated.

**THE SPEED-TIME CURVE**

A speed-time curve, as its name indicates, is a curve which exhibits the instantaneous speed value at various intervals of

the revolutions pencil varies with the car speed between successive contacts. At starting the car wheel may make the first revolution in approximately one-half second. At a speed of 22 m. p. h. approximately four contacts will be made in one-half second. The duration of time per revolution provides the means of plotting a speed-time curve when the tread of the wheel is accurately known.

The third feature of the instrument, and by far the most important, is the device for recording current. It consists of a high-range ammeter connected in series with the power line of the train. The range of this instrument is of sufficient magnitude to permit of a deflection without banking, equivalent to the maximum current input of the motors. Mounted rigidly

sudden variations of speed, will indicate when a straight line inclined to the axis that the speed is constant, and will serve as a check when plotting the speed-time curve.

It is customary when investigating the results of tests to plot all of the variables upon the same sheet with time as the abscissa, so that at any time interval the distance covered, the speed, the power consumption, the current input, the voltage and the acceleration may be readily compared. The speed curve (Fig. 4) was obtained by drawing tangents to the distance curve.

This particular test was selected because it contained both grades and a curve. The car left station A upon a curve and a slight up-grade. When emerging from the curve the grade

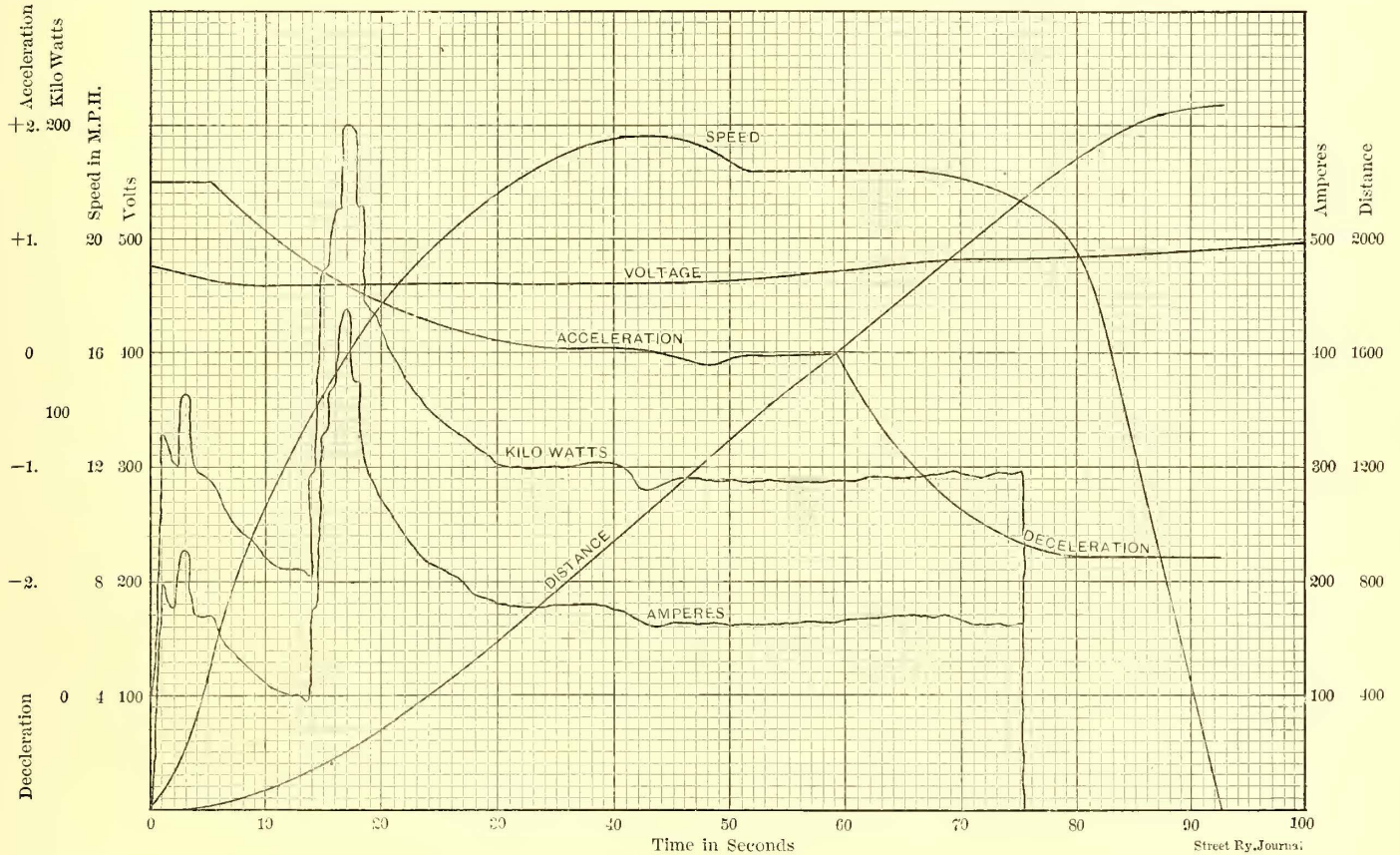


FIG. 4.—TEST DIAGRAM PLOTTED FROM RECORDS MADE BY RECORDER

upon a spindle in front of the ammeter is an arm with a pointer on one extremity and a handle on the other end. This handle can be moved by the operator with a little practice so that the pointer may accurately follow the variations of the ammeter needle. By means of a fine wire passed several times around a pulley mounted upon the fulcrum of the handle, the motion of the pointer may be transmitted to a sliding rest upon which is situated the current-recording pencil. The wire is kept taut by passing it around two additional pulleys in a similar manner to that of an endless belt (see Fig. 2). The instruments, as now designed by Mr. Keiley, have an additional attachment similar in every respect to the current-recording device, to record voltage (see Fig. 3) requiring the services of an additional operator. In the tests made by the writer, voltmeter readings were obtained by inserting a voltmeter in the lamp circuit with an attachment plug, the drop due to the lamps being allowed for.

PLOTTING OF OBSERVATIONS

Prior to plotting a speed-time curve it is desirable to plot a distance-time curve. This is readily accomplished by counting the number of contacts representing wheel revolutions up to the given time interval and multiplying by the tread of the wheel in feet. Securing points every 5 seconds and plotting the same, a curve is produced (see Fig. 4) which will exhibit any

sudden variations of speed, will indicate when a straight line inclined to the axis that the speed is constant, and will serve as a check when plotting the speed-time curve.

The test was performed upon a single car, having 33-in. wheels, with a tread of 8.63 ft.; was equipped with automatic multiple-unit control, and was operated by four motors, rated at 60 hp each, the motors being geared in the ratio 21 to 65. The total weight of the car, including passengers, was 67,200 lbs. The total distance covered between starting at station A and stopping at station B was 2480 ft.

To plot the current curve from the test sheet, vertical, parallel lines are drawn across the paper intersecting the current curve, separating it into half-second intervals, as determined from the time record. The current attachment of the instrument is calibrated by placing the pointer on the successive 50-amp. points of the ammeter while the paper is passing under the current-recording pencil. This produces a series of parallel lines, one beginning where the previous one ended, from which a scale may be deduced. A zero current line is then drawn on the test sheet. The amperes equivalent to the height of the current curve above the zero line is readily determined by means of the scale. The various successive current values at every half-second period are then plotted as illustrated in Fig. 4.

The voltage, as observed every 3 seconds, is plotted above the current curve. The voltage curve will fluctuate while the motor is accelerating and by employing one of Mr. Keiley's later instruments, which records voltage, a much more accurate curve may be plotted. In the curve sheet, Fig. 4, for instance, the voltage curve should drop at each notch of the controller instead of remaining practically uniform.

When the current curve and the voltage curve have been plotted a power curve may be obtained by multiplying together the instantaneous values of both curves. The area of this curve in square inches may be obtained with a planimeter. This area may be reduced to watt-hours by a knowledge of the watt-

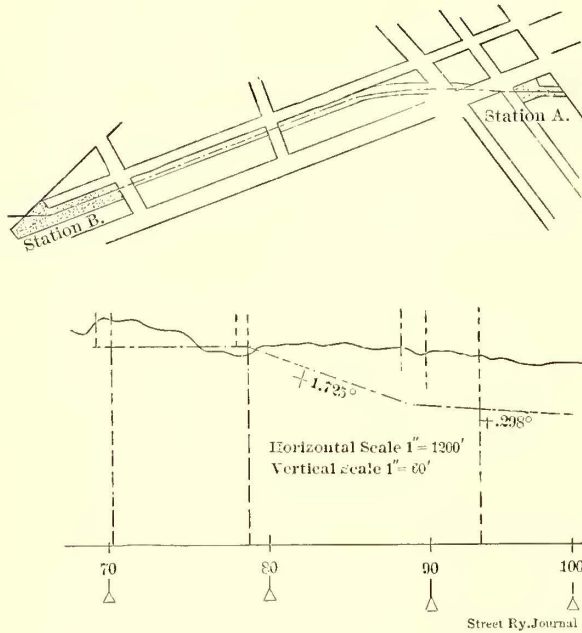


FIG. 5.—PROFILE AND PLAN OF THE SECTION OF ROAD ON WHICH RECORDS SHOWN IN FIG. 4 WERE OBTAINED

hours equivalent to 1 sq. in. of cross-section paper. In the test we are considering, 1 in. of cross-section paper is equal to 10.0 seconds on the abscissa, and it is also equal to 40.0 kw upon the ordinate representing an area of .111 kw-hours per square inch. The total area of the current curve is equal to 15.73 sq. ins., being equivalent to a power consumption between stations A and B of 1.750 kw-hours.

The effective current value representing the square root of the mean square current, or its heating value, may be obtained as follows: The instantaneous current values, represented by the current curve, should be squared, and a curve of current-squared values and time plotted. The area of this curve in square inches should be obtained with a planimeter, and this area, when divided by the base line in inches, will yield the mean ordinate in inches. Plotting this mean ordinate on the current-squared axis will give the mean square current value. Extracting the square root of this quantity the square root of the mean square current value is obtained, or, in other words, the effective current value.

The effective current value will enable the  $I^2R$  losses of the armature coils and the field coils to be readily determined when their resistance is known. The combined remaining losses, due to friction, hysteresis, eddy currents, journal friction, windage, etc., may then be determined by comparison with the efficiency curve of the motors.

The schedule speed is obtained by dividing the area of the speed-time curve by the base line following the method previously described. In a similar manner the mean acceleration in miles per hour per second may be deduced by integrating with a planimeter the acceleration curve up to the point where the maximum speed occurs, and then dividing by the base line corresponding to the same time interval. If we divide the area

of the acceleration curve by the total time between stations the through acceleration is obtained. The mean rate of deceleration while braking is equivalent to the area of the deceleration curve divided by its base line.

#### TEMPERATURE TESTS

A standard method of making temperature tests of armature coils and field coils is by means of measuring the increase in resistance during a run. As the motors cool off slowly, especially when slightly above atmospheric conditions, the car must be laid up in the yards for several days before the test is made. A satisfactory method for making this test is to utilize a storage battery with an ammeter in series attached to two long, flexible terminals with good flat contacts on their extremities, so that these contacts may be readily inserted between the brushes and the commutator surface of one of the motors. Attached to these flat contacts must also be the terminals of a low-reading voltmeter. This will enable the IR drop and the current passing through the armature to be observed. Employing Ohm's law, and the temperature coefficient of copper (.0042), the resistance of the coils at zero,  $R_0$ , is easily determinable from the formula,

$$R = R_0 (1 + .0042 t)$$

where  $R$  is the resistance before the run at the temperature,  $t$ , of the atmosphere. The final temperature,  $t_1$ , of the coils is obtained by remeasuring their respective resistances,  $R_1$ , after the test and employing the formula

$$R_1 = R_0 (1 + .0042 t_1)$$

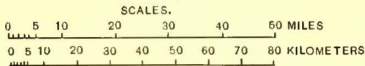
Inserting the value for  $R_0$ , as previously determined, and solving for  $t_1$ , we obtain the resultant temperature. The temperature of the field coils and armature coils should not be allowed to rise more than 75 degs. C. above the temperature of the atmosphere, which is assumed to be about 25 degs. C. A curve exhibiting the rise of temperature of the field coils may be easily determined from a series of resistance values obtained by shunting the field terminals with a voltmeter, and having a large range ammeter in series with the ground side of the field coils. The resistance may then be determined at any instant when the motors are receiving power and the rise of temperature calculated by the method previously described.

#### INTERURBAN LINES IN ILLINOIS

The accompanying map of the interurban lines of Illinois shows considerably greater mileage than the map of Northern Illinois published in the STREET RAILWAY JOURNAL of July 5, 1902. Most of the increase in mileage has been in the shape of extensions of roads already in existence. A large number of projected lines are not shown on this map, as it has been the aim to confine it mainly to projects far enough along to seem almost assured and to those under construction and in operation. The greatest activity in this State has been shown by the "McKinley," or "Portland," syndicate. This syndicate has constructed the lines between Urbana and Danville, and between Peru and Marseilles, and has under construction several links in a chain between Danville and St. Louis by way of Decatur and Springfield. The same syndicate also controls the Galesburg and Monmouth line, which is under construction, and has projected lines between Galesburg and Rock Island. There is a considerable mileage tributary to Chicago, and Rockford is another important interurban center. A number of lines have been considered which would connect the Rockford and Chicago networks. A large interurban system also radiates from East St. Louis. The other interurban lines of the State are mainly short, isolated lines between large towns. The Coal Belt Electric Railway is a remarkable little road, serving a belt of coal mining towns tributary to Marion. The population is small, as Marion, the largest town, has a population of only a little over 2000, but the road has been economically constructed and seems to be doing well financially.

# INTERURBAN RAILWAYS OF ILLINOIS

——— In Operation  
 - - - Under Construction  
 - - - Projected



### NAMES OF COMPANIES.

- 1 Mgin, Aurora & Southern Traction Co.
- 2 Aurora, Elgin & Chicago Ry. Co.
- 3 Rockford & Interurban Ry. Co.
- 4 Chicago & Joliet Electric Ry. Co.
- 5 Rockford, Peoit & Janesville R. R. Co.
- 6 Illinois Valley Traction Co.
- 7 Joliet, Plainfield & Aurora R. R. Co.
- 8 Coal Belt Electric Ry. Co.
- 9 Chicago & Milwaukee Elec. R. R. Co.
- 10 Chicago Electric Traction Co.
- 11 East St. Louis & Suburban Ry. Co.
- 12 People's Traction Co.
- 13 DeKalb-Sycamore Electric Co.
- 14 Chicago, Harvard & Geneva Lake Ry. Co.
- 15 Moline, East Moline & Watertown Ry. Co.
- 16 Peoria & Pekin Terminal Ry. Co.
- 17 Galesburg, Monmouth & Rock Island Ry. Co.
- 18 Sterling, Dixon & Eastern Ry. Co.
- 19 Decatur, Springfield & St. Louis Ry.
- 20 Aurora, DeKalb & Rockford Traction Co.
- 21 Terre Haute Electric Co.
- 22 Waukegan, Fox Lake & Western Ry. Co.
- 23 Danville, Urbana & Champaign Ry. Co.
- 24 North Kankakee Electric Light & Ry. Co.
- 25 Galesburg & Kewanee Electric Ry. Co.
- 26 Granite City & St. Louis Ry. Co.
- 27 Bloomington & Joliet Electric Ry. Co.
- 28 Central Traction Co.
- 29 Bloomington & Normal Ry. Elec. & Heating Co.
- 30 St. Louis, Granite City & Alton Traction Co.
- 31 Keokuk & Western Illinois Electric Co.

## ELECTRIC RAILWAY CAR HOUSES—CONSTRUCTION AND HAZARDS\*

BY RALPH SWETLAND

A number of articles have appeared in insurance journals on the construction and hazards of the average electric railway car house. Attention has been called to the large areas usually found, to the inflammable nature of the contents, to the great aggregation of value exposed to one fire, to the very poor condition of the wiring of the cars, and to other hazards usually found in this class of risk.

Various suggestions have been offered for the correction of these defects, such as to build the houses with brick division walls between tracks, and roller shutters between the cars on each track, the whole structure being covered with a light iron roof. Or, it has been proposed to build the house of brick with iron partitions between adjacent tracks, the whole covered with a light iron roof; the object being with both forms of construction to stop draughts as much as possible and limit the extent of the fire.

The question of the removal of cars has also received considerable attention, and numerous methods have been proposed to remove the cars provided the building was on fire. One plan proposed contemplates a double trolley, one of which is to be the operating trolley and which is ordinarily used, the other trolley being dead. When the cars are run into the car house the trolley poles are so turned that the cars can be run from the house, the trolley wheel placed in contact with the dead trolley wire, and the controller set to its first position. By means of a switch some distance from the house, in case of trouble, this dead trolley is to be made alive, and as the controllers are on, the cars are supposed to move out of the building. Another method proposed to remove cars from the house has been to have the tracks inclined toward the front of the building, the cars to rest against each other, bumper to bumper, and the car at the front of the house to be blocked. In case of trouble it is proposed to remove this blocking and allow the cars to run by gravity out of the building.

While, undoubtedly, these different schemes have considerable merit, they apparently neglect one thing, and that is—the fact that the railways must operate, and however desirable, from a fire point of view, a certain type of construction may be, if it seriously interferes with the operation of the railway, some other plan would be chosen. It is problematical whether a road would agree to have each car in a pocket, as it were, since the increased cost of construction and the increased cost of operating would more than offset any advantage gained.

While it is desirable that the cars should be removed from the house in case of fire, a construction calling for an incline of the tracks is again very objectionable from an operating point of view, since with cars weighing 15 tons to 30 tons, the liability to accident to employees, and to the cars themselves, is very great, and it would almost be impossible to make any inspection or to do even minor repair work with the cars on an incline. A track scheme which would allow all the cars in a house to be run out at the same time would, to say the least, be very expensive and also require a great deal of space adjacent to a car house.

The New England Insurance Exchange has given considerable study to the question of a standard electric car house and equipment of same, and has recently adopted requirements, as given at the end of this article, for such houses.

Construction.—This standard proposes a wall of a good hard burned brick not less than 16 ins. thick, except when piers are used, when piers shall not be less than 20 ins. thick, with the length of piers at least one-quarter the distance between the

center of piers. Cutoffs or division walls are to be not less than 20 ins. thick, to be carried full thickness through and at least 5 ft. above the roof, and arranged to cut cornice and protect doors and windows at either end. Area between cutoff walls to be not over 12,000 sq. ft. with the distance between centers of adjoining tracks not less than 11 ft.

The roof to be of regular mill construction; that is, 3-in. plank supported on single stick timbers spaced not less than 6 ft. nor more than 10 ft. on centers and supported on wooden posts. No monitors to be used, but if light through roof is necessary metal skylights with wired glass to be provided. The height of the roof at eaves to be not over 10 ft. nor more than 25 ft. at the peak, the covering to be of gravel, tin, or approved composition.

The floors to be of brick, concrete, stone or earth. Partitions, if necessary, to be of non-combustible material or of 2-in. matched plank coated with fire-retardant paint. The pits to have brick, stone or concrete retaining walls with steps of stone, concrete or iron, and, in addition, two types of construction are permitted; one allows a pit built in the form of a rectangular box of a width equal to the distance between the inside of the rails—that is, with no space at the sides under the track. The other allows of connecting pits, but requires the rails to be supported directly on brick, stone or concrete piers with brick arch or cement between the outside rails of adjoining tracks, and as often as every second track, a brick wall extending from the floor of the pit to the under side of the brick arch or expanded metal and cement, thus tightly shutting off the space between every second pit. The floors of the pits in all cases to be of cement, brick or stone.

The tracks to run clear from building without transfer table and to terminate at the rear of the building so as to give at least 3 ft. clear space between the end of the car and the building. The doors to be in pairs and swing out against stops, although under certain circumstances metal roller doors are allowed.

In a consideration of the type of construction which has been briefly outlined above, it will be noted that only brick is proposed for construction of the walls, and that these are somewhat thicker than many engineers specify. It is believed that even with a severe fire, there should be considerable salvage on walls constructed in accordance with these requirements, and with good outside protection a fire should not extend beyond a cutoff wall. By limiting the area and at the same time the distance between centers of adjoining tracks, the car storage within a fire section is limited, since if the house is filled with the more expensive type of cars, worth at the rate of \$150 per track foot, the total value within the fire section should not exceed \$150,000—a very moderate amount, at least as present car houses go.

The roof construction differs from most standards in that all forms of trussed roofs, either of wood or of iron, are eliminated and the roof timbers rest directly on posts. This roof will have a factor of safety of from 4 to 6, and with the height recommended the chance for the spread of the fire above the cars should be greatly reduced over any form of trussed roof. It should be slow in igniting, and as there will be no warp or twist, it should offer as good an opportunity as any to fight the fire from the sides or ends, and if there are skylights from the roof. That an iron trussed roof, with trusses simply strong enough to allow for snow and wind pressure, is not suitable for a car house has been shown when fires have occurred in houses with this type of construction. The recent fire in the car house of the Lewiston, Brunswick & Bath Railway Company, at Lewiston, Me., gives a good example of what may be expected. This house had light iron trusses with 3-in. plank and gravel covering. As near as can be determined, only 6 or 7 minutes elapsed between the discovery of the fire and the falling of the roof, which, crushing the fire around the trucks, prevented the

\* By permission from the Quarterly Bulletin of the Committee on Special Hazards and Fire Record of the National Fire Protection Association.

firemen from reaching the seat of the fire with their streams.

The type of floor and pits recommended aims to have everything below the floor of the car fire resisting, so that even if the bodies of the cars are totally destroyed, salvage on the trucks and motors may be expected.

Heating.—The heating to be by direct steam or hot water, boiler for same cut off from car house. Hot air by blower system has been tried, but is not recommended, owing to the necessity, with this method of heating, of having large pipes passing through fire walls requiring automatic dampers, which are difficult to keep in repair.

Electrical Arrangements.—The lighting to be by electricity except that gas is permitted in the office and lobbies. The electrical equipment for the lighting, trolley wires, etc., to be in accordance with the National Electrical Code, except that in addition to the regular trolley cutout switch a switch for the lighting circuits is required outside the building, so that both trolley and lighting circuits can be controlled independently.

Hazards.—The hazards of car houses are somewhat varied, but perhaps that of pits might be first mentioned. These are receptacles for waste, blocking, sweeping from cars, etc. With the construction proposed for these pits it would seem by providing proper receptacles for waste and with ordinary care these should give but little trouble. Sawdust has been quite extensively used to absorb grease and oil which drips from the motors, but it is perfectly feasible to substitute sand, which is not as hazardous as the oil and sawdust. Employees' tool and other closets might also be mentioned, but in the better class of car houses the former are now made of metal, so that the hazard from them is practically eliminated. The tool closets would require the ordinary care that such closets in a machine shop need.

Oils and grease constitute quite a serious hazard, but can be well taken care of, provided the main supply is kept in a detached building and only a day's supply brought into the car house. Headlights were originally of the kerosene oil type, but on most roads these have been given up and the incandescent or arc headlight substituted. Signal lights, especially on heavy interurban cars, use oil, and should be cared for in oil house or in detached oil room. The hazard of the electric light and the trolley installation will be small, provided they are installed in conformity with the National Electrical Code.

The principal hazard of any car house is undoubtedly the cars themselves. During the past few years the equipment on the average railway has increased enormously as regards to power, since, where originally it was customary to install one or two 15-hp or 20-hp motors on a car, to-day it is of common occurrence to have an ordinary street car equipped with motors of 150 hp or 200 hp in capacity. The cars themselves have increased in size and the lighting and heating have also increased proportionately. No radical change has been made in the wiring except in minor details as regards fittings. The history of practically every car house fire seems to show that the fire originated in a car. Oftentimes it has been impossible to determine exactly what caused the fire, but presumably it was from overheated resistances, from the heater circuits, poor switches or cutouts, and loose contacts, which ignited the insulation of the conductor and thus communicated fire to the woodwork of the car. The Underwriters' National Electric Association have realized for some time that the wiring of cars was not covered by the Code, and not long since appointed a special committee to draw up rules and submit to the association for approval.

This committee, recognizing the fact that the American Street Railway Association was a member of the National Conference, and that the members of this organization would be the ones chiefly affected by any rules which might be drawn up, suggested a conference committee to consider the whole matter. This committee was appointed, a number of meetings have been held, and while no definite rules have actually been

agreed upon, it is fair to assume that they will embody requirements covering the following points:

1. The protection of that part of the under side of the car over all electrical apparatus by some form of fire-resisting material. This has been tried on certain cars using very heavy equipment, and while it is hard to obtain a material which is really fire resisting, an insulator, and at the same time will not absorb moisture, certain asbestos compounds satisfying these requirements to a large extent are now on the market.

2. The use of standard conductors with flame-proof braided outer covering and an improvement in the design of terminals. Owing to the severe jar and straining that practically every car is subjected to, there is a tendency for a solid wire to crystallize and break off, giving a loose connection, or for a screw in a terminal to loosen, and thus a poor contact result. Both of these will cause heating which may set the insulation on fire. Flame-proof covering for wires has been tried somewhat extensively by certain roads, and although there are objections on the part of the manufacturers to its use, owing to the poor insulating qualities of any flame-proof material, since these materials are usually good conductors when wet, its use must help to prevent the carrying back and spread of the fire.

3. The use of an approved line of switches, cutouts, etc. The fittings which have been used on many of the cars have given considerable trouble through loose contacts, etc., owing to the fact that the jar and constant use of these fittings have caused them to deteriorate rapidly. It seems to be essential that these fittings should be more rugged than those usually found, and it is expected that a line of fittings will be designed especially for use on cars.

4. An approved method for running the wires between the various parts of the car. The wires to be run in metal conduit, fire-resisting moulding, under certain circumstances in ordinary hardwood moulding, or cleated directly to the fire-resisting material. The space underneath the ordinary car is very much taken up with brake rods, air motor and pump, resistances, etc. It is oftentimes almost impossible to find a place to run the wires even when but little cars is taken with their supports and the easiest path is chosen. The height of the floor of the car above ground also adds to the complication, since if this height exceeds a certain fixed amount it is necessary in the ordinary closed car to provide two steps for the passenger to enter the car, which is quite objectionable from an operating point of view. The same thing applies to the open car, as one designed to run over city streets can only have one step on a side, since with two or more the width over all is too great. With the floor of the car well down, there is but little room between the top of the wheel and the under side of the car, and this further reduces the space available. It may be necessary to provide channels or raceways when the car is constructed for the conductors.

5. To do away as far as practicable with the use of clusters for lighting and the substitution of individual lamps at all outlets. In the ordinary cluster having three or five lamps, the difference of potential at the fixture is from 300 to 500, so that considerable difficulty has been experienced in providing insulation which will be suitable. Trouble has also been experienced from lightning, as these circuits seem to be especially susceptible to lightning damage, even if the car is well protected by lightning arresters.

6. To have the heaters so designed and located that the current-carrying parts will be kept away from all combustible material. The heaters on the ordinary street car, having longitudinal seats, are usually placed in the panel work underneath the seat, the wires being run behind this panel work in more or less of a slip-shop manner. This space becomes a receptacle for dirt and rubbish, and is but seldom looked after. Considerable moisture also gets in here through the floor of the car and so rots the insulation. Apparently many of the fires have

started from these heaters. While they should be treated as stoves, it seems almost impossible to do this owing to the limited space available.

Protection.—The internal protection has usually consisted of fire pails, both water and sand, small hose, and in certain cases automatic sprinklers. Probably no piece of apparatus is harder to keep in a car house even with the best of management than the ordinary metal pail, owing to the fact that sand pails are extensively used on practically all cars at some season of the year, and it becomes a great temptation for the ordinary motorman to grab the first pail that comes handy. It apparently makes but little difference even if the pail is of the round bottom pattern, since one kick makes it a flat bottom one.

With pails well located, about half the number water pails and half sand pails, the latter being provided with scoops, these should be valuable in extinguishing slight fires, although with a fire on the underside of a car it is rather hard to use them to an advantage.

Standpipes with 1½-in. linen hose and ¾-in. nozzle are valuable, as they can be used either inside or under a car, and owing to their size are easy to carry around. With a car house full of cars, however, it requires a very much larger number than in the same area in a mill or factory, since in order to reach many of the cars it will probably be necessary to make a good many bends and crooks in the hose and thus cut down the pressure, unless a standpipe happens to be handy to the car on fire.

Portable chemical extinguishers within the past few years have been extensively used and seem to give ideal protection, since they are not difficult to carry around, and can easily be used for a fire under or inside a car.

Automatic sprinklers have been installed in a number of car houses in New England, and when properly installed are looked upon by many underwriters as a valuable aid in preventing the spread of fire. It is recognized that the sprinklers in a car house cannot be installed so as to reach where it is expected a fire will naturally start; that is, inside or under a car, and further that the water from the sprinklers must fall on a roof of a small house, as it were, about 8 ft. wide and from 30 ft. to 45 ft. long, made to shed water. What is hoped for, however, is that with a considerable amount of water falling on a car the fire can be kept from spreading to other cars and opportunity thus offered for its extinguishment by external means.

If the sprinklers are to be of assistance it would seem that the following conditions are absolutely necessary:

First.—That the roof of the car house shall be as near the top of the car as possible, and one allowing for the best distribution of water from the sprinklers.

Second.—That the roof shall be so constructed and supported that it will not warp or twist, and one that will remain in its original condition as long as possible.

Third.—That the volume and pressure of the water shall be such that even with a large number of heads open, say fifty to sixty, all sprinklers can give good distribution.

It will be noted that the first two conditions are cared for in the construction which has been proposed for the roof. To meet the third condition will require the pipe sizes to be larger than that ordinarily used, and a water supply capable of maintaining a pressure of not less than 75 lbs. at the base of the riser with 750 gals. to 800 gals. of water flowing.

Unfortunately, but little data are to be had on fires in car houses equipped with sprinklers, and in these the conditions were not what they should have been. A car house in Newtonville equipped with sprinklers burned in 1895, but at the time of the fire the water was off owing to a freeze of the street main. A few years later a car house in New York City equipped with sprinklers took fire from the under running trolley, and although the fire was in the space for the trolley under the main floor, which was not equipped with sprinklers,

the report on this fire states that the sprinklers assisted to prevent its spread.

In 1901 there was a fire in a car house at Pawtucket, the house being equipped with sprinklers. In this case the fire was confined to the car in which the fire originated, the sprinklers being a material aid in preventing the spread of the fire. In St. Louis in 1902 a car house completely equipped with sprinklers was totally destroyed, the report on this fire stating that the sprinklers were of no value in preventing the spread of the fire. The supply of water here was poor, being two 3-in. connections from a 6-in. main through Crown meters. The water pressure was low and there was a long feed through the 6-in. pipe.

The external protection should be of such volume that even in a section of the car house, with a total loss on the car bodies, the trucks can be kept so cool that the motors will be but little damaged. This will require a system capable of furnishing a large volume of water, necessitating liberal sized mains and numerous hydrants well located. Where the house is not under the best of city protection an ample supply of private hydrants housed with hose attached should be provided. With the large number of men usually found around the ordinary car house, there should be nothing to prevent these men from getting a number of streams on a fire and under many conditions hold it in check until the arrival of help.

The value of good outside protection for a car house was well illustrated in a fire at Quincy, Mass., a few years ago. The house was small, holding seventeen cars and two snow-plows, and was part brick and part frame, with joist graveled roof, construction. The department used eleven streams, and although the bodies of the cars were totally destroyed, the damage to the equipment was slight and the fire went through the roof in only one place.

It would seem that a minimum protection should be the following. A double hydrant for each 6000 sq. ft. of ground area connected through not less than 6-in. pipe, with not less than a 6-in. street main. Hydrants to be ordinarily not farther than 100 ft. from building or nearer than 50 ft., and to be so located that with 200 ft. of hose connected with hydrants all parts of the building could be reached by hose from at least two hydrants. The water supply to be of such pressure and capacity that at least the number of hose streams as given by the following table will be available:

Area of Building	No. of Streams
Up to 12,000 sq. ft. ....	3
12,000 to 18,000 sq. ft. ....	4
18,000 to 24,000 sq. ft. ....	5
Over 24,000 sq. ft. ....	6

With the area as given by the above table, it is assumed that the houses will be divided according to the standard—that is, into sections of not over 12,000 sq. ft. of ground area. Where these sections are over this amount, or where the houses are exposed, the number of streams required will necessarily be increased.

Care and Attendance.—Too much stress cannot be laid upon the necessity of good care of car houses and their equipments, and probably there is no class of risk where this care counts for more than it does in these houses. Cars at the end of their day's run should have inspection so that the condition of resistances, heaters, etc., will be known, and no car put away when same is not in good order. Fires have apparently started in cars having no connection with the trolley, some time after they have been housed, due probably to a fire which originated while the car was in service, but did not break out until some time after the car was stored away.

With any considerable amount of fire appliances, such as fire pails, small hose, sprinklers, outside hydrants, etc., self-inspection by the insured becomes an absolute necessity and should be insisted upon. The tendency of the time seems to be



towards consolidation of smaller roads into quite large systems, and with these larger systems this requirement does not seem to be a hardship, many railways being more than willing to go to the slight extra expense which this inspection incurs when the matter has been brought to their attention.

Requirements for Standard Electric Car Houses of New England Insurance Exchange.

#### BUILDING

Walls.—(a) To be of good hard-burned brick, laid in best lime or lime and cement mortar.

(b) Outside Walls.—When of pier construction, piers to be not less than 20 ins. thick, the face of pier to measure not less than one-fourth as much as the space between centers of piers, and the wall between piers to be not less than 12 ins. thick. When without piers, to be not less than 16 ins. thick.

Where exposed, to be carried full thickness of wall at least 5 ft. above roof, to be provided with durable and non-combustible coping, and to have no openings.

(c) Cut-off or Division Walls.—To have no openings.

To be not less than 16 ins. thick, and when walls are over 60 ft. in length to be not less than 20 ins. thick, to be strengthened by equivalent piers or pilasters, spaced not over 20 ft. center to center, the walls between piers being not less than 16 ins. thick.

To be not less than 5 ft. parapet, carried full thickness of wall, projecting through and beyond cornice 8 ins. (metal roofing not to be carried over wall) with a durable and non-combustible coping.

Where doors or windows in end walls are within 7½ ft. of cut-off or division wall, cut-off wall to extend 5 feet beyond end walls.

Where roof timbers enter walls at opposite sides, there must be at least 8 ins. of brick work between ends of beams, which shall be self-releasing.

Height.—One story, without basement or space below, except at pits. (See requirements pertaining to roofs.)

Area.—Sections between standard cut-off or division walls to contain not over 12,000 sq. ft. of floor area. Distance between centers of adjoining tracks to be not less than 11 ft.

Roofs.—To be not less than 3-in. splined plank. To have timbers (preferably single stick) not less than 6 ins. by 12 ins., spaced not less than 6 ft., or more than 10 ft. on centers, supported by wooden posts, not less than 10 ins. by 10 ins., and without trusses. To be without monitors; skylights, if any, to have standard metal frames with wire glass. To be not more than 19 ft. at eaves nor more than 25 ft. at peak above the floor level, the slope being from ½ in. to 1 in. per foot. To be covered with gravel, tin, or approved composition.

Cornice.—To be of brick, or of non-combustible material.

Floors.—To be of brick, concrete, stone, or earth, except as noted in requirements for pits.

Finish.—If any, to be non-combustible and without concealed spaces.

Partitions Other Than Cut-off or Division Walls.—To be constructed of non-combustible material, or 2-in. matched plank coated with fire retardant paint.

Doors to be of substantial construction and hung with heavy hardware. Window openings to be glazed with wire glass.

Pits.—To have brick, stone or concrete retaining walls; brick or concrete floors; steps of stone, concrete or iron; the rails supported directly on brick, stone or concrete piers, and in addition to follow construction as given under a or b—

(a) The space between outside rails of adjoining tracks to be filled in solid.

(b) The space between adjoining tracks to be floored over either by brick, arched, or expanded metal and cement; as often as between every second track there shall be a brick wall parallel with track, not less than 8 ins. thick, extending from floor of pit to under side of brick, arched, or expanded metal and cement, tightly shutting off space between adjoining pits.

Earth floors are not acceptable as standard.

Tracks.—To run clear from building, without break or transfer table. To be terminated by suitable bumpers, so that there will be a clear space of not less than 3 ft. between bumpers and wall of building. Special track work in front of building to be provided with guard rails when necessary.

Track Doors.—To be of wood, in pairs, swinging outward, and so hung as to clear all span, pull-off, trolley, and other wires and each other; i. e., to have stops to prevent swinging over each other, either when closed or open. When within 10 ft. of cut-off wall, to be covered and hung as for a standard swinging fire door.

Metal roller doors are acceptable, and specifications will be furnished on application.

Note.—Concrete construction may be accepted for walls, roofs, and posts, provided plans showing construction proposed are submitted and approved.

#### HEATING, LIGHTING AND OCCUPANCY

Heating.—To be by direct steam or hot water, piping being supported on iron hangers and kept free from woodwork.

Boiler.—To be outside or cut off by standard cut-off wall, except that parapet need not be over 3 ft., and one opening into car house will be permitted provided same is protected by standard automatic fire doors on both sides.

Lighting.—To be by electricity.

Secondary lighting by gas of offices and lobbies will be permitted, provided supply of gas is from public system, piping and jets being properly arranged.

Occupancy.—No woodworking, painting, varnishing, finishing or general repair work to be allowed in building. Cars heated by anything other than electricity not to be stored in building.

#### ELECTRICAL ARRANGEMENTS

Trolley Wires.—Trolley wires or irons to be thoroughly insulated from building, and so supported that in case of break contact cannot be made with floor.

Cut-Out Switch.—To be located at proper place outside of building, so that all trolley circuits in building can be cut out at one point, and line circuit breakers installed so that when cut-off switch is open the trolley wire will be dead at all points within 100 ft. of building.

Where building is divided into several sections by cut-off walls, cut-out switch for each section should be provided so that sections can be controlled independently.

Wiring.—Electric light and power equipment to be installed in strict conformity with the National Electrical Code Standard, approved wire, switches, cut-outs, etc., being provided.

Main switch located in box on pole at least 50 ft. from building to be provided, so that entire lighting and power installations (except trolley) can be controlled independently of trolley cut-out switch.

In General.—No system of feeder distribution to center in building. Rails to be thoroughly bonded at each joint. Cars not to be left in electrical connection with trolley wires.

#### CARE AND ATTENDANCE

Superintendence, Watchman.—During such time as building is not in charge of a regular foreman, a watchman to be maintained. An approved electric clock to be provided, on which the watchman shall record hourly rounds during nights, and bi-hourly rounds during days.

Waste Cans.—A proper supply of approved metal waste cans to be provided. Cans to be emptied daily.

The number of cans required will depend on the occupancy, but where building contains pits or is used for cleaning, at least two cans, not less than 24 ins. diameter and 36 ins. high, will be required for each 6000 sq. ft. or fraction thereof of floor area.

Oils, Gasolene, Etc.—Main supply of oil to be kept in detached oil house so constructed and located as not to be an exposure to the car house.

No gasolene, benzine, lacquer, or other inflammable material, to be kept in or near the car house.

Storerooms.—To be kept in a clean and orderly manner.

#### FIRE PROTECTION—INTERNAL

Extinguishers.—One approved 3-gal. chemical fire extinguisher for each 2000 sq. ft. of floor area. Extinguishers to be uniformly distributed in permanent locations.

Pails.—In rooms containing pits, or where any wiping up or cleaning is done, one pail to each 1000 sq. ft. of floor area.

Pails to be galvanized iron, painted red, with the word "fire" in black letters 2 ins. long. To be filled with dry sand and to be provided with scoops.

Small Hose.—50 ft. of 1½-in. linen hose to each 6000 sq. ft. of floor area. Hose to be provided with ¾-in. nozzle, and to be in lengths of not over 50 ft., and to be kept folded and attached to not less than 2-in. standpipes, which shall have an adequate supply of water at not less than 50 lbs. pressure.

Where an approved water supply is not available and building is not 12,000 sq. ft. floor area, three additional approved chemical extinguishers may be accepted in place of each hose connection.

#### EXTERNAL

Water Supply.—There must be for each 6000 sq. ft. or fraction thereof of area an approved double hydrant, connected through not less than 6-in. pipe with not less than 6-in. street main. Hydrants should be within 100 ft. of building, but under ordinary circumstances not nearer than 50 ft., and must be so located that with 200 ft. of hose connected to hydrants, all parts of building can be reached by hose from at least two hydrants.

Water supply must be of such pressure and capacity that not less than 55 lbs. will be maintained at hydrants when same are discharging through 50 ft. of National Standard  $2\frac{5}{8}$ -in. rubber-lined hose with  $1\frac{1}{8}$ -in. Underwriters' playpipes, the number of streams required varying with the area, exposure and other conditions, but not to be of less efficiency than is indicated by the following table:

Area of Building	No. of Streams
Up to 12,000 sq. ft.....	3
12,000 to 18,000 sq. ft.....	4
18,000 to 24,000 sq. ft.....	5
Over 24,000 sq. ft.....	6

Private hydrants are strongly recommended and should be installed where possible. When so installed they should be provided with outside gate valves for each pipe, have standard hose house equipped with not less than 250 ft. National Standard  $2\frac{5}{8}$ -in. rubber-lined hose, three  $1\frac{1}{8}$ -in. Underwriters' clay pipes, having  $1\frac{1}{8}$ -in. smooth nozzles, two axes, one bar, one hydrant wrench, six spanner wrenches, six spare washers.

Fire Department.—There must be a fire department house within one-half mile, having men and horses permanently stationed therein, and an equipment of at least one hose wagon and 1000 ft. of hose.

Fire Alarm.—A fire-alarm box connected with city or town fire-alarm system to be located within 200 ft. of building. Unless the box is of the keyless type a key must be kept at box.

## PROGRAM OF THE ELECTRIC RAILWAY TESTS AT THE ST. LOUIS FAIR

A full meeting of the executive committee, which, as mentioned in a recent issue, was appointed to determine the nature and scope of the electric railway tests to be made at St. Louis and elsewhere during the coming summer, was held at St. Louis on Friday and Saturday, May 6 and 7. The committee consists of Professor W. E. Goldsborough, chief of the department of electricity, chairman; Professor H. H. Norris, Cornell University, superintendent of electric railway tests, and Professors B. V. Swenson, University of Wisconsin, and H. T. Plumb, Purdue University, assistant superintendents of electric railway tests.

After careful study of the reports of the engineering committees, of the suggestions of the advisory committee, and of the excellent facilities afforded by the Exposition officials, the executive committee decided to undertake the following series of tests:

### (a) TESTS ON THE SERVICE CAPACITIES OF ELECTRIC RAILWAY MOTORS

Equipments will be operated upon the special tracks at different rates and durations of acceleration, coasting and braking, with different lengths of stops, in order to determine the heating of the motors under conditions approaching as nearly as possible those of commercial practice. The motors will also be tested separately for heating and for the determination of their torque curves and accelerating power. This will render possible the comparison of the performance of the same equipment upon the track and upon the test stand.

### (b) ACCELERATION TESTS

Acceleration tests upon single cars and upon multiple-equipped trains will be made to determine the ability of the equipment to bring the cars to speed quickly and economically.

### (c) BRAKING TESTS

Braking tests upon single cars and multiple-equipped trains will be conducted in order to determine the quickness of action, the shapes of the braking curves, the relation between the braking forces and the applied pressures and the best methods of application of the braking forces.

### (d) TESTS UPON TRAIN RESISTANCE

Determinations of the resistances due to the rails, to the journals and gearing and to the air will be made by systematic and complete series of runs. The effect of the shape of the car body will be carefully investigated. The methods to be used in measuring train resistance comprise the use of calibrated motors as the sources of power, the hauling of the car under test by calibrated dynamometers, and by noting the falling off in speed while the cars are coasting. The pressure of the air upon different parts of the car will be recorded by means of self-registering pressure gages.

In addition to this definite series a number of other tests will be conducted upon various exhibits in the Palace of Electricity in order to determine their efficiency and reliability.

Sections (a), (b) and (c) of the tests will be carried on upon the tracks which have been built for the purpose by the Exposition. These are of substantial construction, conveniently located, and of a total length of about 4500 ft. For the tests described under section (d) the Indiana Union Traction Company has provided a stretch of 8 miles of straight and heavily ballasted track. The resistance tests will be made after the completion of the St. Louis programme.

In all of the above work graphical records of the measurements will be obtained by the use of autographic instruments, which will be either built for the purpose or supplied through the co-operation of the manufacturing and operating companies and the technical colleges. The National Bureau of Standards will materially aid in this work by providing facilities for the calibration of all of the instruments.

For the purpose of comparison the various railway equipments will be divided into several classes, including car weights up to 45 tons, as follows:

- (a) Light city service equipments.
- (b) Heavy city service equipments.
- (c) Light interurban service equipments.
- (d) Heavy interurban service equipments.

The actual work of observation and calculation will be carried on under the personal supervision of the superintendents by a corps of young men carefully selected from among the graduates of leading technical schools, the total number of observers being between thirty and forty. The Exposition management is co-operating enthusiastically with the Railway Test Commission in providing ample facilities for the tests, and substantial results of permanent value to the profession are confidently expected.

At the present time a large part of the equipment is already at St. Louis, the organization is complete, and the ranks of the testing corps have been filled with earnest young men who mean business, and who are already fitting themselves for the tasks before them.

In conjunction with the five interurban roads radiating from Columbus, Ohio, the Columbus Merchants' Association recently conducted a most successful trade excursion. There are about 100 merchants in the association, including concerns in practically every line of business. On purchases from members of the association of \$5 worth of goods the transportation of a customer was paid one way within a radius of 50 miles of Columbus. On purchases amounting to \$10 or more the purchaser was given round trip transportation. Excursion tickets were sold at all stations bearing a Merchants' Excursion Coupon. In places where there were no ticket offices the cash fare receipts given by the conductor were honored. The tickets issued by the association were good for thirty days, and in cases where round trip tickets were given it was an inducement for the customer to make another trip to Columbus. The excursion proved so successful that the plan will be continued at monthly periods hereafter.

### NARRAGANSETT CAR FOR ST. LOUIS EXPOSITION

One of the three patented types of cars which the J. G. Brill Company is exhibiting at the St. Louis Exposition is the thirteen-bench "Narragansett" type shown in the accompanying illustration. Since the introduction of the "Narragansett" car four years ago it has been built for quite a large number of roads in various parts of the country, and appears to have in every way substantiated the claims of the builders as to the solution of the double-step open car problem. The photograph clearly shows the double-step arrangement, and how by the use of Z-bar sills with the upper step on the middle web, the width over all is confined to the limits of the usual single-step double-truck car. The seats are the full standard length. The treads which are to be seen upon the Z-bar are iron plates, which extend a trifle over the edge to form a wider step than the web of the Z-bar itself, and have corrugated surfaces to prevent slipping. It is claimed that with the deep setting of the posts in brackets, through which they are bolted to the sills, together with the form of the sills, an unusually firm support is given to the upper structure. The round-corner seat-end panels, which rest on the brackets and enclose the posts, are an additional support, and by increasing the space at the entrances have much to do with the success of the plan.

The car is finished entirely in ash, with vertical ceiling



NARRAGANSETT CAR FOR ST. LOUIS EXPOSITION

painted light green and decorated in gold. The guard rails slide behind the grab handles, and are held under the water boards by patented gravity catches. Other patented specialties of the builder's make with which the car is equipped are angle-iron bumpers, ratchet brake handles, radial draw-bars, "Dumpit" sand-boxes, folding gates, "Dedenda" gongs, etc.

The length of the ear over crown pieces is 36 ft. 8 $\frac{3}{8}$  ins.; from center of corner posts over crown pieces, 4 ft.; from corner posts to first side posts, 3 ft. 5 ins.; from center to center of side posts, 2 ft. 8 ins. The trucks are Brill No. 27-G. E.-1, with 33-in. wheels and 4 $\frac{1}{2}$ -in. axles.

Practically all the ears in Brooklyn were tied up for an hour on May 18, because of a fire in the new power house on Third Avenue and First Street.

### SEMI-CONVERTIBLE CARS FOR PORTLAND, ORE.

The Portland Railway Company, of Portland, Ore., has lately received ten semi-convertible ears of the Brill type from the American Car Company, of St. Louis. This railway com-



INTERIOR OF PORTLAND SEMI-CONVERTIBLE CAR

pany operates lines between Portland and Vancouver, Wash., a distance of 20 miles. Thirteen miles of new single track have been recently constructed, so that now the company is operating some 52 miles of lines. The seating arrangement of the ears provides for forty passengers. At the corners are placed longitudinal seats for four passengers each; the hand rails only extend over these seats. The transverse seats are 33 ins. in length, and the aisles are 19 $\frac{1}{2}$  ins. wide. The interiors are handsomely finished in quartered oak with ceilings of the same neatly decorated.

The length of the bodies is 28 ft. and the width 7 ft. 3 $\frac{1}{2}$  ins. over the sills and panels, and 7 ft. 6 ins. over posts at belt; sweep of posts, 1 $\frac{3}{4}$  ins., from center to center of posts, 2 ft. 8 ins. The platforms are vestibuled, and are 5 ft. 2 $\frac{1}{2}$  ins. from panel over crown piece. From rails to platform steps is 15 $\frac{1}{2}$  ins., and from steps to platforms, 14 ins. The side sills are 4 ins. x 7 $\frac{3}{4}$  ins., with 12-in. x  $\frac{3}{8}$ -in. plates on the inside, which do away with the necessity of upper and lower trusses, and at the same time stiffen the posts, which are each



SEMI-CONVERTIBLE CAR USED BY PORTLAND RAILWAY COMPANY.

secured to them with two large screws. The end sills are 5 $\frac{1}{4}$  ins. x 6 $\frac{7}{8}$  ins.; thickness of side posts, 3 $\frac{1}{4}$  ins., and end posts, 3 $\frac{3}{4}$  ins. The platform timbers are reinforced with angle-iron and angle-iron center knees, extending well back of the body bolsters, give ample support to the heavy loads which the large

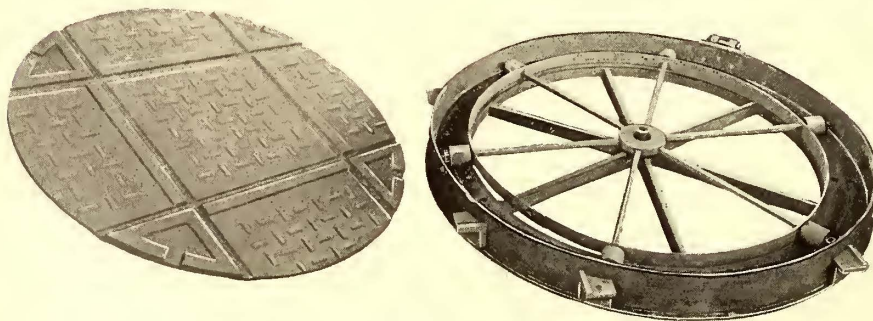
platforms may carry. Angle-iron bumpers, "Dedenda" gongs, "Dumfit" sand-boxes, ratchet brake handles and conductor's bells of Brill manufacture are included in the equipment. The cars are mounted on No. 27-G trucks, with 4-ft. wheel base and 30-in. wheels. The operating equipment includes four 37-hp motors.

### AN IMPROVED ROLLER-BEARING TURN-TABLE FOR INDUSTRIAL RAILWAYS

The increasing use of the industrial railway as an auxiliary in railway repair shop work is causing more than usual care to be given to the selection and installation of track equipment for this purpose. Industrial railways are now depended upon in many shops to such an extent as to cause practice to compare favorably with that of the standard gage work. One of the hardest problems, however, in the maintenance of industrial railway tracks is the turn-table, which is so necessary for facility in handling cars through congested shops and yards where space for curves is prohibited, so that right-angle turns, by means of turn-tables, are necessary. The small-sized turn-table as used in this work is usually a source of a great deal of trouble by becoming clogged from dirt, shifting out of grade by action of frost or otherwise, etc., which tends to cause rapid wear, and generally results in a marked inefficiency of the entire system.

The New York Switch & Crossing Company, Hoboken, N. J., has recognized these shortcomings of the ordinary pivot turn-table, and has recently placed on the market a new design of turn-table for this work which it is thought will obviate the more serious difficulties that are now encountered. This turn-table, which is illustrated in the accompanying engraving, does not embody radically new principles but effects a most desirable combination, resulting in a free and easy action of the table with any load that may be brought upon it. As may be seen from the accompanying illustration of this device, it is a combined pivot and roller-bearing turn-table, the track plate not only resting on a center pivot but also having six rollers at its outer edge for ease of revolving under load.

The important feature of this turn-table is the arrangement of the roller bearings so that they cannot easily become clogged from accumulations of dirt or other disturbing influences. These rollers are carried upon a simple spider frame, which merely acts to keep them properly spaced under the table. The rollers are not fitted with bearings upon the guiding arms, but are merely placed very loosely thereupon, the idea being that of guiding their movement as above stated. The runway for the



VIEW OF THE TURN-TABLE, WITH TABLE REMOVED TO SHOW ARRANGEMENT OF ROLLERS AND PIVOT

rollers is arranged upon the bottom surface of the circular frame casting within which the table revolves; a raised portion is cast smooth, upon which the rollers will turn freely. This circular frame is stiffened by six arms radiating from the center portion, which serves also to carry the table pivot.

Provision is made for the connecting tracks by lugs riveted to the outside of the frame so that the track may be fastened to them and thus easily brought to gage. The usual locking

device for holding the table in line of the tracks is provided by a hinged bracket at one side, which is arranged to drop into grooves provided for it at the edge of the table, as is shown. This turn-table has been applied in various important industrial railway systems and has given the best of satisfaction. The table is universally found to work very freely, and accumulations of dirt do not render it ineffective. It is one of the simplest and most easily maintained devices of the kind that has been developed.

The use of the table is not confined to narrow-gage work. It is built in various sizes, including standard gage, and is very well adapted to turn-table use for double trucks in repair shop work.

### CARBORUNDUM SAFETY TREAD

Safety tread steps on railway cars have long been recognized as absolutely necessary for securing to passengers the greatest possible safety in boarding and leaving cars, thereby eliminating one of the most fruitful sources of expensive accidents.

The tread shown in the accompanying cuts is composed of a rolled steel plate foundation, formed with a series of channels, and has every other channel filled with carborundum.



THREE-PIECE TREAD, FOR STRAIGHT STEP



THREE-PIECE TREAD, WITH ENDS REVERSED, FOR CURVED STEP

This material is ideal for treads, as it is the hardest grit known, and its surface cannot be smoothed by any known process. The Empire Safety Tread Company, of Brooklyn, N. Y., makes car steps of this material in all widths, from 4 ins. to 12 ins., and in any desired length whether straight or curved. This composition can, of course, be employed in any other places where good tread is required.

The "Cincinnati Enquirer" has arranged with the Toledo, Bowling Green & Southern Traction Company, the Toledo, Fostoria & Findlay Railway Company, and the Tiffin, Fostoria & Eastern Railway Company to carry morning papers to Toledo, Fostoria, Findlay, Bowling Green and other points in their district, so that papers are now distributed from three to four hours earlier than heretofore. The same paper has special arrangements with interurban lines reaching Dayton, Springfield, Urbana, Bellefontaine, London, Columbus and other cities in Central and Western Ohio.

Trainmen of the Pacific Electric Railway Company, of Los Angeles, are soon to appear in new uniforms. The suits will be regulation blue, but in place of an unsightly badge each man will wear his number on the band of his cap. On the coat lapels initials of the company will appear in gold thread. The cap bands are to have the man's number on each side, while his position, motorman or conductor, will be designated in front. From either side of the car passengers will thus be able to see the number of the trainman. Similar uniforms will also soon be worn by Los Angeles Railway employees.

## LEGAL DEPARTMENT\*

### OVERLAPPING OF RAILROAD PLATFORMS BY PASSING CARS

In the recent decision of the Court of Appeals of Maryland in State to use of Egnor vs. United Railways Electric Company, of Baltimore (56 Atl. 79), which was an action against a street railway company for damages for death, it appeared that the deceased was struck by the footboard of a car while it was passing a platform on which he was waiting. He had ample space to stand on without coming in contact with the footboard. The car passed in perfect safety four other passengers on the same platform before it reached the decedent. He had an uninterrupted view of the approaching car and had had an opportunity from the passing of two previous cars, to notice the portion of the platform which would be covered by the footboard. The platform has been in use for years and had accommodated ten or twelve persons at a time in entire security. There was no evidence that the motorman in charge of the car acted in a negligent or unlawful manner, although the car came up and passed at the rate of 30 or 35 miles an hour and did not stop on signal to do so. The Court very soundly and justly held that the facts did not establish negligence on the part of the street railway company and that no recovery could be had against it. Of course this decision should not lead to the adoption of a policy of having footboards overlap platforms upon which passengers are to wait for cars, if the same can be avoided. Wherever, however, such practice is unavoidable or very convenient, the cited case lays down a proper rule for the exemption of companies from liability. If a platform be insufficient in area to accommodate the number of waiting passengers ordinarily to be expected; or if a platform be suffered to become improperly crowded a different question would arise. In Dittmar vs. Brooklyn Heights Railway Company, in the New York Supreme Court, Appellate Division, Second Department (March, 1904, 86 N. Y. Supp. 878), it was held that where a street railway company had entire charge of a platform from which access was obtained to its cars and permitted passengers to go on the platform only after having paid their fare, the company was guilty of negligence in permitting the platform to become so overcrowded that passengers could not enter the cars in safety, and was therefore liable to a passenger who was injured through being pushed by the crowd against the side of a car and then thrown violently into it. But certainly it is little short of preposterous to hold that a waiting passenger with ample space to stand in safety, may hug the edge of the platform when cars are passing and the company be held responsible if he happens to be injured.

The Maryland case cited was a street railroad case, and another recent decision in a steam railroad case is closely in point. In Lehigh Valley Railroad Company vs. Dupont in the United States Circuit Court of Appeals, Second Circuit (New York Law Journal, March 7, 1904) Judge Lacombe in concurring in a judgment against the defendant records "a strenuous protest" against the proposition which he apprehends might be deduced from the opinion of the other members of the Court, that a railroad company may be found negligent, and therefore liable for personal injuries solely because its passing cars overlapped the edge of a platform. Judge Lacombe remarks:

"It does not seem to me that it can be held to be negligence on the part of a railroad company to place its platform so close to the track that some of its cars will overlap its edge. Such a construction is a reasonable one, because it brings the platform and track so near together that there is no open space left between them when cars of other types with shallower steps and less overhang are passing. Certainly it must be patent to any one of intelligence enough to be left loose on a railway platform that the strip of platform nearest the track, while very necessary for a person getting on or off the

train, is not intended for people to stand on when a train is passing; the suction alone would make it a dangerous place, even if no car or car step overlapped. Of course, the platform may be so narrow that it should be sent to the jury to say whether the defendant was negligent in not providing a sufficiently safe place to wait on, and such is the case here."

Judge Lacombe concedes that there was sufficient in other elements of the case to hold the defendant liable. An embarrassing feature was that his associates in the decision in the Lehigh Valley case cited two cases in the New York Court of Appeals, one of which upholds the proposition against which Judge Lacombe's protest is made. The New York cases are Dobiecki vs. Sharp (88 N. Y. 203) and Archer vs. New York etc., Railway (106 N. Y. 589). As to the latter of these it appears that, as in the Lehigh Valley Railroad case, there were other factors involved which, together with the overlapping, constituted negligence on the part of the defendant. Dobiecki vs. Sharp, however, would seem to sustain the contention that the mere overlapping in itself amounted to negligence. The Court says:

"Assuming that they (the cars) did extend beyond the platform to the smallest extent proven, and in this form may have caused the death of the deceased or injured persons upon the platforms, some evidence was presented that the cars were improperly constructed, and it was a question of fact for the jury whether this negligence was on the part of the defendant.

\* \* \* \*

"The request to charge the jury: 'That if the jury believed that the deceased was standing on the platform as the train approached, and with knowledge of its approach, placed himself in such a position as to be struck by the train, the plaintiff cannot recover,' was properly refused. It was covered by the charge made, and the request, if granted, would have required the deceased not only to exercise proper care and vigilance, but to guard against the improper construction of the defendant's cars, of which he had no knowledge. If he had been out of the reach of the cars if constructed in the usual manner, under the request the company would be exonerated from negligence arising from the defective construction which, it is claimed, caused the testator's death. No such vigilance is demanded by the law."

It is a matter of considerable significance that two of the members of the New York Court of Appeals dissented from the decision in the Dobiecki case, and we much doubt whether its doctrine would be accepted as good law in other forums. It is believed that the sound policy, both as to street railroads and steam railroads, is that laid down in the Maryland case cited and in the language of Judge Lacombe above quoted.

#### CHARTERS, ORDINANCES AND FRANCHISES

MISSOURI.—Street Railroads—Use of Street—Track Above Grade—Rights of Property—Owners—Obstructing Access to Property—Measure of Damages—Benefit to Property—Pleading—Evidence—Cause of Action—Departure.

1. Plaintiff alleged that defendant constructed and maintained its street railway along the street in front of plaintiff's property, with the track and roadbed several feet higher than the street grade, thereby shutting off plaintiff's ingress to and egress from such property. It appeared that defendant's predecessor had originally constructed a track on the grade of the street, which defendant subsequently raised above such grade. Held, that this did not require plaintiff to aver that such latter work was a reconstruction or change of a prior existing grade of defendant's roadbed and the track thereon, and, in the absence of such averment, testimony as to such fact did not constitute a departure from the cause of action pleaded.

2. Where a street railway constructed its track on the street in front of plaintiff's property, and thereafter raised the track above the street grade, thereby shutting off his ingress to and egress from such property, the measure of damages was the difference between the fair market value of the property immediately before the track was so raised and such value after it was raised.

3. In estimating damages caused to abutting property by the construction of a street railway above the street grade, no deduction for any benefit from the railway to the property is permissible.

4. Where the right to lay its track on a highway is conferred

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on a street railway corporation by municipal authorities, such track must conform to the grade or level of the highway, and, if not so constructed, the corporations is liable to the owners of abutting property for damages resulting from the obstruction of access thereto.—(Farrar vs. Midland Electric Ry. Co., 74 S. W. Rep., 500.)

ALABAMA.—Street Railways—Tickets and Money Fare—Reasonable Regulations—Ejection.

1. A regulation of a street railway company requiring a higher rate where cash is paid the conductor than is charged for a ticket is not reasonable and furnishes no justification for ejection of a passenger tendering only the price of a ticket, where he is taken on at a place where tickets are not for sale, though they are for sale at a station 1,000 ft. away.—(Kennedy vs. Birmingham Ry., Light & Power Company, 35 Southern Rep., 108.)

NEBRASKA.—Street Railway Companies—Mortgages—Special Assessments—Lien—Priority—Stipulations—Conclusiveness—Debtor and Creditor—Payments—Application.

1. One party to a stipulation or an agreement cannot be released from a part of it on the ground of a mistake, and still leave the other party bound thereby. His remedy is not by motion to withdraw from a part of the stipulation, but by a proceeding to reform the agreement, or to set it aside altogether.

2. Where a party waits until near the close of a second trial before asking to withdraw from a stipulation of facts used by both parties on both trials, the court may, in its discretion, refuse such request.

3. A street railway company authorized to construct, equip, and operate lines of electric street railway may purchase lines already constructed, and fit and suitable for the extension and completion of its system, as well as construct the same; and a recital contained in a mortgage executed by such company that it has power to borrow any sum or sums of money which may be necessary for the purchase, construction, and equipment of its electric street railway will not render the mortgage void upon its face.

4. The charters of all street railway companies in this State are created by general law. Cities have no power to grant such charters or impose any limitations thereon; and the act of 1889, authorizing street railway companies to borrow money for certain purposes, and secure the payment of the same by mortgaging their property and franchises, applies to all street railway companies in this State, whether chartered before or after the passage of that act.

5. Where it is claimed that a mortgage executed by a street railway company is for an amount in excess of that permitted by law and its charter, such alleged fact must be proven, so that an examination of the record will disclose it. Otherwise it will be presumed that the mortgage was not for an excessive amount.

6. Where a street railway company mortgaged its property and franchises to secure the sum of \$600,000 for the purpose of purchasing, constructing, and equipping its lines of electric street railway, and it is shown that it expended for that purpose about \$900,000, it cannot be said that the mortgage was given to create a fictitious indebtedness.

7. A series of bonds secured by a mortgage or trust deed on the property of a street railway company are negotiable, and, as between bona fide purchasers thereof for value, are equal in priority; the lien of each bond dating from the recording of the mortgage that secured it, and not from the time it was issued.

8. Such a mortgage is a first lien upon the property of the street railway described therein, as against all special assessments for paving taxes, except such as were assessed for paving already done, or as were in contemplation at the time it was recorded.

9. Section 77 of chapter 11 of the Laws of 1887, which creates a lien for paving taxes against the lines of street railway companies, does not make such special taxes a lien on their personal property.

10. Under the statutes the taxes levied as special assessments in cities of the first class draw interest at the rate of 12 per cent per annum from the time of delinquency, and a decree enforcing a tax lien arising thereon will draw interest at the same rate. A computation of the amount due on special assessments upon that basis will be sustained. Lincoln Street Railway Company vs. The City of Lincoln, 8; N. W. 802. 61 Neb., 109.

11. A creditor cannot divert a payment by his debtor from the appropriation made by him upon mere equitable considerations, that do not amount to an agreement between the parties giving the creditor a right to appropriate the payment otherwise than directed by the debtor, though mere equitable considerations may control where the payment is made without designating its application.

12. The direction given by defendant to the city treasurer, as shown by the evidence in this case, was specific enough to require him to credit the payment of the \$5,000 deposited with him on the taxes which were a first lien upon the defendant's line of street railway.

13. One purchasing property and retaining title to it under a decree of foreclosure will not be permitted to challenge the validity of such decree.

14. The sale and purchase of property under a decree of foreclosure divests the property of the lien of the decree; but, where the decree is also a third lien upon other property, such proceedings do not operate to cancel the lien thereon for the amount of the deficiency arising upon such sale.

15. "Where street improvements are made, and the cost of paving that portion of the same occupied by street railway companies is levied as special assessments against the property of the several street railways as separate properties, and the different street railways are afterwards consolidated and merged into one property, and operated as one street railway system, the old companies losing their individuality and identity, and the new company assuming the burdens and obligations of the constituent companies, held that, as between the consolidated company and the municipal authorities levying such special assessments, the liens arising by reason of the several assessments against the different constituent companies and properties attach to the new property owned and operated by the substituted company as one property in its entirety." Lincoln Street Railway Company vs. The City of Lincoln, supra.

16. "Where, however, a mortgage was placed upon a street railway property, and afterwards another company, against which certain liens for taxes levied as special assessments existed, was consolidated with the mortgagor company, held, that the lien of the mortgage on the property covered thereby, without the consent of the mortgagee, could not be impaired by the agreements and acts of consolidation, and that the tax lien on property consolidated and merged into the new company, and with the property mortgaged, could not be made prior to the mortgage lien on all the property after consolidation; that the tax and mortgage liens attached to the specific properties embraced in the levy and the mortgage, respectively," in accordance with their original priorities. Lincoln Street Railway Company vs. The City of Lincoln, supra.

17. Where the trial court finds, on sufficient evidence, that certain assessments for paving taxes were in contemplation at the time of the execution of a mortgage by the street railway upon its property, it follows, as a matter of law, that the lien of such taxes is superior to the lien of the mortgage.

18. Assessments for paving one foot outside of the rails of street car lines will not be held void where such paving was done while the statutes were in force providing that street railway companies should be required to pave between their tracks and one foot outside of the rail thereof.

19. The district court, in its discretion, may refuse to render a personal judgment against defendants at the time of the rendition of its decree in a suit to foreclose tax liens, and may defer such action until after the execution thereof.—(City of Lincoln vs. Lincoln Street Railway Company et al., 93 N. W. Rep., 766.)

NEBRASKA.—Appeal Bond—Action—Petition.

1. In an action on a bond executed after judgment, and pending the transfer of the cause to this court by proceedings in error, conditioned that the obligors "shall pay whatever judgment may be rendered by the court upon dismissal or trial of said appeal," a petition which merely alleges that the original judgment of the lower court was affirmed, and is unpaid, fails to state a breach of the bond.—(German National Bank of Beatrice vs. Beatrice Rapid Transit & Power Company et al., 95 N. W. Rep., 49.)

NEW HAMPSHIRE.—Carriers—Street Railways—Passengers—Platform—Evidence—Negligence—Question for Jury.

1. Where a person was injured by falling off a platform which was built by the side of a street railway, and used by it, and at which the company regularly stopped its cars to take on and discharge passengers, a finding that the company had adopted the platform, and invited the public to use it in getting on and off the cars, was justified.

2. Where a street railway company has adopted a platform, and invited the public to use it in getting on and off the cars, it is its duty to keep the platform in a reasonably safe condition for that purpose; and it is immaterial whether or not the platform was built by the company, or is in a public street.

3. Where a person, for the purpose of taking a street car, went to the platform at which the car stopped, and, after assisting his aged companion to a seat, walked along the platform to take the next seat, and fell off the unguarded end of the platform, which did not extend back to such seat, he was a passenger, and entitled to the care due to that relation, though he had not come in physical contact with the car.

4. The questions whether the platform was in a reasonably safe condition, and, if not, whether plaintiff was injured in consequence of his own negligence, were for the jury.—(Haselton vs. Portsmouth, K. & Y. Street Railway, 53 Atlantic Rep., 1016.)

## NEW JERSEY.—Mortgages—After-Acquired Property—Lien—Priority.

1. Where a corporation, after giving a mortgage covering existing and after-acquired property, which was duly recorded, placed poles and wires belonging to it on the land of another by agreement with him, the mortgage was a lien prior to any claim of the landowner.—(Monmouth County Electric Co. vs. Central Co., of New Jersey, et al, 54 Atlantic Rep., 140.)

## NEW JERSEY.—Carriers—Street Railways—Ejection of Passenger—Transfers—Time Limit—Errors of Issuing—Conductor—Actions Ex Delicto.

1. Where a passenger on a street car was entitled to continue his journey for the same fare on a connecting line within ten minutes after leaving the original car at the junction, and he was ejected from the connecting car, which he had boarded within the time, by reason of the failure of the conductor of the first car to correctly punch the time of plaintiff's leaving the car on his transfer, such passenger was not limited to an action for breach of contract, but was entitled to recover for his expulsion in an action of tort, unless by his own fault or negligence he aided in producing the situation which led to the expulsion.—(Perrine vs. North Jersey Street Railway Company, 54 Atlantic Rep., 799.)

## NEW YORK.—Sewers—Right to Maintain—Easements—Verbal Consent—License—Trespass—Injunction.

1. The right to maintain a sewer through the land of another is an easement in real estate, and can be only acquired by written conveyance.

2. A landowner's verbal consent to the maintenance through his land of a sewer by another is a mere revocable license, which may be terminated by reasonable notice.

3. Where one carries on a system of various petty trespasses on the property of another, the latter is entitled to an injunction.—(Fonda, J. & G. R. Co. vs. Olmstead, 81 N. Y. Supp., 1041.)

## NEW YORK.—Attorney's Lien—Enforcement—Equitable Action—Exclusive Remedy.

1. Where a claim and cause of action are extinguished by a settlement made before judgment, or even trial, Code Civ. Proc., Sect. 66, giving an attorney a lien on his client's claim and cause of action upon the commencement of the action, impliedly provides that the lien shall extend to the proceeds, and it attaches to the fund created by the settlement, so that, where a party with actual notice of the lien pays the fund over to the other, he is liable to the attorney for the amount of his lien, in an equitable action to enforce it, where it cannot be collected from the client.

2. That Code Civ. Proc. Sec. 66, relating to an attorney's lien, provides a remedy by petition for the enforcement of the lien, does not exclude the right to bring an equitable action to enforce it; showing that plaintiff is within the provisions of such section, and subject to the defense that no lien ever existed, or that it has been waived or discharged.—(Fischer-Hansen vs. Brooklyn Heights Ry. Co. et al, 66 N. E. Rep., 395.)

## LIABILITY FOR NEGLIGENCE

## NEW YORK.—Trial—Instructions—Street Railways—Contributory Negligence—Effect—Instructions—Expert Testimony—Competency—Excessive Damages.

1. Where the questions of defendant's negligence and plaintiff's contributory negligence were, under the evidence, for the jury, the court was not required to charge, as matter of law, that, if the jury believed the testimony of a particular witness as to a particular fact, they should find for defendant.

2. A traveler, though turning on a street car track when an approaching car was 30 ft. away, was entitled to recover for injuries sustained by being struck by the car, notwithstanding his own negligence, unless the motorman did what he could to avoid the accident.

3. In an action against a street railway for injuries received by a traveler, an instruction that if the accident happened by reason of the traveler starting to drive across the tracks when the car was 30 ft. away, and if the motorman could not, by the exercise of ordinary care, have stopped the car in time to avoid the accident, then defendant was not liable, was properly refused, as authorizing a verdict for defendant though the motorman might have so checked the car that the force of the collision would not have been sufficient to throw the traveler off his wagon and injure him.

4. Where plaintiff's right shoulder, previously in good condition, was injured in a collision with a street car in which he was thrown from his wagon, it was not error to permit a physician, who testified that about three months before the trial, which occurred some two years after the accident, he had examined plaintiff, and found a condition indicating an old inflammation of the shoulder joint, to answer a question whether the condition could have been caused by a severe contusion of the shoulder nearly two years before, caused by his being thrown out of a wagon.

5. Where plaintiff's evidence in an action against a street railway company for injuries received in a collision with a car tended to show that the use of his arm was impaired, a verdict for \$1,000 was not excessive.—(Wagner vs. Metropolitan St. Ry. Co., 80 New York Suppl., 191.)

## NEW YORK.—Negligence—Care Required of Infant—Evidence of Incapacity.

1. An infant of the age of 12 years, or above, is chargeable with the measure of care demanded by an adult, unless he shows as a fact that he does not have the capacity sufficient to exercise the care of an adult.—(Charlton vs. Forty-Second St., M. & St. N. Ave. R. Co., 80 New York Suppl., 174.)

## NEW YORK.—Carriers—Negligence—Evidence—Question for Jury—Street Cars—Invitation to Board—Instructions.

1. Where, in an action against a street railway company for injury to a passenger who was thrown down by the sudden starting of the car as he was getting on, there was no evidence relating to the conductor, except that plaintiff did not see him, it was error to leave the question of the conductor's negligence to the jury.

2. Where, in an action against a street railway company, plaintiff, while stepping onto a slowly moving car, which he had signaled, was thrown off by its starting forward with a jerk, the refusal of the court to charge that "the slowing up of the car as it approached the street crossing was not an invitation to the plaintiff to board it before it stopped," was error.—(Monroe vs. Metropolitan St. Ry. Co., 80 New York Suppl., 177.)

## NEW YORK.—Street Railroads—Person on Track—Driver of Wagon—Negligence—Question for Jury—Contributory Negligence—Right to Use Track Space.

1. Evidence in an action by the driver of a wagon for injuries occasioned by a collision with street cars passing each other considered, and held to require the submission of the question of the street car company's negligence to the jury.

2. Evidence in an action by a wagon driver for injuries from a collision with a street car, occasioned by his turning onto the track to avoid approaching trucks, considered, and held not to warrant withdrawing the issue of contributory negligence from the jury, though there was no proof that plaintiff looked for cars.

3. It is not negligence, as a matter of law, for a wagon driver to turn onto the street car track in front of an approaching car which is so far away that by proper care it can be stopped so as to avoid a collision.—(Blum vs. Metropolitan St. Ry. Co., 80 New York Suppl., 157.)

## NEW YORK.—Carriers—Crowded Street Car—Contributory Negligence—Arguments of Counsel.

1. Where a street car company fails to provide seats or standing room, so that a passenger must stand on the platform, and the company permits him to ride there, the question of its negligence is for the jury where the platform is so crowded that he is liable to be pushed off by an employee operating the car.

2. The plaintiff was a passenger in a street car, the seats of which were occupied, and he rode on the front platform, with seven others. In going fast on a down grade, the driver, in his efforts to apply the brakes, jostled the crowd, and decedent was thrown off and instantly killed. Held, that the questions of negligence and contributory negligence were for the jury.

3. A passenger on a street car is not chargeable with contributory negligence as a matter of law, because he stood on the platform of the car with knowledge of its overcrowded condition, where there was no evidence that he was ever on a street car before, or that he knew of any fact, other than the crowded condition of the platform, which would expose him to danger.

4. Calling attention to an improper statement of counsel in summing up for the first time after the instructions, and the taking exceptions to the language used by counsel present no question that can be reviewed by the Court of Appeals.

5. An exception to the denial of a motion to withdraw a juror because of improper remarks of counsel in summing up presents no question for review, the denial resting in the discretion of the trial court.—(Cattano vs. Metropolitan St. Ry. Co., 66 N. E. Rep., 563.)

## NEW YORK.—Guardian Ad Litem for Infant—Execution—Giving Security.

1. Under Code Civ. Proc. Sec. 474, providing that a guardian ad litem for an infant may not receive money of the infant till he has given security, and general rules of practice No. 51, to the same effect, she or her attorney may not proceed by execution to collect a judgment till the security be given.—(Wileman vs. Metropolitan St. Ry. Co., 80 New York Suppl., 233.)

## NEW YORK.—Children—Negligence of Parents—Imputed Negligence—Street Railroads—Injuries to Pedestrians—Duty to Look—Witnesses—Duty to Produce—Presumptions.

1. Parents of a child 6½ years of age were not guilty of negligence in permitting the child to accompany his brother, 12 years

of age, well acquainted with the city, on a visit to their aunt, in a different portion thereof.

2. Where a child 6½ years of age was killed by a street railway car while accompanying his brother, 12 years of age, from one part of the city to another, the negligence if any, of the elder brother, would be imputable to the child in an action to recover for his death.

3. A boy 12 years of age, accompanied by decedent, his younger brother, left a northbound street car after it, with other cars, had become blockaded, and waited on the curb until the cars had passed, when he started to cross the street, after looking and seeing a southbound car by which his brother was struck a block away, but was himself compelled to jump out of the way of the car, which approached at an unusual and negligent rate of speed, without ringing the gong. Held, that the elder boy was not guilty of negligence, as a matter of law, which, being imputed to decedent, would preclude a recovery for his death.

4. Where decedent, in custody of his elder brother, attempted to cross a street in front of a street car which was a block away when they started from the curb where they looked, and saw the car, which approached at a high and negligent rate of speed, of between 14 and 15 miles per hour, without ringing the bell, whether decedent's brother was negligent in not looking a second time before reaching a point of danger was a question for the jury.

5. Defendant requested the court to charge that, by plaintiff's failure to produce certain witnesses claimed to have been witnesses for plaintiff on a former trial, the jury might infer that their testimony would have been unfavorable to plaintiff. It did not appear that the witnesses named had been witnesses on the former trial, and the court declined the request, and charged that if either side had under control witnesses who could testify to any material facts connected with the accident, and did not produce them, that fact might be considered by the jury, and added that it did not appear that both of the persons named in the request were witnesses at the former trial, but that the witnesses mentioned by defendant were under its control. Held, that such instruction was not error.—(Levine vs. Metropolitan St. Ry. Co., 80 New York Suppl., 48.)

NEW YORK.—Res Judicata—Formal Appeal—Subsequent Trial—Appeal—Review—Weight of Evidence—Contributory Negligence—Instructions—Exceptions—Sufficiency.

1. The decision, on appeal from a non-suit in an action for personal injuries; that the questions of defendant's negligence and plaintiff's contributory negligence are for the jury, is res judicata on the subsequent trial of the action, where plaintiff's evidence is the same as on the former trial.

2. A verdict for plaintiff on a question of fact will not be disturbed as against the weight of the evidence, though the evidence on defendant's part is sustained by a greater number of witnesses.

3. A pedestrian, after signaling an approaching car about half a block away to stop at the place passengers are customarily taken on, is not negligent, as a matter of law, in proceeding diagonally across the tracks to such place, and in assuming that the motorman, as the car approaches the stopping place, will use reasonable care to permit her to cross in safety.

4. The pedestrian was not guilty of negligence, as a matter of law, for failing to look behind her after she had started in her diagonal course across the tracks.

5. Where, in an action for personal injuries, the evidence justifies a finding that plaintiff will suffer pain from the injuries in the future, an exception generally to an instruction permitting an award of damages for future pain, mental and physical, on the ground that there is no proof warranting the jury in allowing damages for future pain, does not present the question of the correctness of the instruction so far as it allows damages for future mental pain.—(Copeland vs. Metropolitan St. Ry. Co., 79 New York Suppl., 1054.)

NEW YORK.—Street Railways—Injury to Passenger—Contributory Negligence—Negligence.

1. It is not negligence per se for a passenger on a crowded car to stand on the running board.

2. Testimony that street car crossed a street without stopping, then slowed up a little, and then suddenly started quickly, with a jerk sufficient to throw standing passengers off their footing and against the seats, and that, coincident with the sudden jerk and accelerated speed, plaintiff's intestate, a passenger standing on the running board, fell from the car, makes a case of negligence for the jury.—(Sheeron vs. Coney Island & B. R. Co., 79 New York Suppl., 752.)

NEW YORK.—Personal Injury—Damages—Earning Capacity—Evidence—Admissibility—Excessive Damages.

1. Plaintiff, injured while alighting from one of defendant's cars, was at the time a licensed pilot, and belonged to a corporation known as the Sandy Hook Pilots' Association. His earnings

consisted of fees received for boarding incoming vessels and bringing them into port, the fees being regulated by law. All of the fees received by the various pilots were turned into a common fund held by the association, from which plaintiff received \$200 monthly. Held, that proof of the receipt by plaintiff of such sum was admissible to show his earning capacity.

2. The accident resulted in a fracture of plaintiff's thigh, with permanent disablement. He was entitled, under the rules of the association, to \$75 a month pension. Held, that a verdict for \$10,000 was not excessive.—(Waldie vs. Brooklyn Heights Ry. Co., 79 New York Suppl., 922.)

NEW YORK.—Street Railroads—Injuries to Pedestrians—Contributory Negligence—Duty of Motormen—Instructions—Intervening Cause.

1. When plaintiff started to cross a street, he saw a southbound car approaching about a block away. He crossed the southbound track, and did not discover a northbound car approaching until he was about to step on the northbound track, and in order to avoid a collision he stepped back on the southbound track, and was struck by the southbound car. Held, that it was plaintiff's duty to have looked both ways before starting to cross the street, and his failure to do so constituted contributory negligence.

2. The motorman on the southbound car was not bound to anticipate that plaintiff, after crossing the southbound track would retrace his steps in order to avoid a collision with the northbound car.

3. Where, in an action for injuries while crossing a street railway track, there was no evidence of any intervening cause, and the evidence would have justified a finding that plaintiff's injuries were due to his own negligence, a charge that, though plaintiff was guilty of contributory negligence, yet if defendant, by reasonable care, could have avoided the consequences of such negligence, and if plaintiff's negligence was not the direct cause of the accident, plaintiff was entitled to recover if defendant was guilty of negligence, was error.—(Trauber vs. Third Ave. Ry. Co., 80 New York Suppl., 231.)

NEW YORK.—Identity of Person—Evidence—Sufficiency as Affected by Other Testimony—Ejection of Passengers—Damages.

1. Testimony of plaintiff in an action for forcible ejection from a street car, given twelve months after the event, that he would not know the conductor, does not affect his positive testimony that the conductor to whom he gave his transfer at Thirty-Fourth Street was the one who ejected him at Ninety-Fourth Street, so as to allow the question to go to the jury, though the conductor who ejected him testified that he did not take charge of the car till it reached Fiftieth Street.

2. A verdict of \$1,500 for ejection of a passenger from a street car by the conductor, who insisted that he had not paid his fare, is not excessive, considering the element of humiliation; the conductor having repeatedly struck and kicked him, and endeavored to assault him with a piece of iron, which he was prevented by plaintiff's companion from doing, and it not appearing plaintiff's resistance was such as in any way to mitigate or palliate the unprovoked violence.—(Foley vs. Metropolitan St. Ry. Co., 80 New York Suppl., 249.)

NEW YORK.—Res Ipsa Loquitur—Burden of Proof—Derailment of Street Car.

1. The doctrine of res ipsa loquitur operates to raise a presumption of negligence against the defendant, but does not shift the burden of proof.

2. The doctrine of res ipsa loquitur applies to cases of injuries to passengers caused by derailment of a street car operated by mechanical or by mechanical and electrical power.—(Adams vs. Union Ry. Co. of New York City, 80 New York Suppl., 264.)

NEW YORK.—Servant—Injuries—Elevation—Inspection—Question for Jury.

1. Where defendant maintained an elevator in its street car barn for the purpose of lifting street cars from one floor to another, and the only evidence of inspection was that of one of defendant's witnesses, who testified that he was in the habit every week of going around the elevator and looking at it, and going on a ladder and observing the wheels and the drums and oiling the machinery, but had not used the hammer test on the gear wheel, which subsequently broke, for more than a year prior to the accident, a finding that the inspection was inadequate was proper.

2. Defendant street railway company maintained a car elevator in its barns, the elevator being provided with a track connecting with other tracks on the different floors, and the cars being moved by defendant's employees. Plaintiff, an employee, was injured by the fall of the elevator, caused by the breaking of a cable and a gear wheel. It was shown that if the cable alone had broken, the elevator would simply have sagged a few inches, and defendant contended that the breaking of the gear wheel was the result of a



blow-hole in the metal constituting a hidden defect. Plaintiff, however, contended that the break was due to a crack in the wheel, which was patent, and might have been ascertained by a proper inspection. Held, that the cause of the break was for the jury.—(Swenson vs. Metropolitan St. Ry. Co., 80 New York Suppl., 281.)

NEW YORK.—Street Railways—Injuries—Contributory Negligence—Instructions.

1. As plaintiff left the sidewalk to cross a street there was a car approaching, 75 ft. to 100 ft. away, moving 5 miles or 6 miles an hour. There was a truck in advance of the car. Just as the car came opposite the head of the horses hitched to the truck, plaintiff ran in front of both vehicles, and was struck by the car before the motorman could stop it. Held, not to warrant a charge that, even if plaintiff was guilty of contributory negligence, the question remained whether the motorman might have avoided the consequence of plaintiff's negligence; only the simple questions of negligence and contributory negligence being presented.—(Phelan vs. Forty-Second St., M. & St. N. Ave. Ry. Co., 80 New York Suppl., 333.)

NEW YORK.—Master and Servant—Negligence—Care Required of Servant—Tools—Choice of Tools—Inspection by Servant—Inspection by Defendant—Proximate Cause—Notice of Defect.

1. A servant who, in the discharge of his duties, ascends a telegraph pole, is not bound to fasten the pole with guy ropes, braces, etc., unless the danger of proceeding otherwise is known and obvious.

2. An electric lineman, who ascends a telegraph pole for the purpose of cutting wires, has a right to use such of the appliances furnished as appear to him to be reasonably safe for the performance of the task.

3. Where an electric lineman, in the discharge of his duties, ascends a telegraph pole, it is not incumbent on him to make an inspection of the pole, where the defect is not obvious.

4. It is the duty of an employer, who sends a servant to the top of a telegraph pole, to inspect the pole in order to see whether it is safe.

5. Where an electric lineman was injured owing to a pole on which he was at work falling when the wires were cut, and it appeared that the pole had deteriorated from dry rot, so that it was supported by only a small portion of good material, the proximate cause of the injury was the defect in the pole.

6. Where an electric lineman is injured by a pole on which he is working breaking with him, owing to it having deteriorated from dry rot, that the wires were being removed from wooden to iron poles did not amount to notice that the wooden poles were defective.—(Walsh vs. New York & Q. C. Ry. Co., 80 New York Suppl., 767.)

NEW YORK.—Carriers—Injuries to Passengers—Trial—Misconduct of Counsel—Reversible Error.

1. In an action for injuries to a passenger, after an objection had been sustained to a question asked of defendant's witness on cross-examination as to whom a doctor, who accompanied the witness on a visit to plaintiff, represented, plaintiff's counsel asked witness whether such doctor did not go to settle with plaintiff, and whether he was not representing an insurance company back of defendant, to which defendant's counsel at once objected, and which was not allowed to be answered. Held, that the asking of such question constituted reversible error, where it did not affirmatively appear that it did not affect the verdict, though the court instructed the jury that they should not regard it.—(Manigold vs. Black River Traction Co., 80 New York Suppl., 861.)

NEW YORK.—Personal Injury Case—Failure to subpoena Attending Physician—Instructions.

1. There being no evidence that the physician who attended plaintiff for the injury for which she sues was subpoenaed, and she admitting that he had testified on a former trial that he found nothing to indicate that she had been injured, except what she told him, defendant is entitled to an instruction that the jury may consider his absence as a fact bearing on plaintiff's right to recover.—(Minck vs. New York & Q. C. Ry. Co., 80 New York Suppl., 712.)

NEW YORK.—Street Car Conductor—Assault on Passenger—Credibility of Evidence—Assault Provoked by Passenger—Evidence—Arrest of Conductor—Discharge.

1. Where defendant's version of an assault made on plaintiff by a conductor on one of its cars, uncontradicted by any testimony except that of plaintiff, is to the effect that plaintiff fell in jumping off the car while in motion, and the conductor stopped the car, and went back to make inquiries, whereupon, after some conversation, plaintiff, who was suffering from a broken ankle, followed and struck him, and was dealt a blow in return, a verdict for defendant will not be disturbed on the ground that the story is too incredible to justify it.

2. A street railway company is not liable for an assault on a passenger by a conductor, provoked by the passenger's violence.

3. Where, in an action against a street railway company for assault on a passenger by a conductor, plaintiff elicits evidence that the conductor was arrested for the assault, the admission of evidence by the defendant that he was discharged after arraignment was not error.—(James vs. Metropolitan St. Ry. Co., 80 New York Suppl., 710.)

NEW YORK.—Injury to Employee—Contributory Negligence.

1. The evidence showed that plaintiff's intestate was excavating under defendant's street railway, over which the cars were continually passing; that while working in the trench he was struck by a car; that he saw it approach, and leaned back to be out of the way; and that there was plenty of room in the trench for him to remain at a safe distance from the car as it passed, but that he raised up so as to bring his face near the car, and was struck by the step. Held, that he was guilty of contributory negligence, preventing recovery.—(Riddle vs. Forty-Second St., M. & St. N. Ave. Ry. Co., 66 N. E. Rep., 22.)

NEW YORK.—Appeal—Dismissal Before Verdict—Motion for New Trial—Review—Street Railroad—Starting Car Without Warning—Negligence—Question for Jury.

1. Where, subsequent to the coming in of the jury the court decides a motion to dismiss the complaint favorably, so that the case is left without a verdict, a motion for a new trial is not before the Supreme Court for review.

2. Where a street car comes to a full stop on reaching a crossing, the conductor having announced a transfer point, the act of the motorman in starting the car without signal received therefor, and without looking around to discover whether any one is in the act of alighting, whereby a passenger, partially alighted, is thrown and injured, may constitute negligence; the question being for the jury.—(Bessenger vs. Metropolitan St. Ry. Co., 79 New York Suppl., 1017.)

NEW YORK.—Witnesses—Impeachment—Cross-Examination as to Matter not Subject of Direct Examination—Street Railroads—Personal Injuries—Rules of Company—Admissibility.

1. In an action for personal injuries, a physician called by defendant testified merely that he knew plaintiff, and had treated her several times; his other testimony being excluded. On cross-examination he testified that he had never told plaintiff that defendant had offered him money to testify against her. Held, that, as the testimony was with relation to a matter not brought out on the direct examination, plaintiff was bound by it, and could not afterwards herself go on the stand and testify to the contrary.

2. In an action against a street railroad company for injuries to plaintiff, caused by the sudden starting of the car while she was attempting to board it, it was reversible error to permit plaintiff to introduce in evidence a rule of the company having no relation to the question involved; it tending to confuse the jury.—(Deutschmann vs. Third Ave. R. Co., 79 New York Suppl., 1043.)

NEW YORK.—Street Railroads—Injuries on Tracks—Continuous Negligence of Driver—Contributory Negligence—Issue for Jury.

1. Where the only evidence of the negligence of the driver of a horse car in running into a child on the track was his continuous negligent conduct in not looking forward—he having been aware that any one was on or near the track—it was error to take a clear issue of contributory negligence from the jury.—(Bortz vs. Dry Dock, E. B. & B. R. Co., 79 New York Suppl., 1046.)

NEW YORK.—Street Railroads—Improper Conduct of Party and Counsel—New Trial—Persons Driving near Tracks—Contributory Negligence.

1. Where, in an action against a street railroad for personal injuries, defendant, after unsuccessfully attempting to introduce in evidence and have rung before the jury a gong which could not be identified, took advantage of the absence of the court during recess, and rang it in the presence of most of the jurors, plaintiff was entitled to a new trial, though the jury was charged to disregard the sounding of the gong, and affidavits were made by seven of the jurors that they had done so.

2. In an action for injuries received by being hit by a street car while driving near the tracks, it was prejudicial error to refuse, at plaintiff's request, to charge that it is not negligence, as a matter of law, for a man to drive on the tracks of a street railway or near the tracks, where the court had not charged on this phase of the case, and the jury were left to infer that plaintiff was negligent, as a matter of law, in so driving.—(Bronk vs. Binghamton R. Co., 79 New York Suppl., 577.)

NEW YORK.—Carriers—Street Railroads—Injury to Passenger—Contributory Negligence—Negligence of Carrier—Defective Track—Pleading—Allegation of Injuries—Proof—Appeal—Harmless Error.

1. Where, at the time of a passenger's injury by the derailment of

a street car in which she was riding, she was seated in the car, the question of contributory negligence did not arise.

2. At the time of the derailment of a street car the road was being changed to be operated by electricity. The pavement had been removed, and sand was piled and barrels of gravel had been left along the track. The car struck one of these barrels, and was derailed, throwing plaintiff, a passenger, to the floor, causing her injuries. Held, to justify a finding of negligence on the part of the carrier.

3. Where a complaint alleged that plaintiff, a passenger, was thrown against a car and severely injured "in and around the head and body, and that by reason of the premises plaintiff was made sick, sore, and lame, and was caused to suffer, and still suffers, great bodily pain, and by reason of the permanent character of such injuries she may never recover therefrom," it was insufficient to justify evidence that such accident created a physical condition in plaintiff known as "retroversion," which rendered her incapable of bearing children.

4. A judgment in favor of plaintiff in an action for injuries amply sustained by competent evidence will not be reversed for the erroneous admission of evidence concerning an injury not pleaded, where plaintiff and her physician were permitted by defendant to testify thereto without objection, and no objection was made on the ground that the evidence was incompetent under the pleadings, until, on cross-examination of another physician, such objection was made to a question relating to such injury, the answer to which did not positively show that the accident caused the particular injury objected to.—(Ramson vs. Metropolitan St. Ry. Co., 79 New York Suppl., 588.)

NEW YORK.—Streets on Private Grounds—Street Railways—Construction on Private Grounds—Maintenance—Negligence—Liability—Right of Action—Assignment.

1. A street located on the campus of a university, and on ground owned and controlled by the university, the use of which by the public has not been inconsistent with the university's private ownership thereof, is not a public street.

2. Cornell University authorized defendant street railway company to construct its tracks on a street within the university campus on an agreement by which defendant contracted to keep in thorough order all the construction necessary for its road. Plaintiff, a servant of one of the professors, living in the university with her sister, who was also employed in the university, had been driving in the country with a livery rig, and on returning the cutter was overturned by a defect in defendant's track on the college campus. The horse ran away and was killed, and the cutter injured. Held that plaintiff having been impliedly invited to use the premises by the university, the latter owed her the duty of reasonable care to keep the street in repair, and that defendant, under its contract, was liable for the exercise of the same duty.

3. The fact that the horse and cutter did not belong to plaintiff was immaterial, since the owner thereof had all the rights which plaintiff would have against defendant for their negligent injury, and on his assignment thereof to plaintiff she was entitled to recover therefor.—(Bolster vs. Ithaca St. Ry. Co., 79 New York Suppl., 597.)

NEW YORK.—Street Railway—Personal Injuries—Opinion of Court on Reversal—Right of Plaintiff on Second Trial—Evidence—Verdict—Conduct of Jury.

1. Though the court, on appeal, in reversing a judgment for plaintiff in an action against a street railway for injuries received while attempting to cross the track, by reason of the negligence of the driver in failing to stop the car and defendant's negligence in failing to supply the car with an efficient brake, intimated that no recovery could be had for the driver's negligence, plaintiff on a new trial might introduce evidence to support both allegations, and was entitled to have both issues submitted to the jury, if sustained by sufficient evidence.

2. In an action against a street railway company for injuries to a person on the track, the only evidence of a defective brake was testimony of the driver. His evidence was contradictory to that given by him on a former trial, and he admitted that he had given false evidence in several respects. The jury returned a verdict for plaintiff, and did not answer the question whether the brake was defective, and, on being interrogated by the judge, stated that they did not answer it because the jurors had decided to throw out the driver's evidence. They were instructed if they did so, to answer the question in favor of defendant. They retired, and returned with an affirmative answer to such question. Held, that the verdict should be set aside, as the result either of prejudice or misapprehension.—(Csatlos vs. Metropolitan St. Ry. Co., 79 New York Suppl., 653.)

NEW YORK.—Personal Injuries—Complaint—Nature of Injury—Dementia.

1. Under a complaint alleging that plaintiff was severely injured in her person; that her skull was fractured, and she was severely

wounded, bruised, and contused in various parts of her person; that she received severe internal injuries, was greatly shocked, and sustained permanent injuries, incapacitating her from attending to her duties—proof that plaintiff was suffering from dementia, caused by the accident, was inadmissible.—(Sealey vs. Metropolitan St. Ry. Co., 79 New York Suppl., 677.)

NEW YORK.—Trial—Personal Injuries—Physical Demonstration—Propriety—Personal Injury Action—Amount of Damages—Amendment of Complaint—Harmless Error—Excessive Verdict.

1. On the trial of a personal injury action it is proper to permit plaintiff to attempt to write his name and to drink a glass of water in the jury's presence, for the purpose of demonstrating the extent of his injuries.

2. On the trial of a personal injury case, the testimony being concluded, it is not an abuse of discretion to permit an amendment of the complaint increasing the claim for damages from ten to twenty thousand dollars.

3. Any error in permitting an amendment of a complaint increasing the claim for damages for personal injuries is harmless where the recovery did not exceed the amount originally claimed.

4. A verdict of \$10,000 for personal injuries is not excessive, the evidence showing that plaintiff had sustained a fracture of two ribs, contusion on the whole chest, bruises on the back and head and hand, and had developed pleurisy from the rib fracture, and a nervous tremor, indicating chronic sclerosis of the spinal cord and brain, which was progressive and incurable.—(Clark vs. Brooklyn Heights Railway Company, 79 New York Suppl., 811.)

NEW YORK.—Mortgages—Foreclosure—Action by Trustee—Request by Holders of Bonds Secured—Necessity—Detachment of Coupons—Effect—Foreclosure for Interest Alone—Demand for Payment—Necessity—Time when Interest Begins to Run—Costs—Additional Allowance—Amendment to Statutes.

1. A mortgage securing bonds provided in section 5 that, in case of default in the payment of any half year's interest on any of the bonds, the trustee might elect, on the request in writing of the owners of one-half of the bonds outstanding, to make the principal sum immediately due and payable. Section 7 provided: "In case of default as hereinbefore defined, the said trustee may adopt any legal or equitable method for foreclosing this mortgage and enforcing the trusts herein contained, or for collecting the principal and interest of the bonds secured hereby," etc. Held, that under section 7 the trustee could sue in foreclosure to compel a sale of the mortgaged premises, so far as might be necessary to pay interest represented by unpaid coupons without any request in writing by the bondholders.

2. The detachment of the interest coupons from the bonds did not deprive those holding them of the security of the mortgage.

3. The mortgage could be foreclosed for the interest alone.

4. The abandonment by the mortgagor of its office where, under the terms of the mortgage, the interest was payable, released the holders of the coupons from obligation to make demand for payment, even if such demand was necessary.

5. The holders of the coupons were entitled to interest thereon from the time they were detached from the bonds and passed into separate ownership, thus becoming distinct negotiable instruments.

6. Code Civ. Proc. Sec. 3253, provided prior to 1898, that the court might award to any party, in addition to costs, in an action brought to foreclose a mortgage on real property, or in a difficult and extraordinary case, a further sum, as follows: "(1) In an action to foreclose a mortgage, a sum not exceeding \* \* \* the aggregate sum of two hundred dollars. (2) In any other case or special proceeding specified in this section, a sum not exceeding five per centum on the sum recovered or claimed, or the value of the subject-matter involved." In 1898 the second subdivision of the section was amended by striking out the word "other" after the words "in any." Held, that the effect of the amendment was to permit the court to allow more than \$200 additional costs in a mortgage foreclosure suit of a difficult and extraordinary nature.—(Long Island Loan & Trust Co. vs. Long Island City & N. Ry. Co. et al., 82 New York Suppl., 644.)

NEW YORK.—Evidence—Expert Witnesses—Personal Injuries—Evidence—Sufficiency.

1. Opinions of expert witnesses must be disregarded, if formed without the aid of facts necessary to enable the witnesses to come to a conclusion.

2. In an action for death alleged to have been caused by inflammation of the brain, resulting from the lodgment in that organ of pus formed in the wrist, which was injured by the negligence of defendant, evidence of expert witnesses considered, and held insufficient to show that pus found in the brain was carried there from the injury at the wrist.—(McQuade vs. Metropolitan St. Ry. Co., 82 New York Suppl., 720.)

NEW YORK.—Street Railroads—Street Intersection—Accident—Negligence.

1. The wagon in which plaintiff was riding was struck in broad daylight by defendant's car at a street intersection, and carried a distance of 20 ft. Both plaintiff and the one with whom he was riding testified that they looked and saw the car 200 ft. away, when the horses were 4 ft. from the track, and again 40 ft. away, when the horses were about to step on the track, and that no warning signal was given by the motorman. Held, that the question of defendant's negligence was for the jury.—(Andres vs. Brooklyn Heights R. Co., 82 New York Suppl., 729.)

NEW YORK.—Street Cars—Personal Injuries—Contributory Negligence—Wrongful Death—Damages—Excessive Verdict.

1. Decedent, while seeing, some distance away, a southbound car approaching, started, at a street crossing, to walk diagonally across the street in order to board an approaching northbound car. He signaled the latter to stop, which it did. Its conductor called to him to hurry. When in the center of the track on which the southbound car was running he was warned by a companion of its approach, and stepped back, but was struck and killed. There was evidence that the southbound car was proceeding at a speed of 20 or 25 miles an hour, and that no signal of its approach was given. Held, that the issue of contributory negligence was for the jury.

2. A verdict for \$10,000 for causing the death of a man seventy-three years of age, successful in business, apparently in good financial circumstances, leaving a wife and adult children, to none of whom he gave financial aid, except to the wife, was excessive, and should be reduced to \$5,000.—(Stillings vs. Metropolitan St. Ry. Co., 82 New York Suppl., 726.)

NEW YORK.—Abatement—Pendency of Another Action—What Constitutes Pendency of Other Action—Waiver of Plea—Suit by Plaintiff's Testator—Elevated Railroad—Damages—Devisee's Right to Recover—Assignment of Claim for Damages—Waiver of Objection to Recovery in Equitable Action.

1. The plea of the pendency of another action can only be supported by a showing that the former action was pending when the second action was begun.

2. A mere showing that a summons in another action has been served is not sufficient to support of plea of the pendency of another action.

3. A plea of the pendency of another action will be deemed waived where a reliance thereon was in no way indicated by objection or motion during the trial, and defendant's motion to dismiss was based on entirely different grounds.

4. The pendency of an action commenced by a testator to enjoin the operation of an elevated railroad in front of his premises is no bar to a suit by testator's devisee for injunctive relief and the recovery of damages sustained since he acquired title.

5. The mere fact that a devisee has a right to maintain an action to enjoin the operation of an elevated railroad in front of his premises does not entitle him to recover damages accrued during the life of his testator.

6. Where a devisee had acquired by assignment the claims of his testator's estate to damages for the operation of an elevated railroad in front of the devised premises, he was entitled to have these past damages included in the recovery in a suit to enjoin the operation of the road.

7. Where a devisee who had taken an assignment of the claims of his testator's estate to damages for the operation of an elevated railroad in front of the devised premises asked recovery for the past damages sustained by him and the testator, in a suit to enjoin the maintenance of the road, and no objection was made to plaintiff's right to recover for the assigned damages, and proof thereof was received without objection, defendant waived any right it may have had to have these damages ascertained in an action at law.—(Hirsch vs. Manhattan Ry. Co., 82 New York Suppl., 754.)

NEW YORK.—Street Railroads—Injuries to Vehicles—Negligence—Evidence—Curing Error.

1. In an action for injuries to a horse and wagon in a collision with a street car, evidence as to the motorman's negligence, held to present a question of fact for the determination of the trial judge as a trier of the facts, and not to authorize a finding that the motorman was not guilty of negligence as a matter of law.

2. In an action for injuries to a horse and vehicle in a collision with a street car, error, if any, in refusing to permit the motorman to testify as to the purpose of certain "stop" and "slow" signs, was cured, where he was subsequently permitted to testify that every motorman slowed up when he reached a sign of that character, and that witness slowed up at the place where the sign was.—(Strauss et al. vs. Brooklyn Heights Ry. Co., 82 New York Suppl., 767.)

NEW YORK.—Street Railroads—Use of Streets—Injuries to Vehicles—Negligence of Driver—Negligence of Railroad Company—Evidence—Damages.

1. Where the space left between certain vans and an elevated railroad pillar in a street was estimated at from 7 ft. to 8 ft., and other witnesses testified that there was not sufficient room to permit defendant's servant to drive a wagon five feet wide through such space, whether the servant was guilty of negligence in not attempting to drive through the space, instead of driving around the pillar onto a street railway track, where the wagon was struck by a street car, was for the jury.

2. Where, at the time plaintiff's servant drove on a street railway track, a car was approaching from 100 ft. to 125 ft. away, at from 6 miles to 8 miles an hour, and when the car was 80 ft. from the wagon, the motorman rang the gong hard, but did not attempt to stop the car, and the wagon was demolished by the collision, the motorman's failure to stop the car constituted negligence on the part of the railroad company.

3. Where plaintiff's wagon was wrecked in a collision with a street car in one of the streets of the city of New York, plaintiff was entitled to recover, in addition to the reasonable cost of repairs, expenses paid in removing the remains of the wagon from the street and storing the same during such time as arrangements could be made for repairs, together with the reasonable value of the use of the wagon while it was being repaired.—(Moore vs. Metropolitan St. Ry. Co., 83 N. Y. Suppl., 778.)

NEW YORK.—Railroads—New York City—Statutes—Construction—Rapid Transit Act—Application—Payment for Stock—Cash—Certificate of Incorporation—Subsequent Certificate—Validity—Board of Railroad Commissioners—Review of Discretion.

1. Laws 1860, p. 16, ch. 10, provided that it should not be lawful to construct any railroad along the streets of New York City, except under the authority and subject to restrictions thereafter granted and provided by the Legislature. Since that time three acts (laws 1875, p. 740, ch. 606; laws 1880, p. 874, ch. 583, and laws 1884, p. 872, ch. 252) have been passed, under which street railroads could be built in the city. In 1890 most of the provisions of the railroad act of 1850 (laws 1850, p. 211, ch. 140), and the three acts above referred to, were merged in one act (laws 1890, p. 1082, ch. 565); those three acts being expressly repealed. The act of 1890 extended the general provisions of the railroad law of 1850 to New York City, imposing special provisions for the protection of the city when a railroad invaded its streets. Held, that the act of 1890 was not merely a codification of the pre-existing laws, but gave authority for the construction of railroads in New York City without reference to the provision of the act of 1860.

2. Rapid Transit Act 1891 (laws 1891, p. 3, ch. 4) applies only to roads to be built exclusively within New York City, and is not intended to exclude the application of railroad law 1890 (laws 1890, p. 1082, ch. 565) to the city.

3. Payment for stock in a railroad company by an uncertified check on bank is not a payment in cash, such as is specified by laws 1890, p. 1082, ch. 565, sec. 2, requiring 10 per cent of the minimum amount of capital stock of a proposed railroad company to be paid in cash at the time of the filing of the certificate of incorporation.

4. Where a certificate of incorporation of a railroad company is void because 10 per cent of the capital stock has not been paid in cash at the time of filing such certificate, as required by laws 1890, p. 1082, ch. 565, sec. 2, the filing of an additional certificate after payment has been made, containing all that the statute requires an original certificate to contain, will operate as a valid original certificate, though it be called an "amended certificate" by the applicants for incorporation.

5. Under laws 1892, p. 1395, ch. 676, sec. 59, requiring the Board of Railroad Commissioners to certify that public convenience and necessity require the construction of a proposed railroad, the action of the Board in so determining is not a subject for judicial revision.—(People ex rel. New York, N. H. & H. R. Co. vs. Board of R. Com'rs of State of New York et al., 81 New York Suppl., 20.)

NEW YORK.—Railroads—Pass—Limitation of Liability—Consideration—Construction of Limitation—Sufficiency.

1. Where, by agreement between a railroad company and a landowner, the railroad agreed, in consideration of a grant of right of way, to give the landowner transportation for life, on the sole condition that her right to transportation should be forfeited if tickets were presented by anyone save herself, and the tickets given the landowner bore a provision exempting the railroad from liability for injuries, such condition was not binding on the landowner in an action by her for injuries owing to the road's negligence, since it was without consideration, and her acceptance of

the tickets did not indicate an intention on her part to assent to the terms thereof.

2. Where tickets issued by a railroad company bear a condition providing that the company shall be released "from all claims for damages for personal injuries from whatever cause," the language is not sufficiently plain and unequivocal to release the railroad from liability for injuries resulting to a passenger from its negligence.—(Dow vs. Syracuse, L. & B. Ry., 80 N. Y. Suppl., 941.)

NEW YORK.—Carriers—Injuries to Passengers—Inadequate Damages—Inconsistent Statements.

1. The flesh of one plaintiff's fingers was torn while he was attempting to alight from one of defendant's trolley cars, by his finger-ring catching in the handle-bar of the car, which was started with a sudden jerk as he was attempting to alight. Plaintiff's wound was very painful, and was dressed by a physician twenty or twenty-five times, for which plaintiff incurred a bill of \$150 for medical services. Held, that a verdict for plaintiff for 6 cents damages was inadequate.

2. In an action for injuries to a passenger, his sworn statement that he was not thrown by the force of the car, but had a ring on the third finger of his left hand that got caught on the brass car-handle, lacerating the finger, was not inconsistent with his claim at the trial that the sudden forward movement of the car caused the laceration of his finger.—(Tooker vs. Brooklyn Heights R. Co., 80 N. Y. Suppl., 969.)

NEW YORK.—Street Railways—Injury to Pedestrian—Crossing Behind Car—Contributory Negligence—Construction of Testimony.

1. A pedestrian, struck by a downtown car immediately after having crossed onto the track behind an uptown car, testified that the car was about 40 ft. away when he first saw it, and that he was standing on the downtown side, waiting to get across the avenue, and that he waited to let an uptown car pass, which was 40 ft. away when he first saw it. He later testified that he looked and did not see the downtown car, but it did not appear when he looked. Held, that his testimony disclosed contributory negligence as a matter of law.—(Little vs. Third Ave. R. Co., 82 N. Y. Suppl., 55.)

NEW YORK.—Street Railways—Injury to Pedestrian—Contributory Negligence—Reliance on Slackening of Speed—Sufficiency of Evidence.

1. While a pedestrian who reaches a street car track in time to cross safely if the speed of an approaching car is not increased is not negligent in proceeding, yet, if it would be apparent to a person of ordinary prudence that the car will overtake him unless the speed is slackened, it is negligent for him to proceed, though he have an equal right with the company to the use of the street.

2. Evidence in an action by the administratrix of a pedestrian killed by a street car construed, and held insufficient to sustain a verdict for plaintiff, based on the theory that decedent was not guilty of contributory negligence in crossing in front of an approaching car.—(Du Frane vs. Metropolitan St. Ry. Co., 82 N. Y. Suppl., 1.)

NEW YORK.—Street Railroads—Person Using Tracks—Injury to Teams—Contributory Negligence.

1. In an action for negligent injury to property, caused by defendant's car overtaking and running into plaintiff's horse and wagon, evidence of plaintiff's servant that he was driving on defendant's track, which was straight, and afforded a clear view back of him for an eighth of a mile, and that he did not look back at all—there being no testimony that he even listened for the approach of a car, or that there was anything to prevent him from driving at the side of the road, free from the track—showed that he was guilty of contributory negligence, as a matter of law.—(Reynolds vs. Larchmont Horse Ry. Co., 82 N. Y. Suppl., 185.)

NEW YORK.—Street Railroads—Injuries to Pedestrians—Crossings—Instructions.

As plaintiff left a curbstone at a street corner, which was 14 ft. from the first rail of a street car track on which he was injured, he saw the car 40 ft. or 50 ft. away from him, coming at reduced speed. He saw the car suddenly jump forward as he was just at the track, at which time the car was but 15 ft. away. From this point plaintiff had about 5 ft. to go to carry him across the track but before he left the further rail he was struck. Defendant's evidence was that the car was approaching slowly to stop at the further corner of the street, when plaintiff ran in front of the car, when but a few feet ahead of it, and, though the gripman endeavored to stop the car, he was unable to avoid striking plaintiff. Held, that under such evidence it was error to charge that though plaintiff was negligent if, after his negligence occurred, defendant's motorman in the exercise of ordinary care could have avoided colliding with him, plaintiff might recover.—(Poole vs. Metropolitan St. Ry. Co., 82 New York Suppl., 150.)

NEW YORK.—Trial—Nonsuit—Insufficiency of Evidence—Incredibility.

The court is justified in non-suiting a plaintiff, although there is slight evidence to support his position, where such evidence is incredible and averse to well-known physical laws.—(Walter vs. Syracuse Rapid Transit Ry. Co., 82 New York Suppl., 82.)

NEW YORK.—Carriers—Injuries to Passenger—Street Cars—Negligence—Assumption of Risk—Duty to Call Witness—Failure to Call—Presumptions.

1. Decedent attempted to board a combination street car moving between 4 and 6 miles per hour. Decedent lost his hold, fell under the car, and received injuries from which he died. There was no evidence that the motorman saw decedent. The conductor was inside the closed portion of the car, collecting fares, at the time of the accident. The motorman testified that after a blockade which had occurred they had orders to pass streets without taking passengers to equalize the traffic; that he did not slow up for passengers at the street where decedent attempted to board the car, and was not aware that any one attempted to do so. Held, that such facts were insufficient to establish negligence on the part of the railway company.

2. Decedent, in attempting to board the car under such circumstances, in the absence of an invitation by signal or otherwise from the conductor or motorman, assumed the risk of a change in the speed of the car and of his ability to get on in safety.

3. Where in an action against a street railway company for the killing of a passenger, it was shown that the conductor in charge of the car had left defendant's employ, and had gone to another State, and had refused to appear as a witness for defendant, and it did not appear that he saw the accident, or could have given any material evidence, it was error to charge that no adverse inference should be drawn from the absence of the conductor, except that the jury might consider defendant's failure to procure the conductor's testimony by commission as a circumstance bearing on the facts in the case.—(Fremont vs. Metropolitan St. Ry. Co., 82 New York Suppl., 307.)

NEW YORK.—Evidence—Handwriting—Standard of Comparison—Proof of Genuineness.

1. Under laws 1880, p. 141, ch. 36, as amended by laws 1888, p. 911, ch. 555, authorizing the introduction of standards for comparison of disputed handwritings where such standards are proved to be genuine, it was not error to rule that a contract for the sale of certain real estate in controversy, alleged to have been signed by decedent, was not sufficiently proved to contain decedent's genuine signature to authorize its use as a standard for comparison where the only proof thereof was that the contract was found among decedent's papers; decedent's son having refused to testify that his father's signature thereon was genuine.

2. Where the only evidence of genuineness of decedent's signature to a consent for the construction of an elevated railway in front of his property was that of decedent's son who testified that, though the signature on the consent looked like his father's signature, he could not tell that it was, for the reason that a long time had elapsed since he had seen his father's signature, the exclusion of the consent for want of proof of the genuineness of such signature was not error.—(Farrell vs. Manhattan Ry. Co. et al., 82 New York Suppl., 334.)

NEW YORK.—Carriers—Horse Railroads—Injuries to Passengers—Speed—Negligence—Evidence—Riding on Platform—Assumption of Risk.

1. Plaintiff, a passenger on a horse car, during an altercation with the driver on the front platform fell or was thrown therefrom, as the car was rounding a curve. He contended that he was thrown off by the excessive speed of the car while rounding the curve, and testified that the car was going at "full speed," and at a "terrific rate," while rounding the curve. Plaintiff's witness, who saw the accident, testified that the car was going 3 or 4 miles an hour, which was substantiated by other witnesses, and it was undisputed that the car stopped within 5 ft. of the place where plaintiff fell. Held, that the evidence was insufficient to sustain a verdict for plaintiff on the ground of excessive speed.

2. Where a passenger on a street railroad elects to ride on the front platform when there is room inside the car, he thereby assumes the additional risks of injury incident to such position, and defendant owes him no higher duty than to operate the car with reasonable care in the practical discharge of its duty to the public as a carrier of passengers.—(Vogler vs. Central Crosstown Ry. Co., 82 New York Suppl., 485.)

NEW YORK.—Street Railroads—Injuries to Teamster—Contributory Negligence.

Where plaintiff drove on a street railway track to cross it at a curve as it entered another street, without looking to the rear to ascertain whether it was safe to cross the track or whether a car was approaching, and his wagon was struck by a car coming di-

rectly behind him on the curve, from which plaintiff was injured, he was guilty of contributory negligence.—(Schmidt vs. Interurban St. Ry. Co., 81 New York Suppl., 832.)

**NEW YORK.—Street Railroads—Injuries to Pedestrians—Crossings—Contributory Negligence.**

Plaintiff saw a street car approaching him as he left the curb to cross the track two doors from the opposite corner of the street, and again near the corner as he reached the first rail of the track. He testified that he thought he could get across, as he thought the car would stop at one of the crossings to give him a chance to cross; but there was no proof that the car was bound to stop at the crossing, or that plaintiff had reasonable grounds for his belief that it would do so. Held, that plaintiff was guilty of contributory negligence.—(Freeman vs. Brooklyn Heights Ry. Co., 81 New York Suppl., 828.)

**NEW YORK.—Electricity—Falling of Wires—Injuries—Liability of Company—Res Ipsa Loquitur—Explanation of Cause of Fall—Effect.**

1. Whether plaintiff was injured by physical contact with a trolley wire as it fell, or by one of the currents caused by the wires coming in contact with the ground and with the rails, thereby forming a completed circuit, was immaterial; the company being liable in either event.

2. The doctrine of *res ipsa loquitur* applied to a case where defendant's trolley wire fell into the street, injuring plaintiff; and this though plaintiff introduced evidence showing that the fall was caused by the trolley slipping off and striking some of the supporting wires.—(Clancy vs. New York & Q. C. Ry. Co. (two cases) 81 N. Y. Suppl., 875.)

**NEW YORK.—Actions—Negligence—Amendment—Adding Party Defendant.**

Under Code Civ. Proc. section 723, providing that the court may at any stage of an action amend a pleading or proceeding by adding the name of a person as a party, etc., where an action was brought against a city and one railroad company for injury resulting from a defect in a street at the crossing of two railroads, the defect being claimed to be owing to the negligence of the city and of both railroad companies, the court, on petition of the plaintiff, may order that the other company be made a defendant.—(Schun vs. Brooklyn Heights R. Co. et al., 81 N. Y. Suppl., 859.)

**NEW YORK.—Evidence—Medical Works—Admissibility.**

In an action for personal injuries it was error to allow counsel to read from a medical book a statement as to the symptoms of a certain disease, and ask plaintiff's physician if he subscribed thereto.—(Pahl vs. Troy City Ry. Co., 81 N. Y. Suppl., 46.)

**NEW YORK.—Municipal Corporations—Ice in Streets—Drippings from Elevated Trains—Unusual Accident—Negligence—Failure to Provide Drip Pans.**

1. The rule that where an accident is of unusual and extraordinary character, which could not have been reasonably prevented, defendant is not bound to foresee or make provision against it, did not apply to a case where the dripping of water from the trains of an elevated railroad company, standing at its station, caused the formation of ice in the street below, on which a pedestrian slipped, where it affirmatively appeared that the company had reason to know of the formation of the ice, and that it employed men for the express purpose of looking after ice forming, and one of these employees testified that before the accident occurred, and at the very place, he had found ice formed several times, and that once when a train was standing at this place he saw the drip, and that it came from the train.

2. While walking along a public street at night, plaintiff slipped on ice formed by drippings from the "exhaust" on steam hose connected with trains on defendant's elevated railroad. There was evidence that at other points on the line drip pans were furnished, into which the water was collected and retained; that a drip pan under the structure at the place of the accident would have prevented the ice from forming. Held, negligence on the part of the defendant not to provide such an appliance.—(White vs. Manhattan Ry. Co., 81 N. Y. Suppl., 1011.)

**NEW YORK.—Carriers—Injuries to Passenger—Negligence—Contributory Negligence—Evidence—Question for Jury.**

In an action against a carrier for injuries received by a passenger on its train, where a jury might have inferred from defendant's evidence, though of a negative character, that no accident had occurred to plaintiff in the manner stated by his witnesses, either through any negligence of defendant, or without contributory negligence on plaintiff's part, it was error to take from the jury the question whether plaintiff had established his freedom from contributory negligence.—(Wimpelberg vs. Yonkers Ry. Co., 81 N. Y. Suppl., 963.)

**NEW YORK.—Carriers—Injury to Passenger—Res Ipsa Loquitur.**

The fact that a passenger on a trolley car, injured by reason of the escape of electricity in the car, undertook to show that the accident was due to defective insulation, and failed, did not necessarily take away from the company the legal obligation of giving an explanation of the occurrence, and showing that it was not due to its negligence.—(D'Arcy vs. Westchester Electric Ry. Co., 81 N. Y. Suppl., 952.)

**NEW YORK.—Appeal—Disposition of Cause—Judgment Erroneous in Part.**

Where the property alleged to have been injured by the construction of a railroad tunnel consisted of two lots, one of them undoubtedly injured to some extent, but the other suffering only nominal damage, and the damages awarded were in a lump sum, and the decision of the trial judge did not show how much he assessed as the damage to each lot, reversal of the entire judgment was necessary.—(Peak vs. Kings County Electric Ry. Co. et al., 81 N. Y. Suppl., 926.)

**NEW YORK.—Carriers—Injury to Passenger—Measure of Care—Instructions.**

In an action against a street car company for personal injuries sustained by a passenger from a collision between the car and a wagon, it appeared that the wagon was approaching from the direction towards which the car was going, and that because of the heavy load the driver was unable to turn out as quickly as he might ordinarily have done, as a result of which the stanchions at the middle of the car struck the rear bags of cotton with which the wagon was loaded, shattering the handles, and injuring plaintiff by the flying splinters. Held, that the situation was not one from which grave injury might have been expected, and hence a charge that the street car company was bound to exercise the highest degree of care and skill which human foresight could provide was erroneous.—(Conway vs. Brooklyn Heights R. Co. et al., 81 N. Y. Suppl.)

**NEW YORK.—Street Railways—Injury to Passenger Alighting—Negligence—Pleading and Proof.**

The only negligence alleged by a complaint stating that, while plaintiff was a passenger on defendant's street car, and when it came to a complete stop, and while she was in the act of alighting from it, it was started up with great suddenness and velocity, throwing her, is in starting the car without giving plaintiff an opportunity to alight after it had come to a full stop, so that, if she stepped off the car while it was in motion at all, the negligence alleged is not established.—(Coleman vs. Metropolitan St. Ry. Co., 81 N. Y. Suppl., 836.)

**NEW YORK.—Use of City Streets—Live Electric Wire—Cause of Injury—Jury Question—Operation of Electric Railway—Admission in Pleadings—Requirement of Due Care—Res Ipsa Loquitur.**

1. The absence of evidence that a live electric wire came into actual contact with plaintiff or his horse will not, as a matter of law, preclude recovery for injuries to them, the evidence showing that the horse had fallen into a pool of water and that plaintiff had gone to its assistance, when a loose wire, blown against a trolley pole, caused a series of electric discharges, resembling explosions, and lighting the pole from top to bottom.

2. Plaintiff, injured by a live trolley wire, alleged, and defendant admitted, that on a day named defendant "was operating a surface or street railroad propelled and worked by electric power" on a certain street. Held, an admission by defendant that it was using the appliances and mechanical devices necessary for the operation of its electric railway.

3. A company merely operating an electric railway is required to use the appliances with the same degree of care as if they had been built, and were actually owned, by it.

4. The doctrine of *res ipsa loquitur* is applicable to an injury from a broken live wire belonging to an electric railway system.—(Smith vs. Brooklyn Heights R. Co., 81 N. Y. Suppl., 838.)

**NEW YORK.—Street Railways—Safe Stopping Place—Excavation in Street.**

Plaintiff signaled one of defendant's southbound cars on a rainy and foggy night. The motorman immediately attempted to stop, but did not succeed till the car was some distance past the crossing, and just beyond an excavation in the street, extending from the track to the west curb, and protected by a light at the end towards the track, and by embankments on the two sides. As the car stopped, the conductor cried, "Come on!" and plaintiff started for the car, going out into the roadway, diagonally towards the rear platform, but fell into the intervening excavation. Defendant was in no way connected with the digging or maintenance of the excavation, and was not shown to be charged with any duty

to the public with respect to the street. Held, that there was no showing that the car did not stop at a safe place, nor that the conductor was negligent in failing to warn plaintiff, and defendant was not liable.—*MacKenzie vs. Union Ry. Co. of New York City*, 81 New York Suppl., 748.)

NEW YORK.—Street Railways—Crossing Collision—Evidence—Question for Jury—Injuries—Pleading—Evidence—Absence of Allegation—Waiver.

1. In an action against a street railroad for injuries, plaintiff testified that as he started to drive across the street he looked and saw an approaching car a block away; that as he drove on the track he saw the car 25 ft. away, and tried to hurry, but the rear wheels of the wagon were stuck. The evidence upon the part of the defendant tended to establish that the plaintiff drove directly in front of the car in such close proximity to it that the motorman was unable to stop, and that the horse was struck by the fender just as it entered on the crossing. Held, that there was a case for the jury.

2. In an action for injuries, evidence of injuries to plaintiff's ribs is inadmissible where not pleaded.

3. In an action for injuries the complaint did not allege injuries to plaintiff's ribs, and he testified he knew his ribs were broken because of certain symptoms, which he described, and which might not have indicated broken ribs, and a physician testified that a tumor in plaintiff's side might have been caused by a broken rib. Held, that the latter testimony should have been excluded on defendant's objection, since plaintiff's testimony had not established the injury claimed.—(*Cronin vs. Metropolitan St. Ry. Co.*, 81 N. Y. Suppl., 752.)

NEW YORK.—Carriers—Passengers—Ejection—Misconduct—Issues—Submission—Evidence—Damages—Evidence.

1. Where, in an action for ejecting a passenger, plaintiff alleged that the ejection was without any fault or negligence on his part, which was denied by the answer, and proof of misconduct of plaintiff was introduced, it was error to refuse to submit the issue on the ground that the only defense alleged or stated in defendant's opening was that plaintiff was not a passenger at the time of his ejection.

2. Where plaintiff alleged that he was ejected from defendant's street car without any fault on his part, which was denied by the answer, it was error to exclude evidence that complaint was made to the conductor by a passenger in the car as to the language plaintiff used before ejection, on the ground that the only defense pleaded was that plaintiff was not a passenger by reason of his failure to pay fare.

3. In an action for ejection of a passenger, evidence of improper conduct by plaintiff was admissible in mitigation of damages.—(*Bough vs. Metropolitan St. Ry. Co.*, 81 New York Suppl., 771.)

NEW YORK.—Carriers—Elevated Railroads—Injuries to Passengers—Evidence—Withdrawal of Juror—Instructions.

1. Plaintiff attempted to board one of defendant's trains at a station, but before she could do so the guard slammed the gates together, which caught her dress while she was still on the platform, and, the train being immediately started, she was dragged along, and her foot crushed between the platform and the car. Held, that the facts were sufficient to sustain a verdict in favor of plaintiff.

2. Where, in an action for injuries to a passenger, her physician testified that the injury had nothing to do with a subsequent operation for the removal of one of plaintiff's ovaries, and there was no allegation in the complaint respecting such injury, it was error to refuse to strike out evidence relating thereto.

3. Where, in an action for injuries to a passenger, the complaint made no claim that plaintiff's ovarian trouble was occasioned by her injuries, and no evidence relating thereto being introduced, and defendant's motion to strike out the same having been denied, defendant requested the court to permit the withdrawal of a juror on the ground that it had no notice of a claim for such injuries, and had no opportunity to show that such trouble was not due to the injury, the application was erroneously denied.

4. Where, in an action for injuries to a passenger, an injury to plaintiff's ovaries was not pleaded, but the court submitted such injury to the jury in an instruction that they should not allow damages therefor unless it was necessarily occasioned by the injury and was a direct result thereof, it was error to refuse to charge at defendant's request that if the injury to plaintiff's ovary was merely a possible result of her injury on defendant's railroad, and she had failed to show by a preponderance of the evidence that the ovarian trouble was caused by such injury, the evidence relating thereto should be disregarded.

5. Where, in an action for injuries to a passenger on an elevated railroad, the court, at plaintiff's request, charged that such rail-

roads were required not to start their cars until the gates had been firmly closed, and that no train should be started until every passenger on the platform desiring to board the same had actually boarded the cars, and that plaintiff had a right to assume that the train, when she started to board it, would not be prematurely started, it was error to refuse, at defendant's request, to charge that when the people who desired to stop at the station at which plaintiff was injured had left the train, and the persons who were, in a manner apparent to the guards, actually evincing a desire to board the train had entered, defendant had a right to close the gates and start the train.

6. Requested instructions that plaintiff, when on the station platform, was in a place of safety, and was not under such stress of circumstances as would justify her in attempting to get on a moving train after it had started, and that if the guard had closed the gates and started the train before plaintiff had time to board same, and even while she was walking toward it, this would not justify her in attempting from a place of safety to board the train after it had started, were improperly refused.—(*Brown vs. Manhattan Ry. Co.*, 81 New York Suppl., 755.)

NEW YORK.—Servant—Injury—Negligence of Master or Third Person—Verdict—Release of Master.

Plaintiff's decedent, while employed as driver of an express wagon, was caught between his wagon and a street car, and killed. Plaintiff's evidence tended to show that as decedent was crossing the track a wheel came off his wagon, and the car came on, and caught and killed him. Defendant's evidence tended to show that the car had stopped, or almost stopped, and that while the wagon was passing the car the wheel came off and threw the wagon against the car, and that he was caught between the wagon and car and killed. There was no evidence as to how or why the wheel came off, or that it was the result of the negligence of defendant's employer. The court charged that, "if the coming off of the wheel was what caused the accident, there must be a verdict for the defendant." There was no request for a charge based on the assumption that the accident was occasioned in part by the coming off of the wheel, irrespective of any question of negligence in that regard. Held, that the verdict for plaintiff was on the theory that the accident was caused solely by the negligence of defendant's motorman; hence a release executed by plaintiff of decedent's employer did not discharge defendant.—(*O'Brien vs. Brooklyn Heights R. Co.*, 81 New York Suppl., 127.)

NEW YORK.—Carriers—Transportation of Employees—Passengers—Assault—Rules—Application—Witnesses—Cross-Examination—Harmless Error.

1. Rules of a street car company, providing that employees, while riding free, must not occupy seats to the exclusion of paying passengers, and, on open cars, employees riding free must not ride on the front seat, and that employees in uniform may ride free, to the number of five, on a car, provided that if more than that number insist on riding the conductors shall collect fare, applied only to employees riding free; and did not justify an assault on an employee riding in uniform, but paying fare, in ejecting him from the front seat on his refusal to vacate the same.

2. Where a street railway inspector, in ejecting an employee from a seat in a car, acted under a mistaken impression that such employee was not entitled to ride in such seat, under a rule of the company, his act could not be justified on the ground that he had authority to make rules, which the employee was bound to obey.

3. Where it was claimed that plaintiff gave two versions of his ejection from a street car, and, on his attention being called thereto, testified that, in his opinion, both versions were the same, error, if any, in excluding a question as to whether it was not possible that plaintiff's statement at the trial was not the correct version, and that what he said the day after the occurrence was correct, was harmless.—(*Rowe vs. Brooklyn Heights R. Co.*, 81 New York Suppl., 106.)

NEW YORK.—Street Railways—Collision with Team—Negligence.

1. Plaintiff, a boy twelve years old, while riding on the rear of a wagon, was injured by its being struck by an electric car. He testified that when the wagon was on the track the car was a block away, and that the horse was going slowly. The motorman (in business for himself at the time of the trial) testified that as he approached the crossing, going 4 or 5 miles an hour, the horse was going rapidly, and when first seen was 18 ft. ahead of the car; that as soon as he saw it he reversed, and the car, after striking the rear wheel of the wagon without injuring it, went only 5 ft. further. He was corroborated by the motorman of another car, and the driver of the wagon testified that his horse took fright, he was unable to control it, and it dashed in front of the car. Held, that there was nothing to show negligence of the street railway company.—(*Summerman vs. Interurban St. Ry. Co.*, 87 N. Y. Suppl., 427.)

## FINANCIAL INTELLIGENCE

WALL STREET, May 18, 1904.

### The Money Market

Gold to the amount of \$53,000,000 is the grand total taken for export to France since the movement began six weeks ago. Had it not been for the \$30,000,000 odd arriving, Japanese specie, this enormous output would have before now exhausted the local bank surplus. As it is, the surplus has been reduced from \$34,203,000—the high level of the season April 23—to \$12,827,000. Loans have risen during this period \$53,000,000, showing that the gold exports are not the only cause for the drain on reserve holdings. Large sums have been lent to syndicates floating new bond issues, expanding both loans and deposits and consequently raising the legal requirements against which cash must be held in bank. Nevertheless the extraordinary withdrawals of gold for Europe have been the overshadowing factor in the change which has come over money conditions during the last few weeks. As already pointed out in these articles the \$40,000,000 Panama Canal payment and the \$25,000,000 American subscription to the new Japanese loan, are the two main reasons for the expulsion of specie from this country. The routine commercial operations of exchange, as the latest figures of exports and imports prove, can have added only slightly to the volume of the movement. Our exports for April, thanks to an increase in shipments of manufactured articles, exceeded, for the first time in several months, last year's corresponding total. Imports meanwhile decreased \$4,200,000, leaving a net trade balance in our favor \$4,400,000 larger than was recorded in April, 1903. In this quarter, therefore, the situation has greatly improved as compared with last winter. But the immediate facts which the market must face are that \$10,000,000 more gold has been engaged for export than was included in the bank statement last Saturday, and that the coming return will necessarily show the surplus item brought down pretty low. Under the circumstances the sharp advance in money rates which has occurred during the last few days, is certainly not surprising. Call money, which sank as low as  $\frac{1}{2}$  of 1 per cent a fortnight ago, has risen to  $2\frac{1}{4}$  per cent, sixty day rates from  $2\frac{1}{2}$  to 3 per cent, and six months rates from  $3\frac{3}{4}$  to 4 per cent. The belief in banking circles at the moment is that this upturn is enough to put a stop to the excessive loss of gold.

### The Stock Market

The intense dullness of a week ago has been followed during the past week by a general movement in the direction of lower prices. Trading, while not very active, has shown a decided increase over what it was before; in other words enough actual liquidation has set in to change the character of the market and to give it a rather positive downward tendency. Three groups of stocks have been particularly affected, the Steel shares, the Eries and the shares of the Gould Southwestern roads. In these instances the weakness has been more apparent than it has in other parts of the list. Heavy selling of the granger railways has occurred and prices have yielded. But the market in this quarter has displayed a certain buying power which, in the quarters just alluded to, has been almost entirely absent. It cannot be said that sentiment in high financial circles is bearish on the situation, but what amounts to almost the same thing according to professional calculations, the exponents of capital are not willing to take a decided stand in favor of higher prices, but are simply content that the market be left to take its own course. Under these circumstances, so long as the outside public, both investors and speculators, are resolutely holding aloof, there is more encouragement offered to speculation for the short than for the long account. The only check on the declining tendency at such a time is that imposed by an overcrowded short interest. It can hardly be said that outside developments have played much of a part in the Stock Exchange movement of the week. Crop news has not been as good as it was a week ago, railroad and trade reports are no better. The enormous gold engagements and the consequent drain upon the local bank reserves may have had some continental bearing on the market, but they are not a mark of weakness, and this fact is well understood. To sum up the outlook in a few words, the present is a time of caution and inactivity in trade and financial circles, no great forward movement is at all likely for some time to come,

and the market is feeling the effects of occasional liquidation by speculators who are not alarmed over their position, but merely tired of holding on.

The local traction stocks have presented an altogether better appearance than almost any other part of the market in the week's dealings. The speculative position in Metropolitan is considered by well informed observers to be particularly strong. Manhattan is being bought all the time by investors, their purchases serving to hold the stock steady without advancing it. A strong speculative contingent, bearish on the rest of the list, is giving out bullish expressions on Brooklyn Rapid Transit. It is taking its stand mainly on the knowledge that earnings now are and are expected to continue very satisfactory by comparison with previous years.

### Philadelphia

The active traction issues on the Philadelphia Exchange have as a rule gone lower in the week's trading, but the losses are comparatively small. Philadelphia Company common declined the most, yet its loss was only a point, from  $38\frac{7}{8}$  to  $37\frac{7}{8}$ . Some large blocks of Rapid Transit came out at  $13\frac{1}{4}$  after which the stock touched 13 and then  $13\frac{1}{8}$ . Union Traction after reaching  $50\frac{7}{8}$  eased to  $49\frac{3}{4}$ . Philadelphia Traction was active from 96 to  $95\frac{3}{4}$ . Philadelphia Company preferred was dealt in between  $44\frac{1}{2}$  and  $44\frac{1}{4}$ . On the other hand, Philadelphia Electric—one of the weakest on the list in the previous dealings—recovered on rather heavy buying from  $5\frac{1}{4}$  to 5 9-16. The rally was attributed to disbelief in the recent rumors that the company is about to levy an assessment. Consolidated Traction, of New Jersey, was also exceptionally strong, 600 shares selling at an advance from 65 to  $65\frac{1}{4}$ . Odd lot transactions were reported in American Railways at  $44\frac{1}{2}$ , Fairmount Park Transportation at 26, Pittsburg Traction preferred at  $49\frac{3}{4}$ , United Railways, of San Francisco, preferred at 45, Rochester Passenger at  $101\frac{7}{8}$  and Second and Third Streets Passenger at 295.

### Chicago

Selling of the street railway stocks—a part undoubtedly of the general market weakness—has gone on steadily throughout the week in Chicago. Fifty shares of City Railway went at 157, after which 600 were sold at 155. Union Traction preferred declined from  $30\frac{1}{4}$  to 29 on unusually active trading, while large blocks of the common were passed over at  $5\frac{1}{2}$ . North Chicago, on sales of a few odd lots dropped off to  $66\frac{1}{2}$  rallying later to 68. West Chicago declined from 40 to  $39\frac{1}{2}$ , and then went back again, on sales altogether of 50 shares. Scarcely anything was done in the elevated securities. One hundred Metropolitan preferred changed hands at 45, and a few lots of Lake Street receipts between  $3\frac{1}{8}$  and  $3\frac{3}{8}$ . Great progress is being made in the preparations for finishing the Metropolitan's downtown terminal and officials of the road say that earnings will begin to feel the benefit of the improvement in July. Leading interests in the stock yards district believe that construction of the elevated line in that section will be commenced next fall. Nothing, however, can be learned from officials of the South Side Elevated Company on the subject.

### Other Traction Securities

Liquidation has depressed prices in Boston, especially the Massachusetts Electric shares. The common declined from  $19\frac{3}{4}$  to  $17\frac{5}{8}$  on active trading; the preferred, after first selling down from  $72\frac{1}{2}$  to  $70\frac{1}{2}$ , broke to 69 on sales of only 100 shares. This is the lowest the stock has sold at all on the year's general downfall. Speculative rumors adverse to the dividend-paying ability of the company have circulated, but none of them has been serious enough to bear repeating. West End common lost a point from 91 to 90, then rallied to  $90\frac{1}{2}$ , while the preferred fell from 112 to 111. Boston Elevated has held comparatively selling, touching 140 at one time, but recovering promptly to 141. All the securities of the United Railways Company, of Baltimore, have been very weak on talk that the June coupon on the income bonds is to be defaulted. These bonds, which sold as high as 53 only a few weeks ago, went as low as  $46\frac{7}{8}$  during the past week. Ten of them sold at the low figure, after which 27 were bought in, apparently by short sellers, on a scale up to  $47\frac{7}{8}$ . The general 4 per cents lost a point from 91 to 90, while 2000 shares of the stock were thrown over at  $6\frac{1}{2}$ , the low-water mark of the season. Some declines occurred in outside traction bonds dealt in on the Baltimore Exchange, notably in Anacostia & Potomac 5s, which dropped from 98 to  $97\frac{1}{2}$ , and City & Suburban, of Washing-

ton 5s, which fell from 99 to 98½. Other sales comprised City & Suburban, of Baltimore, 5s at 114, North Baltimore Traction 5s at 114, North Baltimore Traction 5s at 117½, Lexington Street Railway 5s at 100¾ to 101, Augusta Street Railway 5s at 101½, Knoxville Traction 5s at 101½, and Atlanta Street Railway 5s at 106. On the New York curb Interborough Rapid Transit broke sharply from 110¾ to 107½ on sales of about 2000 shares, but afterwards rebounded to 110. New Orleans common sold at 8⅞ and 8 for 200 shares. Nassau Electric 4s, after rising as high as 80⅝, weakened to 80⅜. New Jersey Street Railway 4s went at 71⅞, and Washington Electric 4s at 76½ to 76⅞.

Cincinnati, Covington & Newport issues were very active at Cincinnati last week. The common sold to the extent of about 1000 shares with a range of from 29½ to 30 and the preferred to the extent of 700 shares at 85 and 85½. Cincinnati, Dayton & Toledo came in for a run and 650 shares in small lots sold at 19½ and 19¾. Detroit United sold at 62, and Cincinnati Street Railway at 137½ to 138½; small sales.

Northern Ohio Traction & Light bonds were the active issues in Cleveland last week. The 4s sold at 58 and the 5s at 72¼ to 72¾; about \$30,000 worth changing hands in small lots. Cleveland Electric was firm at 72¾, and Northern Texas Traction at 35½, these being the only stock transactions and both small lots. Northern Texas bonds sold to the extent of \$13,000 worth for 78 and 78½.

**Security Quotations**

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

	Closing Bid	
	May 10	May 17
American Railways .....	44½	44½
Aurora, Elgin & Chicago.....	a14	—
Boston Elevated .....	140	140
Brooklyn Rapid Transit .....	45¾	45¾
Chicago City .....	158	155
Chicago Union Traction (common) .....	5½	5¼
Chicago Union Traction (preferred) .....	30½	29
Cleveland Electric .....	72½	—
Consolidated Traction of New Jersey .....	64¾	65
Consolidated Traction of New Jersey 5s .....	106⅝	107½
Detroit United .....	61½	61¾
Interborough Rapid Transit .....	110	110¾
Lake Shore Electric (preferred) .....	a30	—
Lake Street Elevated .....	3¼	3
Manhattan Railway .....	143	142¾
Massachusetts Electric Cos. (common) .....	18½	17½
Massachusetts Electric Cos. (preferred) .....	72	69½
Metropolitan Elevated, Chicago (common) .....	15	15
Metropolitan Elevated, Chicago (preferred) .....	46	46
Metropolitan Street .....	108¾	110
Metropolitan Securities .....	75	75
New Orleans Railways (common) .....	8¼	8
New Orleans Railways (preferred) .....	25	26
New Orleans Railways 4½s.....	76	76
North American .....	84	83½
Northern Ohio Traction & Light .....	13	—
Philadelphia Company (common) .....	38¾	37¾
Philadelphia Rapid Transit .....	13¼	a13½
Philadelphia Traction .....	95¾	95¾
St. Louis (common) .....	13	13
South Side Elevated (Chicago) .....	91	91
Third Avenue .....	116	116
Twin City, Minneapolis (common) .....	94½	93½
Union Traction (Philadelphia) .....	50	49¾
United Railways, St. Louis (preferred) .....	57½	57
West End (common) .....	91	90
West End (preferred) .....	111¾	a111

a Asked.

**Iron and Steel**

Business in the iron market is reported as very dull. New tonnage is coming in slowly, and buyers uncertain as to the continuance of present prices, continue to act very cautiously. Prices of pig iron have eased a trifle in the South, and it is anticipated that the makers will have to grant further concessions before they obtain any large orders. In the finished branches of the trade, business is light, and reports of price-cutting in the plate industry are beginning to come in. Structural steel shows a decided reaction from its activity a few weeks ago. Quotations are as follows: Bessemer pig iron \$13.50 and \$13.75, Bessemer steel \$23, steel rails \$28.

**Metals.**

Quotations for the leading metals are as follows: Copper 13¼ and 13½ cents, tin 27¾ cents, lead 4½ cents, and spelter 5¼ cents.

**EARNINGS OF THE INTERBOROUGH RAPID TRANSIT**

The Interborough Rapid Transit Company, controlling all the elevated railway lines in New York, reports earnings as follows:

	1904	1903	1902	1901
March 31 quarter				
Gross receipts.....	\$3,845,121	\$3,230,064	\$2,878,236	\$2,502,043
Operating expenses .....	1,609,823	1,464,128	1,400,378	1,348,136
Net earnings .....	\$2,235,298	\$1,765,936	\$1,477,858	\$1,153,907
Other income .....	93,850	110,097	121,937	200,287
Total income .....	\$2,329,148	\$1,876,033	\$1,599,795	\$1,354,194
Charges .....	2,127,136	1,709,572	1,138,335	1,133,357
Surplus .....	\$202,012	\$166,461	\$461,460	\$220,837
Cash on hand .....	3,449,345			
Profit and loss surplus.....	1,714,613			
Nine months ending March 31	1904	1903	1902	1901
Gross receipts .....	\$10,441,583	\$8,936,549	\$7,808,661	\$6,917,680
Expenses and taxes.....	4,313,839	4,158,704	4,117,479	3,925,544
Net earnings .....	\$6,127,744	\$4,777,845	\$3,691,182	\$2,992,136
Other income .....	259,736	256,672	514,513	595,211
Total income .....	\$6,387,480	\$5,034,517	\$4,205,695	\$3,587,347
†Charges .....	5,220,190	4,854,295	3,483,821	3,470,138
Surplus .....	\$1,167,290	\$180,222	\$721,874	\$117,209

†This includes dividends on Manhattan Railway.

The balance sheet as of March 31, 1904, follows:

Assets—	
Cost of lease and equipment .....	\$13,430,200
Stocks and bonds .....	15,555,113
Other permanent investments, real estate .....	1,409,934
Supplies on hand .....	690,742
Due by agents .....	64
Due by others .....	9,747
Open accounts .....	669,440
Cash on hand .....	3,449,346
Manhattan guaranteed fund .....	4,018,812
Prepaid insurance .....	94,229
Sundries .....	22,956
Total .....	\$39,350,586
Liabilities—	
Capital stock .....	\$35,000,000
Taxes in litigation .....	763,129
Interest due and accrued .....	165,585
Manhattan Railway Company lease account .....	394,948
Sundries .....	64,381
Interest and premiums on capital stock .....	580,307
Due for wages .....	128,711
Due for supplies and taxes .....	530,946
Open accounts .....	7,964
Profit and loss (surplus) .....	1,714,614
Total .....	\$39,350,586

**NEW HAVEN BRINGING TROLLEYS TOGETHER UNDER ONE MANAGEMENT**

A meeting of stockholders of the Fair Haven & Westville Railroad Company, of New Haven, which is controlled by the New York, New Haven & Hartford Railroad, has been called for Friday, May 20, to transfer the property and franchises to the Worcester & Connecticut Eastern Railway Company in northeastern Connecticut, which also is controlled by the New York, New Haven & Hartford Railroad. It is very evident that the plan of the New York, New Haven & Hartford Railroad is to bring all its electric railway interests together under the charter of the Worcester & Connecticut Eastern Company. Already the charter for the line from Wallingford to Montowese has been transferred to the Worcester & Connecticut Eastern, and quite recently application was made for permission to change the name of the Worcester & Connecticut Company to the Consolidated Railway Company. Authority to make this change of name was given by the Superior Court at New Haven on May 18, and at that time it was announced that the plan of consolidation involved the bringing together of the Meriden Street Railway, Wallingford Tramway, the Fair Haven & Westville Railroad, and the Stamford Company.



### PERMIT FOR ANOTHER HUDSON RIVER TUNNEL

The Hudson & Manhattan Railroad Company, which is to build an electric railway tunnel from Exchange Place, Jersey City, to Church and Cortlandt Streets, New York, has been granted a formal permit by the New York State Board of Railroad Commissioners. William G. McAdoo, president of the company, is also president of the New York & New Jersey Railroad Company, which is completing the old Hudson River tunnel from Fourteenth Street, Jersey City, to Morton Street, New York. The proposed tunnels will relieve the congested ferry traffic at the lower end of New York. At present practically the whole of the downtown traffic from New Jersey is delivered between Liberty and Chambers Streets, distance of less than half a mile. There will be twin tunnels, each  $1\frac{1}{4}$  miles in length, and each will hold a single track. The proposed service will be adapted for passenger and light freight service. The tunnel at the New York end will be connected with the rapid transit tunnel and Broadway by subways. The two tunnels will form a continuous loop. The south tunnel will come from the river under Pier 13 and Cortlandt Street, to the loop station at Church Street, running around into the north tunnel under Fulton Street and Pier 14. From the terminus there will be a footway under Dey Street to Broadway and John Street, the passageway being under the subway level. The company has bought the western part of the two blocks bounded by Church, Fulton, Cortlandt Streets and Broadway for a New York terminus. In Jersey City connection will be made with the Public Service Corporation cars and probably with the Pennsylvania Railroad. Jacobs & Davies will have charge of the work.

The Hudson & Manhattan Company was incorporated in New Jersey last year and is capitalized at \$3,000,000. The directors, besides Mr. McAdoo, are John Skelton Williams, Anthony N. Brady, E. C. Converse, John G. McCulloch, E. H. Gary and William G. Oakman. The directors, besides Mr. McAdoo, are Walter G. Oakman, John S. Williams, E. H. Gary, Frederick B. Jennings, A. N. Brady, H. B. Hollins, John S. McCullough and E. C. Converse.

### MOTORMAN BLAMED FOR NEW YORK ELEVATED ACCIDENT

The New York Railroad Commission has placed the blame for last week's accident on the Third Avenue Elevated line in New York, at Fifty-Sixth Street, on the motorman of the second train, who was killed at his post. In this accident a southbound train, consisting of four motor cars and two trailers, running from One Hundred and Sixth Street to City Hall, ran into the rear of another southbound train, consisting of four motor and two trailer cars. The first car of the second train telescoped the last car of the first train, the front platform of the rear car tearing through the last car of the first train about half the length of the car. Fortunately there was no derailment.

In its investigation the board caused a detailed and thorough examination to be made of the electrical and brake equipment in use on the system and, as far as possible, of the equipment of the two trains in collision and of the methods of operation, including the rules governing employees. As a result of this investigation the board is of the opinion that the accident was caused by the motorman of the second train misjudging the distance in which he could stop his train, the fact that he was running on a down grade at the time probably having some effect upon the error in judgment made by him. The evidence of the rear guard of the first train was to the effect that the motorman was making every effort to stop his train 30 ft. from the point of collision, but he no doubt did not commence the application of the brakes in time to prevent the accident.

The board has recommended that all of the motor cars operated by the Interborough Rapid Transit Company on its Manhattan Railway division be equipped in such a manner that, when the current to the motors is cut off by the action of the automatic cutout device now employed on the controllers, it also will operate the air-brake system so as to cause an emergency application of the brakes on the train. The company has announced that it has already perfected a device which will be put in soon on all cars of the Manhattan division to accomplish the same result. The devices are now being manufactured, and many of them have already been delivered, and are now being tested to overcome difficulties which arose when the motive power of the Manhattan Elevated Railroad was changed from steam to electricity.

### A NEW FINANCING AND CONSTRUCTION COMPANY

An organization has recently been formed under the title of Lonas, Clendenin & McCord, with offices at 42 Broadway, New York City, for the purpose of railway organization and construc-

tion. This firm has connections, both financially and technically, which will enable it not only to take care of the financial details, but also to carry out the construction of railway properties, a combination of great advantage in railway organization. It is usually rarely possible for a firm which is in a position to finance a system to take charge of the constructional details, and this company will thus at once take an important place in the interurban railway field.

The firm consists of F. E. Lonas and I. L. McCord, both of Chicago, and C. F. Clendenin, of New York. Mr. Lonas has been a practicing attorney in Chicago for over twelve years, and has been interested in several important railway organizations, which has given him a wide experience into the details of handling problems of this nature. He was also for some time president of the Maywood Foundry & Machine Company. Mr. McCord's experience has been very extensive in business and accounting lines. He was also for a long time connected with the passenger department of the Michigan Central Railroad, with headquarters at Chicago; also as secretary of the Maywood Foundry & Machine Company, Chicago. Mr. Clendenin was for some time in touch with street railway interests of New England, in the introduction of storage batteries as auxiliaries to electric railway power equipments, and was also secretary of the Continental Electric Company, manufacturers of arc lamps. He has also had an extensive experience in corporate organization, and was lately connected with the Registrar & Transfer Company, of New York City, whose specialty is the organization of companies.

The new firm has several new railway systems in process of organization at present and proposes to carry out the constructional details in a manner which will insure permanence and profitable operation—a most desirable result for the stockholders.

### CONSOLIDATION OF ILLINOIS SYSTEMS—CONSTRUCTION OF HIGH-SPEED LINE

Arrangements have just been consummated for a consolidation of the traction systems operating in Alton and Granite City, Ill., with a new company to be known as the Alton, Granite City & St. Louis Company, which is to operate these roads and construct and work a high-speed interurban line between Alton and St. Louis. The length of this road will be 22 miles. The Alton system is at present operated by the Alton Light & Traction Company of which Joseph F. Porter is president, and J. G. White & Company and Austin Fletcher, of New York, are largely interested. There are some 15 miles of track. The Granite City system is principally controlled by ex-Governor D. R. Francis, of Missouri.

Through cars will be run from Alton through East St. Louis over Eads Bridge to the central terminus of St. Louis. The cars, ten of which will be contracted for in the first instance, will be 50 ft. long, and each will be equipped with four 75 hp motors and air brakes. Power for the lower section will be taken from the new power plant of the East St. Louis & Suburban Company and carried to sub-stations on the route. The Alton power station will furnish current to operate the upper end of the line. The whole line is to be worked by despatch system with signals similar to a steam road. There will be no grade crossings. The rails will be of 70-75 lbs. weight.

J. G. White & Company, of New York, have the contract for the building of the Alton-St. Louis road, and construction work will be begun immediately.

### MR. HUNTINGTON PROJECTS ANOTHER IMPORTANT LINE

H. E. Huntington has in contemplation another extensive project in connection with the extension of his electric railway interests in California. The latest plan is to build from Reno to Lake Tahoe, the line to follow the course of the Truckee River along a picturesque territory lying between the wooded slopes of the Washoe range and the majestic snow-capped peaks of the Sierras. The territory through which the line will be built is now monopolized, so to speak, by the Southern Pacific Railroad and the Truckee-Tahoe Railroad. The Huntington line will, of course, become a competitor of both of these systems, and in some quarters the statement is made that the building of this line simply means another link in the chain of electric railways which Mr. Huntington is constructing north and south through the State, and which will eventually parallel the Southern Pacific from one end of the State to the other. Mr. Huntington already controls the electric railways in the southern counties, is developing an electric power plant on Kern River, and owns the Fresno Electric Railway and that of Stockton. Last year a preliminary survey was made for an electric railway from Placerville across

the summit of the Sierra to Truckee and Tahoe, which was found to be quite feasible. The latter may be constructed to join the Reno line and perform the same function on the western side of the Sierra as the Reno road will perform on the eastern slope. The Placerville-Tahoe road, when built, considered from the service standpoint, will be a formidable rival to the Southern Pacific Company, as the view from its cars through the most attractive part of the Sierra will not be obstructed by snowsheds, which now shut out the most romantic part of the trip on the Central Pacific.

### CINCINNATI COMPANY GAINS IMPORTANT POINT IN A SUIT

The Superior Court at Cincinnati has issued an injunction against the operation of the division of the Cincinnati Street Railway known as the "John Street Route," declaring it to be non-existent. The wide scope of the decision, however, is that all divisions of Cincinnati street railway service which are operated under authority prior to the execution of the Rogers law are held to be valid and good. The John Street line, however, does not come under this head, because the Court finds that it was created purely by the Rogers law. While the Court records that an injunction will issue, there will be no stoppage of traffic as the order is only a step to the taking of the case to the Supreme Court for a final decision. The company wins a victory to the extent of having its title declared good to its many lines which are now operating under resolutions and extensions made before the Rogers law was enacted.

### SHANGHAI MUNICIPAL TRAMWAYS

The firm of Fearon, Daniel & Company, of China, and of 87 Front Street, New York City, is advertising again for bids on the tramway concession for the Shanghai Municipal Council. It may be remembered that this was originally brought to the attention of the public as far back as 1898, when a contract was entered into between the municipality and the Brush Electrical Engineering Company, of England. Due probably to the serious Boxer troubles which broke out in the Chinese Empire, the Brush Company did not proceed with the contract, so that the matter is again open for competition and should receive the attention of American engineers. The firm in question has the full details of the concession, the main point of which is the deposit of \$25,000 upon signing the contract. The road proposed is a fairly extensive one, comprising in the five specific sections about 5¾ miles of double track and 10¾ miles of single track to be equipped with span wire construction for double-track, bracket for the single, and with iron or steel poles. The conditions laid down in the original tramway agreement must be complied with, but the agents state that a fair and reasonable proposal will have favorable attention on the part of the Municipal Council. The company putting in the road is permitted to collect from each first-class passenger 6 cents for a maximum distance of 1½ miles, and from second-class passengers 2½ cents. The company is to pay the Council a yearly rental of \$500 per mile of single track and \$750 per mile of double track. These and many other details are given in the papers in the hands of the firm named.

### THE FUTURE OF THE MIAMI & ERIE CANAL

Tentative plans for the future of the Miami & Erie Canal Transportation Company have been agreed upon by committees representing the stockholders and the bondholders of the company. The debts of the company are to be scaled down to about \$50,000, and this money will be raised by both the stockholders and the bondholders. The refinancing plan will call for the formation of a new company with a new issue of securities. The bond issue of the new company will not exceed the wrecking value of the property as it now stands. The stockholders and bondholders who advance the money will take the bonds at 90 with two years' coupons taken off. The present holders of canal bonds will receive an equal amount in preferred stock, while the holders of canal stock will receive an equal amount of new common stock. The new corporation will have but a single stock liability, which will relieve the old stockholders of the old double liability, it is claimed.

The Canal Company has secured from the State Board of Public Works an extension of time in which to complete the portion of the road between Cincinnati and Dayton, also an extension on

the section from Dayton to Toledo, on which no work has been done. Under the agreement, the canal company will restore the tow-path from Dayton to Cincinnati to such condition that mules may be put in service. Inasmuch as the canal is dry and the transportation company owns all the boats at that end of the canal, this portion of the agreement is not, however, of much advantage to the old line boat owners, who are fighting the transportation company. It is understood that the transportation company still has hopes of making a broader agreement with the State for the use of the canal banks.

### OHIO ASSOCIATION TO MEET MAY 26

The next regular meeting of the Ohio Interurban Railway Association will be held at the Chittenden Hotel, Columbus, May 26, at 9 A. M. This session will be an open meeting, and will be devoted to a discussion by the members of the following subjects:

1. "What arrangements can be made for the operation of cars of one company over tracks of another company?" This subject is at present in the hands of the transportation committee.
2. "What compensation should interurban companies give newspapers for advertising privileges?"
3. "How to take care of employees from the transportation standpoint, particularly the transportation of track men who are hired by the day only, and to whom the company does not care to give badge or pass-book."
4. "The benefit of associations among members, together with social relations between employers and employees."
5. "The most economical method of keeping cars neat and clean."

The subject committee felt that a greater interest would be manifested in the handling of these subjects by the members themselves, and that an occasional deviation from a prepared paper would be beneficial to the association. On account of the central location of Columbus and the fact that if it be desirable only one day need be given by members to the meeting, it is expected that the attendance will be very large. Urgent invitations are being sent to non-members.

### NEW PUBLICATIONS

Quarterly Bulletin of the Committee on Special Hazards and Fire Record of the National Fire Protection Association. 42 pages, paper. Price, 20 cents. Published by the secretary of the association, 67 East Twenty-First Street, Chicago.

This bulletin is devoted entirely to car house and associated risks, and an excerpt from it is published elsewhere in this issue. There are six extended articles on the subject of the proper construction and maintenance of car houses by electrical inspectors and others associated with the different insurance exchanges and underwriters' bureaus which are members of the association, as well as records of a few of the more interesting fires in car houses and power stations which have been brought to the attention of the association. The pamphlet is of the greatest interest, and while as a rule these bulletins are printed exclusively for the information of the members, a number of additional copies have been printed in this instance to supply those who may be interested in this subject.

### STREET RAILWAY PATENTS

[This department is conducted by Rosenbaum & Stockbridge, patent attorneys, 140 Nassau Street, New York.]

759,222. Power Transmission Mechanism; Bion J. Arnold, Chicago, Ill. App. filed Dec. 13, 1902. Relates to mechanism whereby the energy wasted in braking the wheels of the vehicle may be stored and used to aid in propelling the vehicle.

759,385. Railway Switch and Operating Means Wherefor; Lucius A. Lindsey, Strubbe, McConnell & Clifford C. Hudson, Atlanta, Ga. App. filed Nov. 23, 1903. The switch tongue is moved by magnets in the roadbed, which are actuated from the platform of the car by a suitable circuit closing device.

759,433. Trolley; Elmer E. Gillingham & Delancey E. Huntley, Wellston, Ohio. App. filed April 27, 1903. A two-wheel trolley in which the rear wheel is mounted in a frame which has a hinged connection to the frame of the front wheel, whereby the rear wheel can move both in a horizontal and a vertical plane.

759,446. Car Fender; Frederick R. Keith, Randolph, Mass. App. filed June 22, 1903. Relates to that class of fender which is

normally elevated some distance above the rails, but which upon meeting an obstruction is automatically thrown into its lowered position.

759,453. Electric Railway; Timothy Mahoney, San Francisco, Cal. App. filed July 1, 1903. To obviate the necessity of using the car tracks as return conductors, the two ends of the third rail are connected directly to the dynamo, and means provided for shunting the current from the third rail through the car and back to the third rail again.

759,567. Brake-Shoe; Alfred L. Streeter, Chicago, Ill. App. filed March 2, 1903. A brake-shoe provided with a backing of steel spikes partially embedded in the metal of the shoe.

759,661. Panel for Convertible Cars; John A. Brill, Philadelphia, Pa. App. filed April 17, 1903. Details of construction of a sliding panel which will at all times make a tight joint, and which may be made flexible to conform to the curves, be easily movable in the grooves and yet be weather-tight.

759,707. Fender; John O. Harrison, Evansville, Ind. App. filed Feb. 8, 1904. Details.

759,767. Rail Support; Louis Steinberger, New York, N. Y. App. filed Jan. 7, 1904. The chair in which the rail is mounted is adapted to rock on its support to permit the rail to accommodate itself to pressures applied thereon.

### PERSONAL MENTION

MR. JAMES H. MCGRAW, president of the McGraw Publishing Company, has been elected a delegate from New Jersey to the Republican National Convention to be held in Chicago next month.

MR. J. C. MCQUISTON, until recently secretary, has been appointed superintendent of the Westinghouse Companies' Publishing Department, having charge of matters relating to the publicity of the products of the various Westinghouse interests in the United States and Canada.

MR. C. E. FLYNN, formerly general manager of the Wheeling Traction Company, of Wheeling, W. Va., has been elected second vice-president of the Conneaut Traction Company, which is building a system between Conneaut, Ohio, and Erie, Pa.

MR. ARTHUR BUSSE, chief engineer of the Grosse Berliner Strassenbahn, the principal street railway in Berlin and the largest electric railway system in Europe, reached New York on May 11. Mr. Busse is planning to visit a number of the cities in this country on a tour of inspection, and will also go to the World's Fair in St. Louis before his return to Berlin, the middle of June.

CAPTAIN JAMES W. HINKLEY and MR. SILAS HINKLEY, sons of the late Mr. James W. Hinkley, will succeed their father in the management of the Poughkeepsie City & Wappinger's Falls Electric Railway Company, of Poughkeepsie, N. Y. Captain Hinkley has been elected president, and Mr. Silas Hinkley secretary and treasurer and general manager of the company.

MR. GEORGE W. EDWARDS, former superintendent of the elevated division of the Brooklyn Rapid Transit system, has been appointed general secretary of the Brooklyn Rapid Transit Employees' Mutual Benefit Association, to succeed Mr. J. M. Dudley, who has gone to Portland, Me., to take charge of the railroad branch of the Y. M. C. A. at that place. Mr. Edwards is a railroad man of many years' experience, and has been one of the most popular men in the employ of the Brooklyn Rapid Transit Company. Mr. Dudley came on from Chicago purposely to organize the Brooklyn association.

MR. W. OWEN THOMAS, who, until recently, was electrical engineer of the great water-power plant of the Michigan & Lake Superior Power Company at Sault Ste Marie, Mich., has accepted the position of assistant to the mechanical engineer of the Chicago & Northwestern Railway Company at Chicago. Previous to his connection with the Soo development, Mr. Thomas was on the engineering staff of Bion J. Arnold. He is an electrical engineer of a high order of ability, and the appointment on the staff of this railroad of such an engineer would make it appear that something more than the ordinary applications of electricity on a steam railroad system are contemplated by the Chicago & Northwestern, especially as that company is conducting a suburban service out of Chicago, second in volume only to the Illinois Central.

MR. GEORGE W. JACKSON has been selected by the local transportation committee of the Chicago City Council to act as engineer and expert adviser to that body in connection with problems which have come up regarding the lowering of the tunnels under the Chicago River and their relation to any downtown street railway subway that may be built. The government has recently ordered these tunnels either removed or lowered as obstructions to navigation. Mr. Jackson is general manager and chief engineer of the company which has built the extensive system of deep

tunnels under the streets of Chicago for the wires of the new telephone exchange and for the transportation of freight. His intimate connection with underground work in Chicago makes him well fitted for an adviser to the local transportation committee in this matter.

MR. HARRY J. CLARK, formerly connected with the engineering department of the Syracuse Rapid Transit Railway Company and later superintendent of the Oneida Railway Company, of Oneida, N. Y., has been appointed assistant to Mr. C. D. Beebe, president and general manager of the Auburn & Syracuse Electric Railroad, and general manager of the Rochester, Syracuse & Eastern Railroad. Mr. Clark is a graduate of Cornell University, and, while only 37 years old, is particularly well fitted for his new position. His first experience in railway work was with the Syracuse Rapid Transit Company, from which he resigned several years ago to enter the employ of the Andrews-Stanley syndicate, which built the Utica & Mohawk Valley Railway from Utica to Little Falls, and which is now building the Oneida Railway westward from Utica toward Syracuse. In his work with the Andrews-Stanley interests, Mr. Clark was associated with Mr. C. Loomis Allen, with whom he had previously been connected while with the Syracuse Company.

MR. NELSON PERIN, former president of the United Railways & Electric Company, of Baltimore, Md., died Thursday morning, May 12, at his residence in Baltimore. Despite the fact that his health had been declining steadily for months, members of Mr. Perin's family did not think that the end was so near. Mr. Perin was born in Cincinnati, Oct. 31, 1853. His father was the late Mr. Oliver Perin, a well-known banker and manufacturer of that city, and his mother was Mrs. Mary J. Perin. Mr. Perin was educated at Racine College, graduating in 1874. Immediately after graduation he directed his attention to the street railway business. He was successively director and president of the principal street railway lines of Cincinnati. In 1880 he became identified with the street railway interests of Baltimore, when he was made a director of the Union line. Later, with the York Road, Highlandtown, Point Breeze, Hampden and Catonsville lines, the City & Suburban Company was organized, and in 1885 Mr. Perin became its president. One year later he removed to Baltimore and made that city his permanent home. In 1899 Mr. Perin effected the consolidation of all the street railway lines of Baltimore into the present United Railways & Electric Company. He was made president of the company and continued in that office until 1901, when he resigned. Mr. Perin had a number of other interests, in addition to those of the street railway and lighting properties, and, in fact, was constantly taken up with large business affairs. On Oct. 2, 1877, he married Miss Ella Keck, of Baltimore, who, together with six children, survives him.

MR. MASON B. STARRING was elected general manager of the Chicago City Railway Company at a meeting of the directors, held May 12. This fills the vacancy left by Captain Robert McCol-



M. B. STARRING

loch, who went to St. Louis last month. Mr. Starring is by no means unknown in the street railway field, as he has been connected with the Chicago City Railway Company since Jan. 15, 1888. At that time he entered the employ of the company in the office of president and superintendent C. B. Holmes. Here he got experience in all branches of the street railway business. At the time of Mr. Holmes' retirement, when Judge J. S. Grinnell was made general counsel, Mr. Starring was transferred to the office of the legal department. In February, 1894, he was made assistant general counsel. Judge Grinnell, who was the head of the legal department, died in 1898. Mr. Starring remained with the title of assistant general counsel until the last annual meeting of the company in February, when he was made general solicitor. As a matter of fact his duty had been that of general solicitor ever since Judge Grinnell's death. His able paper on "Damages and Claims," for the American Street Railway Association, in 1902, will be remembered by all who have followed that subject. Mr. Starring is 45 years of age, and, as he puts it, entirely "a Chicago product," having been born and educated in Chicago, and having lived there all his life. His education was received in the Chicago public and high schools. Personally, Mr. Starring is of a very genial temperament, and he has the inborn qualities which make him a good man in dealing with both employees and the public.

## NEWS OF THE WEEK

### CONSTRUCTION NOTES

JASPER, ALA.—The Jasper Water, Light & Power Company has been granted a franchise to operate an electric railway here. J. M. Crawford is manager of the company.

OPELIKA, ALA.—Rush Taylor, of this city, has left for the North, where he hopes successfully to finance the projected electric railway and lighting system for Opelika and vicinity. Mr. Taylor has already secured in Opelika and Auburn contracts for light and power sufficient to guarantee a revenue of \$20,000 annually, without including the revenue from passenger service and other sources.

LOS ANGELES, CAL.—The work of widening the distance between the tracks of the Los Angeles-Pacific Railroad Company at Ocean Park is now under way. The rails of the old Kinney line have been torn up. The improvement planned by the Los Angeles-Pacific Company includes the laying of a 10-ft. walk between the two tracks from Hollister Avenue to South Ocean Park, and the erecting of neat depots at the intersections of the principal streets.

LOS ANGELES, CAL.—The Pacific Electric Railway Company is in receipt of 16,000 tons of steel rails that have just arrived from Belgium. Cargoes of steel that have arrived in the last few weeks aggregate a cost of about \$600,000.

LOS ANGELES, CAL.—It is announced that the Pasadena end of the Campbell-Johnston franchise has been completed to the Arroyo Seco, and that less than a mile of road building is required to connect the two sections of the electric railway now constructed. This, it is said, will be done in the near future. The old tunnel, formerly used in the toll road, is to be enlarged so as to make a short-cut across the San Rafael rancho.

OAKLAND, CAL.—J. H. Macdonald has transferred to F. E. Chapin, president and general manager of the San Jose-Los Gatos Interurban Railway Company, all right, title and interest in the franchise for a street railway on College Avenue and on certain thoroughfares in East Oakland on the conditions as agreed between Macdonald and the Oakland Transit Company, whereby the latter is to have the East Oakland privileges mentioned in the franchise.

PORT RICHMOND, CAL.—The construction of the East Shore & Suburban Railway is progressing rapidly and it is expected that the road will be ready for operation by June 15. The power house and car house are nearing completion. The company will not generate its own power, but will convert the 10,000-volt three-phase current of the Richmond Light & Power Company. The equipment of the sub-station was furnished by the General Electric Company, as was also the car equipments.

NEW HAVEN, CONN.—In the Superior Court in this city, Judge Gager recently granted the Fair Haven & Westville Railroad Company permission to build an electric railway from Montowese to Wallingford. An all-trolley trip between New York and Boston will be possible when this stretch of 10 miles is built.

NEW LONDON, CONN.—The charter of the East Lyme Street Railway Company, which has authority to build from New London to Niantic, has been transferred to A. F. Phelps, John A. Morgan and C. C. Phelps. Surveys are to be made at once. Mr. Morgan is a resident of Poquonoc.

WATERBURY, CONN.—Fred T. Ley & Company, of Springfield, have secured a \$175,000 contract to build an electric railway between Waterbury and Cheshire, a distance of about 8 miles. The contract requires that the road be completed by June, 1905.

LEWISTON, IDAHO.—Colonel Judson Spoffard, of Lewiston, Idaho, who is interested in the building of the Lewiston & Southeastern, an electric railway, 110 miles in length, from Lewiston to Grangeville, with a branch 25 miles in length to Nez Perces, says that surveys are practically completed and much of the right of way secured. "It is proposed to begin tracklaying during the coming summer," says Col. Spoffard, "and to complete the road and have it in operation by the first of next year. Power will be secured from the Clearwater River, and a plant with a capacity of some 5000 hp will soon be installed." The company is composed exclusively of Lewiston capitalists, its officers being Judson Spoffard, president; F. J. Randolph, secretary, and W. H. Hill, chief engineer. It is capitalized for \$4,000,000. Colonel Spoffard formerly made his headquarters at Boise, and was the promoter of the great Boise power plant.

CHICAGO, ILL.—Further mandamus proceedings against the city have been filed in the Superior Court by the South Chicago Street Railway Company to compel the issuance of a permit for the construction of tracks under the ordinance granted March 4, 1895, by the City Council. The street involved is Ninety-Fifth Street from Ewing Avenue west to Avenue K, and the petition is directed against Frederic W. Blocki, commissioner of public works. After the granting of the franchise in 1895, which provided that the tracks should be built within five years, the Third National Bank secured an injunction against the company, restraining the construction of the tracks, and this injunction remained in force until May 15, 1902. The street railway company asserts under the provisions of the ordinance it has the privilege of an extension of time equal to the duration of the injunction for the construction of the tracks, and that it has three years in which to build the tracks. Commissioner Blocki has refused to permit, under the decision of Corporation Counsel Tolman, which the company charges he had no power to do. Judge Holdom recently issued a similar writ of mandamus for the construction of tracks on Torrence Avenue, which is included in the same ordinance and to

which the city made the same objection. Double tracks with an electric trolley equipment are asked.

STERLING, ILL.—The Sterling, Dixon & Eastern Railway has opened its local lines for traffic.

AKRON, IND.—The Wabash & Rochester Traction Company will build its power house here. The survey will be made next week. It is announced that the contract will be let soon.

EVANSVILLE, IND.—The specifications for the improvement of the street railway tracks between Eighth and Franklin Streets have been prepared and the contract for the work will be let soon.

FORT WAYNE, IND.—It is said that there is a deal pending for the merger of the Fort Wayne Traction Company, the Fort Wayne & Southwestern Traction Company and the local electric light and power company, which also has the franchise for steam heating in Fort Wayne. The sale is being negotiated through John White. The new company is to construct a monster generating station, using the exhaust steam for heating the downtown districts. Eastern capital is helping to complete the deal.

INDIANAPOLIS, IND.—The Indianapolis, Logansport & Chicago Railway Company will receive bids for the repairs of the levee along the west bank of Fall Creek. Address Quincy A. Meyers, Logansport, Ind.

INDIANAPOLIS, IND.—The Chicago & Northern Indiana Railway Company has been incorporated to build and operate an interurban line in the Counties of Lake, Porter, Jasper, Pulaski, White, Cass, Howard, Tipton, Hamilton and Marion. Capital stock, \$25,000. Directors: Lester Loule, H. E. Davenport, Amzi L. Wheeler, Joseph K. Kemp, Charles W. Thompson, Martin W. Eikenberg, Luther McDowell.

LAGRANGE, IND.—The Lagrange-Elkhart Electric Railway Company, of which H. E. Bucklin is president, has secured a right of way to build a line between Lagrange and Middlebury.

MUNCIE, IND.—The Commissioners of Delaware County have granted a franchise to J. P. McGrantz, of Hartford City, for an electric railway through Delaware County.

DES MOINES, IA.—Surveyors are at work in Ringgold and Union Counties locating the route of a proposed electric railway from St. Joseph, Mo., to Des Moines. The preliminary plans are for a line running through Mount Ayr, Arispe, Creston, Hacksburg and Winterset to Des Moines. The line may come only to Winterset, as the owners of interurban lines out of Des Moines have a route surveyed to Winterset. C. F. Terhune, a civil engineer of Marysville, Mo., is locating the route, and Wallace Hubbard, of Albany, Mo., is chief promoter.

WASHINGTON, IA.—The Arnold Electric Power Station Company, of Chicago, has reported favorably on the construction of the Iowa City, Kalona & Washington Electric Railway. The report recommends 30 miles of single track and 3 miles of turnouts and switches, with one power house and three sub-stations. It will be a standard gage line laid with 80-lb. rails.

WATERLOO, IA.—It is said that surveys are to be begun at once for the proposed electric railway from Des Moines to Waterloo. The principal promoters are Indiana men, but a local office has been opened here, in charge of W. W. Marsh, Thomas Cascaden, J. E. Sedgwick, Geo. E. Litchy and F. J. Fowler, of this city.

HUTCHINSON, KAN.—J. J. Burns, chief promoter of the Hutchinson-Wichita Electric Railway, announces that he has about closed a contract with the General Electric Company for single-phase equipment for the road.

OTTAWA, KAN.—By an application filed with the City Council, Hugh Holmes, of Kansas City, president of the Kansas City-Olathe Electric Railway, agrees to build an electric railway through Ottawa, connecting with Kansas City, and also to operate a municipal system here. Mr. Holmes says he will begin the survey to Garnett and Olathe at once and have the rails down in Ottawa by Jan. 1, 1905.

FRANKFORT, KY.—Articles of incorporation have been filed by the Columbia & Lebanon Interurban Railway Company, of Marion County, which has \$1,000,000 capital stock, and paid thereon \$1,000 organization tax into the State Treasury. The company will build 46 miles of electric railway, from the town of Lebanon, through the county of Taylor to the town of Columbia, in Adair County, and a spur track to the town of Bradfordsville, in Marion County. The principal office of the company will be located at Lebanon. The incorporators are: W. K. Azbill, of Columbia; R. W. Wathen, J. M. Knott and T. M. Estes, of Lebanon; L. C. Rawlings, of Bradfordsville, and W. W. Bradshaw and C. S. Harris, of Columbia.

LEXINGTON, KY.—The Lexington Street Railway Company has placed a contract with the Power & Mining Machinery Company, of New York, formerly the Loomis-Pettibone Gas Machinery Company, of New York, and successor to the Holthoff Machinery Company, of Milwaukee, Wis., for a 550-hp Crossley gas engine, to be direct connected to a direct-current 550-volt generator of 300 kw capacity. The equipment will be installed in the existing power house of the Lexington Company. The present capacity of the plant is 2000 hp.

LOUISVILLE, KY.—The Louisville & Interurban Railway Company has filed amendments to its articles of incorporation providing for important extensions of its lines. They are as follows: From the terminus at Valley Station to Salt River and West Point. From the terminus at Johnson and Main Streets along New Main Street to Southall Avenue to Mellwood to Reservoir, through the Louisville Water Company's grounds to Pipe Line Avenue, and thence east to Prospect, a distance of 10½ miles. Out Preston Street road to Okalona, 7 miles.