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"Associated Villainies"

This is a sweet and soothing epithet to apply to a corporation, and is taken from the political phraseology of the hour out in San Francisco. It is needless to say that the street railways come easily within the purview of the damnatory epithet. There, as in New York, glib accusation has been made without any proof, and so far as we can judge at this distance, is equally susceptible to prompt and indignant denial. Not long ago we noted in these pages the proposals that were being made to gouge the street railway companies in San Francisco by demanding that they should assume street lighting in addition to their other burdens. The companies objecting to further taxation, a plan has been brought forward of municipal operation, and the public ownership of the Geary Street line appears to have been made an issue in the last campaign, just over, although neither party was openly in favor of it, one candidate for Mayor declaring against it, while the other, if he did not "straddle the fence," certainly abstained from "ringing utterances." The Mayor elected has gone in, however, on the votes of those who appear to have a penchant for municipal ownership, and there may be something done. But the odds would be decidedly against success with a single road without transfer privileges or terminals, operated by political appointees. Such competition could not jar the "Associated Villainies" very much.

Long Distance Trolleys

The modern and latter-day trolley systems are already familiarizing people with the idea of cars operated from a central source of current, and as a matter of fact, the power plants generating polyphase current, which is stepped down and converted at remote sub-stations for use on local lines, have now become so numerous that they excite little surprise. As our readers know, in some instances this form of alternating current is being employed directly at the point of utilization, but that work is confessedly of an experimental character. While it is magnificent, as the French general said as he watched the charge of the Light Brigade at Bala-klava, "it is not war," at least not at present, and there is great likelihood that a long time will elapse before anything but direct current is fed to city trolley systems. Conditions favorable to high pressures out in the open country fail of application in centers of crowded population, served by cars under short headway and liable to incessant stopping.

But while polyphase current may not now be considered within the domain of practical politics in street railway work for "trolley wire" purposes, it is developing some startling and spectacular aspects on the side of transmission. The work recently accomplished in California, while it may bear more pertinently on the problems of the steam railroad engineer, who is slowly turning to electricity, has its importance also for street railway managers. California is a region of small water flow, but high "head," as compared with the rest of the country, where water is often abundant, but the "head" is low. Fuel is expensive, moreover, on the Pacific Coast, and as the masses of population are distant alike from fuel supplies and the water powers, an evolution along the line of high voltage transmission has been inevitable. To-day, the Bay Counties Power Company, which is utilizing the power in the Sierras, 150 miles east of San Francisco, is branching out with its circuits in every direction, and has now put its current within reach of half the population of the State. Using potentials of 40,000 volts and 60,000 volts, it develops current at Colgate on the North Yuba River, and supplies it as far away as Oakland, 140 odd miles; and not content with propelling street cars there, it has gone even further, to San Jose, 184 miles from the central source of energy.

Such work as this cannot be dismissed as sensational. It must be looked squarely in the face by all who are devoting their time and money to the perfection of the street railway. For it ought to be borne in mind that what is thus done with water power is likewise within the easy reach of coal and oil supplies. The circuits in California not only traverse all kinds of wild mountainous country, but are strung across broad estuaries, like the Carquinez

Straits, where the steel cables hang in high mid-air over a mile from shore to shore. So far as we are aware, the work of the Bay Counties Company marks the present limit. We have yet to hear of any other place where trolley cars are deriving their current, as do those in Oakland, from a generator 140 miles away; but what has been done there, apparently on satisfactory terms, with efficiency and economy, is within grasp of street railway managers elsewhere, and we believe the California example will be freely copied.

The Week's Progress in Chicago Franchise Matters

More real progress has been made the past two weeks toward settling the Chicago street railway franchise matters than at any period since the question was first taken up. The conference of General Manager Robert McCulloch, of the Chicago City Railway Company, with the council committee on local transportation, which has already been noted in these columns, marked the beginning of the progress. Since that time the committee has held a session at which many important things as to the policy of the committee were decided. The four-cent fare for standing passengers matter was "dropped like a hot potato," as a local newspaper put it, because "the proposition has been lingering in the throes of death for three weeks, and it finally expired because there were no physicians on the committee who would lend a helping hand to the atrophied patient." The payment of a percentage of gross receipts to the city was favored instead. The committee was unanimous in favor of the abandonment of the cable and the use of the underground trolley in the downtown districts. The committee favored the granting of franchises to the full allowable term of twenty years, with a proviso that the city may buy in the lines at an appraised value in ten years, if the voters of Chicago decide that they want to try municipal ownership, and legislative power to do so should be obtained. While the committee is attempting to approach a settlement on a practical basis, acceptable to the companies and to the public, the Mayor pursues a dog-in-the-manger policy, and says he will do nothing until the State Legislature passes an act empowering the city to acquire, own and operate street railways. In the meantime he is doing everything in his power to hinder the work of practical settlement, while doing nothing in that direction himself.

How to Hold Up Cars

There is one fundamental principle in all law, equity and justice, namely, that an aggrieved party shall not take into his own hands the pronouncement of sentence and the infliction of penalties. We cannot, therefore, extend our approval to the judge who, in St. Louis lately, dismissed the case against a man who, after several cars had passed him on a cold and wintry night, threw stones into the windows of one in order to make it stop. The remedy was effective, as far as it went, for the car came back, not that it might "take up" the assailant, but in order that a policeman might do so. Next morning the police justice let David off, merely remarking to him: "You ought to have used a Gatling gun." We recall a case where someone similarly offended put big stones on the track, but we must confess that to us the revenge seems a far greater crime against public morals than the presumed failure of service that causes it. Not long ago it was testified in Glasgow that many of the telephone instruments there got out of order, because when Central reported the line busy, the irate Scotchmen began to "throw the caber," and hurling the instruments against the office walls, at once put the receivers and transmitters *hors de combat*, and spoiled the mural decorations. Obviously, if a street car passenger, every time he is hurt, offended or aggrieved is at liberty to fling red sandstone at the car, pull revolvers on it, or play all over it with Gatling guns, life may be made very interesting for the neighborhood, but the street car schedule will amount to less than it did before. Redress surely does not lie along the line of violence.

Trolley Vegetables

The application of electricity to the stimulation of plant life has for some years past been a delightful field of research. Probably no scientist has yet been able to sum up the exact results, although many would be willing to admit that the current does stimulate. Another analogous field of inquiry—one in which, for example, a social economist, like Oscar T. Crosby, revels—is that of the effect of the trolley on country and farm life. If we are to believe the newspapers, one Michaelis Quentesky, a Bohemian truck farmer, at New Egypt, N. J., has harmonized both investigations, although his synthesis may not be calculated to bring much comfort to the mind of the average trolley manager. It is stated that for some time past his extraordinary radishes, cabbages, tomatoes, potatoes and beets have been the marvel and envy of the neighborhood. All around him were farmers who were wasting their substance in riotous indulgence in fancy fertilizers; but no matter how richly they manured they could not equal Quentesky in either the quality of their crops or the shortness of time necessary for redundant fructification. Meantime, it is alleged, the trolley company adjacent was suffering from loss of current and depression of spirits in consequence, for the cars could not be induced to crawl through the region faster than a tramp would go. When at last investigation was made, the trolley feed wire was found tapped, and from it ran an ingenious system of subsoil wires, with which the little Bohemian was "doing the trick." If this be true—and we are not casting any doubts upon the narrative—trolley companies might find a new source of income in supplying electric fertilizer to the farms they cross; for the insurance regulations against tapping trolley circuits would hardly apply out in the open fields. Quentesky is now being prosecuted, it is said, for larceny of current; but may he not prove, by his originality, a benefactor of the race? Vegetables are very high in price, and he who will cheapen them by adding to quantity and quality will not have lived in vain.

Two Dollars a Kick

Considerable interest was created last week by the announcement in the daily press that a certain prominent street railway company, tired of the annoyance caused by trivial and frivolous complaints against employees on the part of the public, had decided to demand a deposit of \$2.00 as a guarantee of good faith with every letter of complaint against an employee. The complaint was then to be investigated, and, if found to be just, the money was to be returned to the complainant, but if the charge was found to be groundless, the money was to be turned over to the accused employee. A number of our wise contemporaries among the daily press immediately commenced to criticize the rule, declaring it a violation of the constitutional right of the American citizen to raise his voice in protestation on any and all occasions when he considered his rights infringed, or his feelings trampled upon; and many managers in other cities were interviewed as to their opinion of the alleged rule and the advisability and possibility of enforcing it. Independent of the justice of a rule of this kind, the discussion on it seems to have been entirely unnecessary, from the fact that no such rule was made by the company purporting to have decided upon it. The facts in the case are that at a meeting of the employees of the company, at which there was but a small representation, the question was raised by one of the men as to the advisability of such a rule, and the statement was made that such a rule was in force in some other cities, and was giving satisfaction. The manager of the company, who was present, promised that he would take it under consideration, and from this slender statement some of those at the meeting assumed that the rule had been adopted forthwith. As an actual matter of fact, the rule will not be adopted on that road, certainly for the present. Our own opinion of the subject is that this proposed regulation is one of those things which is eminently fair in theory, but one which from its nature can hardly be enforced. It is certainly unjust to oblige a railway company to investigate all the circumstances every time some supersensitive passenger believes that he

has not been treated with the courtesy and deference which the five cents which he has paid for fare entitles him, and it is equally unfair to the accused motorman or conductor to require him to face utterly groundless charges. No one who has not actually had charge of the complaint department of a street railway or other public service corporation can have any idea of the ridiculous grounds of many of the complaints that are made. The great majority of passengers seem to believe that every car should be run for their personal convenience, and that every employee should treat them with especial consideration, and as the entering of a complaint involves no responsibility and no inconvenience to the person making it, he usually does it under little provocation, or none at all. It is safe to say that 99 per cent of the complaints sent in to a street railway office against employees are unworthy of consideration, and a large majority of them would never be made if the complainants had looked calmly at the merits of the case from their own standpoint and that of the conductor. Nevertheless, if any attempt is made to throttle this safety valve of an unrighteous indignation, the public will consider itself affronted, and for the sake of this feeling, as well as to ensure the receipt of the 1 per cent of fair complaints, we doubt whether it would be advisable to enforce a money deposit with each charge. While such a step may, therefore, be on the whole unadvisable, and while we believe that it is good policy to answer courteously every letter of this kind sent to a railway company, we believe that complainants by letter should be required to do something to show their sincerity and good faith. It is not unreasonable, for example, for the company to state that it requires, before considering a complaint, that the complainant should come in person to the office of the company and show that he is in earnest by facing the conductor or motorman against whom the charge is made. Anyone who is unwilling to do this certainly has no grievance which is worthy of consideration.

The Limits of Surface Transportation in Cities

It is becoming a serious question now in most of the large cities of this country as to whether there is a point of maximum possible growth of city transportation, that is, of gross receipts, and when this point will be reached. Given a particular system, an increase of its traffic is possible in only four ways: By carrying more passengers per car; by adding more cars; by running them at higher speeds, and by adding new routes. At the present time each one of the first three of these methods has reached its possible maximum in many, if not most, of the largest cities on certain routes. The length of the car at present standard in most cities is about as great as one conductor can take care of, so that there is no opportunity of adding to the passengers per car. The maximum number of cars which can be operated is, of course, restricted by the number which can pass the busiest intersection or crossing on the route. Finally, the highest speeds attainable by electric cars in city streets seem to have been reached in most cases, in view of the conditions on the highways, the number of stops to be made, etc., although there is a possible increase attainable here, where only two motors are used per car, by a gain in the quickness of acceleration when all four axles are motor driven. It would seem, then, that independent of the natural increase in population which a city may enjoy, the gross receipts of a railway company, under the conditions named, certainly so far as its main thoroughfare or main thoroughfares are concerned, will be reached when the conditions mentioned above are fulfilled, unless some steps are taken in the direction of the fourth alternative. An increase in its suburban mileage, where the naturally objective point of travelers on such lines are places on the already congested division, will only aggravate the trouble, so that would-be passengers will be forced either to walk or to patronize a parallel steam railroad, which may not be so convenient, so far as schedules or termini are concerned, for their particular purpose.

The latter fact that people will patronize a less convenient and accessible route, if by so doing the total time taken for the

journey is less than that on the more direct line, throws light on the only available solution of this problem, that is the installation in some way of new routes through the congested portions of the city. In nearly every city there is one main thoroughfare, which carries most of the passengers, and if it is possible to throw part of the traffic of this street on to a parallel line, the conditions will be greatly ameliorated. In other words, instead of carrying all, or the greater part, of the passengers into the principal business district on one line, it should be the aim of a railway company to transfer a good part of this traffic to one or two lines on either side of the main thoroughfare, and force passengers to use them by turning in on to these lines cars from some of the outside feeder divisions. If necessary, some, or even most, of these downtown business routes need not be extended quite to or even to within a block of the main business district, but could terminate in a loop three or four blocks away, so that the passengers could conclude their journey on foot. Such a proposition will usually at first raise a storm of protest from those who have been in the habit of taking their cars at certain points, but if the public that by the new plan better time can be made, and the cars are less crowded, the habit soon becomes formed of taking the car at the new terminus, even if it involves a slightly longer walk.

When all the available room on the surface, including these side streets, is occupied, the only final solution is, of course, to go underground or overhead. The train density can, of course, be much greater under these circumstances than on the surface, as one line on a different grade will, naturally, be able to take care of the same traffic as several surface lines. This is, of course, however, only an alternative to be adopted as a last extremity.

One possible method still remaining is to install four tracks on the main thoroughfare, provided it is broad enough. We know that a proposition of this kind would usually excite a good deal of opposition at first, but its advantages in the way of rapid transit are so patent that if it can be shown that such a step would be a manifest benefit to the community at large, a sober second thought would undoubtedly result in its acceptance. Where two companies operate in the same city over a broad avenue, it is by no means uncommon to have four tracks through the street, and there is no less reason why one company should not operate four tracks, if four are required. The inside tracks could be reserved for the long distance cars, and while stops would have to be made to receive passengers, in leaving the city and to discharge them on the in trip, such stops would not have to be so frequent as on the outside tracks, which would be reserved for the shorter-haul passengers. In some respects it might be claimed that this arrangement would introduce an element of danger to persons waiting for or leaving the cars on the inside tracks, as such passengers would be obliged to cross an active track to reach the cars they desire; but there are many streets in this country containing four or more tracks, notably the Bowery, in New York; Canal Street, in New Orleans, and Market Street, in San Francisco; and we have never heard that the accidents under these conditions are greater, in proportion to the mileage, than elsewhere in the same cities. It will be remembered that usually the distance for which four tracks will be required is comparatively short; that being in the congested part of the city the cars will naturally have to run at a slow rate of speed, and that the public soon learns, in cases of this kind, to take such additional precautions against injury as are required, assuming that any further care is necessary to avoid accident. There are many cases where the installation of four tracks on a congested city street is perfectly feasible, and where such a step would almost double the carrying capacity of the line, and at the same time accomplish wonders in increasing the speed schedule. It may not be the best plan to follow if other parallel streets are available to which a part of the traffic can be diverted, but in the absence of such an alternative it certainly presents the most logical solution of our modern city problem of car congestion, without compelling a recourse to either the elevated or sub-surface road.

A Plan to Reduce Congestion on the Brooklyn Elevated

The elevated system of the Brooklyn Rapid Transit Company has for some time been more or less cramped for operating space on the Myrtle Avenue division reaching to the Brooklyn Bridge. A large part of this congestion is due to the fact that the Long Island, Fifth Avenue, Bay Ridge, Borough Park, and other trains which reach the suburban districts have been required to

sufficient to handle all the traffic which will be diverted from the elevated by the closing of a few stations. In an interview with General Manager Brackenridge, published in the *Brooklyn Daily Eagle*, he is quoted as follows: "We want to build this incline that the running time on both roads may be reduced, and more especially that the congestion of trains on Adams Street may be avoided. As things are now, the headway on Myrtle Avenue below the point where the Fifth Avenue and Long Island trains turn in is forty-five seconds. This cannot be lessened. On the Kings County, on the other hand, the headway now is about three minutes. The Fifth Avenue trains can easily, therefore, be run in between the Kings County trains. The incline is, of course, both practicable and feasible. Naturally there is opposition to our closing some of the elevated stations. The man who has his store just in back of the places where the outlet from these stations is does not care to see them closed up. But they don't use the elevated roads a great deal, and even if they did, are they not an insignificant part of the mass of the people who desire to get to Manhattan in as little time as possible? Don't you think it is a small and petty interest that will oppose itself to the good that is to be attained by the great majority of the people?"

There are at present two stations near the junction of Fulton Street and Flatbush Avenue. It is intended after making the proposed connection to build one large union station at this point. When the two lines were built they were operated by separate companies, and individual stations were natural, but now that they are both under one management a union station would serve the interests of both railway companies and its patrons to much greater advantage.

The illustrations which are presented herewith show the great care with which the officials of the Brooklyn Heights Railroad Company work out any proposed change in the system. It shows the intended change in a most perfect manner. The inspection of maps and elevations of the structure is very often misleading to people who have not had a technical training, but such realistic views as the accompanying have considerable



FLATBUSH AVENUE AND FULTON STREET

cross Fulton Street and use the Myrtle Avenue and Adams Street line as the only means of reaching the Bridge. The traffic on Fulton Street, which accommodates the East New York service, formerly the Kings County line, is not heavy enough to cause any delay in lower Fulton Street, even though it should be increased to a considerable extent, and a plan has been proposed whereby the Fifth Avenue and other trains using the Flatbush Avenue branch may be diverted to the lower end of Fulton Street, and so reach the Bridge without using the congested Myrtle Avenue road. In order to better discuss this proposition, the engineers of the company have drawn out the connecting link between the Flatbush Avenue and Fulton Avenue lines, as shown in the accompanying engravings.

The two roads where they cross at Flatbush Avenue are at different grades, the Flatbush Avenue line passing under the Fulton Street road. In the illustration, the observer is looking south on Flatbush Avenue, and as will be seen, this road after passing under the Fulton Street structure rises considerably in level, quite a grade being now present at this point. In this way the difference in level between the two ends of the proposed connection is not as great as at first thought would appear necessary, it having been calculated by the engineers that by carrying back the intersection but a few hundred feet an incline of 2 per cent is quite sufficient to reach the upper level of the Fulton Street main line.

In conjunction with the building of the new connection, it is intended to close up a number of stations on the elevated road so that the trains as they approach the bridge may be of a strictly express nature. This has caused considerable disturbance among the merchants of the territory affected, but it is thought that the greatly reduced schedule which would be made possible by the elimination of a number of these stops which are of but little importance either on the uptown or downtown tracks, will greatly benefit the majority of the elevated's patrons. It is the policy of the Brooklyn Rapid Transit Company, under the peculiar conditions which exist in the operation of its system, to follow the rule of providing the greatest good to the greatest number, and it claims in this connection that the surface cars are quite



PROPOSED CONNECTION OF ELEVATED ROADS

effect in preventing undesirable opposition to improvements by persons who cannot understand the benefits to be derived, and who are fearful that some encroachment will be made on their rights. It is expected that work on this new connection between the Flatbush Avenue and Fulton Street structures will be commenced in the near future, and a hearing is now being held before the New York State Railroad Commissioners to legalize the abandonment of the stations which it is desired to discard.

The Use of the Train Diagram in Determining the Best Location of Power House and Sub-stations for Interurban Railways*

BY EDWARD P. ROBERTS

The special object of this article is to indicate something of the value of a train sheet, and as supplementary to the presentation it seemed advisable to present a brief, and necessarily incomplete, outline of the more usual factors to be considered in connection with the design of an interurban electric road.

A train diagram, sometimes called a "despatcher's diagram," is a graphical representation of the ordinary tabulated time-table of a railway. The path of each train is so drawn as to show not only its time of arrival and departure from the various stations, but also the location of each train at any and all times. The length of the road and distances between stations are plotted to scale as abscissæ, and the ordinates represent duration of time—horizontal lines being drawn on even hours, halves or quarters. Diagonal lines are drawn to represent the paths of the trains.

Referring to Fig. 1, "A," "B," "C," "D," etc., are used as the names of towns, the respective distances between which are indicated and drawn to scale. "A" is a large city, and the interurban cars were to operate over a portion of the city lines, and the schedule speed of the interurban cars while on such lines was necessarily taken the same as that of the city cars. Commencing at 12 o'clock the hour and half hours are represented by horizontal parallel lines equally spaced—the lower lines representing the later hours. The schedule of the car starting from "A" at 12 o'clock is shown by the diagonal line descending from the upper left-hand corner of the diagram—this car passes "B" at 1:05 o'clock, "C" at 1:20 o'clock, etc., arriving at "H," the end of the road, at 2:55 o'clock. The return trains are likewise represented, except that the diagonals slope in the opposite direction. The figures herein given are taken from diagrams which were used in the actual design of roads, the length of original diagrams being from 18 ins. to 36 ins. in length.

The making of the profile and the train diagram are one of the first steps in the design of the equipment of a road, and the diagram remains a close companion of the engineer until the complete equipment is decided upon. Its frequent use will be realized by considering briefly the problems arising in the design of an electric road. A discussion of the questions involved in determining the location of the power house and sub-stations is given below, and each question is considered irrespective of the use of the diagram, the outline of discussion showing, as nearly as possible, the order followed in actual design.

The first important question arising is whether to use direct-current generators, or an alternating-current system, the latter current being converted into direct current at the sub-stations. The principal factor in determining this question is the length of the road. The practical limit in distance to which current can be economically supplied to cars at the ordinary voltage is from 10 miles to 12 miles, and if the power house be located in the middle of the road, feeding each way, this would make the usual advisable limit for a direct-current system 20 miles to 24 miles. With the modern improvements that have been made in alternating-current machinery the use of the direct-current system (even with a booster for intermitting load at one or both ends of road) would seldom be employed on roads over 30 miles in straightaway length, except when for reasons later mentioned more than one power house is used. The alternating-current system may be advantageous even on a road in the neighborhood of 20 miles in length if the traffic is heavy, and whether or not storage battery be used, but for interurban roads the traffic will seldom justify its use. For roads 20 miles or 30 miles long the decision as to whether to use direct current or alternating current requires a preliminary study, in which both designs must be considered, and in which the location of the grades and the size of the feeders necessary to climb same at the speed required to maintain the schedule will be an important factor.

Even when the length of road to be built at first does not justify an alternating-current system, the probability of future extensions may demand same. Great care must here be used to ascertain whether the apparent probability is a real one; for a design to accommodate a future extension may make an expensive and uneconomical present arrangement because of providing an alternating-current system for what would otherwise be a more economical direct-current system, considering interest on first cost or operating expense, or both.

A road the length of which would otherwise justify the use of a direct-current system may necessarily or advisably, for reasons mentioned later, have the power house located too far from the middle of the road to take care of the more distant end, and thus necessitate the use either of alternating current or of a booster, either with or without a battery floating on the line.

If, in addition to supplying the road, a considerable demand is made for light or power, the distance of such demand from the power house may be a determining factor as to the use of a direct-current or an alternating-current system. If in the case of a long road where there are several towns where exhaust steam can be used for heating purposes, the direct-current system may not be applicable, but such conditions are unusual, and require the most careful consideration in order not to be led astray.

At all times the water supply, as to quantity, quality and reliability, and the obtaining of fuel, must be considered.

Other considerations frequently arise in the design of a road that considerably affect the solution of the question under consideration, and sometimes they determine definitely the answer, but the foregoing are the most usual determining factors.

The location of the power house, and the sub-stations, if alternating current be used, may be discussed for both direct current and alternating current under the same general heads, but the application of the reasoning in the two cases makes it preferable to consider each separately.

Since a road with more than one direct-current power house is

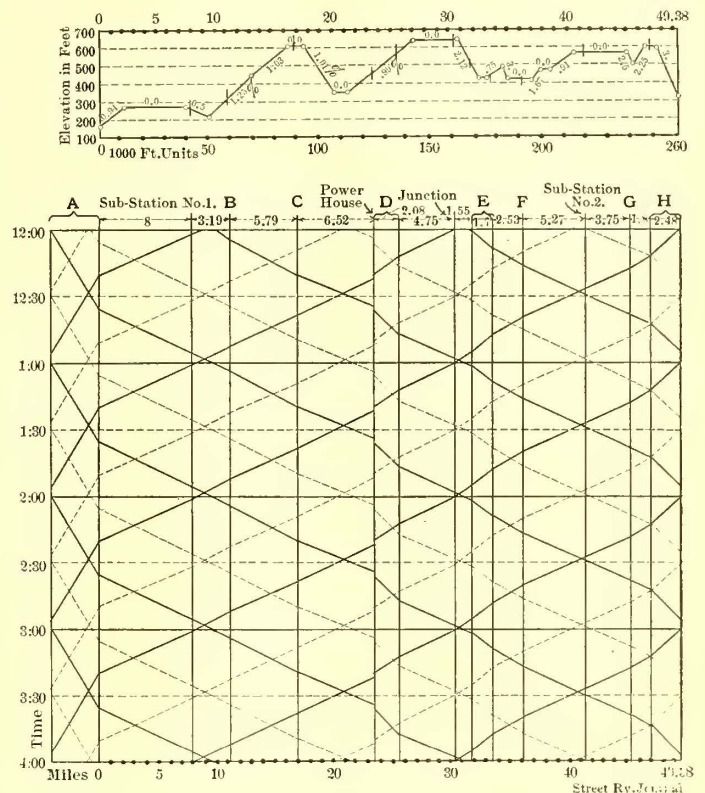


FIG. 1 — TRAIN DIAGRAM AND ROAD PROFILE

to-day, and is becoming more and more a design to meet special and unusual conditions, in the following only one power house will be considered for direct-current roads. If the use of direct-current generators is decided upon, the economy of power demands that the power house be located at the center of gravity of the system. The center of gravity is continually shifting with the changing location of the cars on the road, and depends upon the amount of current each is taking, and this rapidly varies between zero and a maximum of two or three times the average. From the train diagram this center of gravity can be readily determined for different location of cars, and an average found for most economical location of power house. Where the road is to have a future extension not of sufficient length to justify an alternating-current installation, due consideration must be given such extension when locating center of gravity. Sometimes, when the road is not straight, the feeders may take a short cut, and same should be noted when determining center of gravity. Frequent excursions, or high speeds on a particular section of the road, disturb the usual center of gravity, and if the same be near the end of the road and a booster be necessary to keep up the voltage, the economy of the boosters should be considered offsetting the cost of energy, and interest, depreciation and repairs on machinery against interest on copper.

A most important factor in locating the power house is the practical voltage, and this, at present, is 450 volts to 550 volts at the motor. The power house at the center of gravity, as above determined in considering economy of power, will give the best distribution of voltage on the line where the load is evenly dis-

* Abstracted from the Stevens Institute Indicator.

tributed. Frequent excursions on a particular section of road not only disturb the center of gravity, as above noted, but if same be distant from the power house, the effect upon the voltage may become a serious matter. Likewise a lowering of voltage, due to high speeds on a distant section of the road, is more objectionable from the standpoint of voltage regulation than from that of economy of energy, because the low voltage cuts down the speed and interferes with the operation of the road. A long, steep grade, or the passing of cars at a distance from the power house, injuriously affects the voltage regulation. Excursions, high speeds, steep grades, passing of cars, etc., demanding large currents on a distant section of road, should be considered in the light of voltage

power house. If it is practicable to have a spur to the power house from such road as is the natural coal road run, and thus avoid all other switching charges, it is, of course, advantageous because belt line charges, transfer charges, etc., add materially to cost of operation.

With the use of the alternating-current system, the question arises as to how many sub-stations shall be employed. This can be approximately, and sometimes comparatively readily decided by considering only the straightaway length of road, and the practical limit to the distance of feeding direct current. If the question seems to be between two designs, one employing more sub-stations than the other, then the details of the financial side of the question must be worked out—the additional labor, depreciation, repairs and interest in the one design being compared with that of another.

The number of sub-stations must be considered in connection with the best location for the power house, and also depends upon the location of the grades and the crossing points, and especially the location of any branch lines.

The location of power house and sub-stations for the alternating-current system depends upon the same general principles as discussed for the direct-current system, but the application becomes more complicated. To deliver power with the greatest economy, the most advantageous division of the road into sections, each to be fed by a sub-station, is of great importance. It is evident that the longer a section is, the better the load factor will be on the station feeding such section, but the length of the section is limited by the distance the direct current can advisedly be fed. If the road is branched, the load factors will be improved on a station if same can be placed at the junction.

Where more than one sub-station is used, it is evidently advantageous, if otherwise not inadvisable, to locate the power house at the center of gravity of the transmission system.

The advisable minimum direct-current voltage to be furnished to the car motors is an important factor in determining the number of divisions in the road, and what has been said under this head relative to the location of the power house for direct current applies equally well for the alternating-current system, except that in the latter case a division is considered instead of the whole road. However, a difference should be noted in that where two stations are tied together with direct-current feeders, each sub-station takes more or less of the load beyond the half distance from same, and, therefore, for the same cross section or feeder, the voltage is better maintained than would be the case for a direct-current power house feeding one-half the length of such section.

In locating the power house for a direct-current system, the possible locations are usually comparatively few, but in locating the sub-stations for an alternating-current system it is generally practicable to place same at almost any point along the road, and

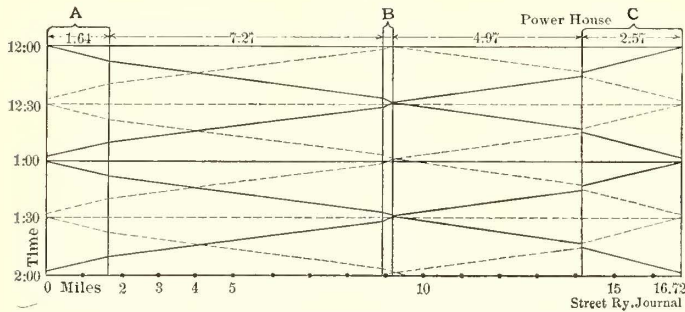


FIG 2 —TRAIN DIAGRAM WITH POWER STATION AT END OF ROAD

regulation when locating the power house, a distinction being made in the effect they produce as viewed from the standpoint of economy of energy and of the regulation of voltage.

Many and varied questions will arise affecting the economy of operation for different locations of the power house. Two important factors in the operation of a road are:

First.—The convenience of the power house being located near the car house and general offices.

Second.—The advantages of same being near the principal town or city on the road. The first cost is important in locating the power house, but ordinarily this will agree approximately with the location as decided by economy of power and voltage regulation. Sometimes the problem becomes more difficult in deciding between two or more designs which involve the use of boosters, storage batteries or more copper and a different location of power house for the various designs. Such designs must be worked out more or less in detail for comparison.

The cost of real estate may (though not often for interurban roads) affect the location of the power house, and shift it from where it would otherwise be best located. For this reason it is

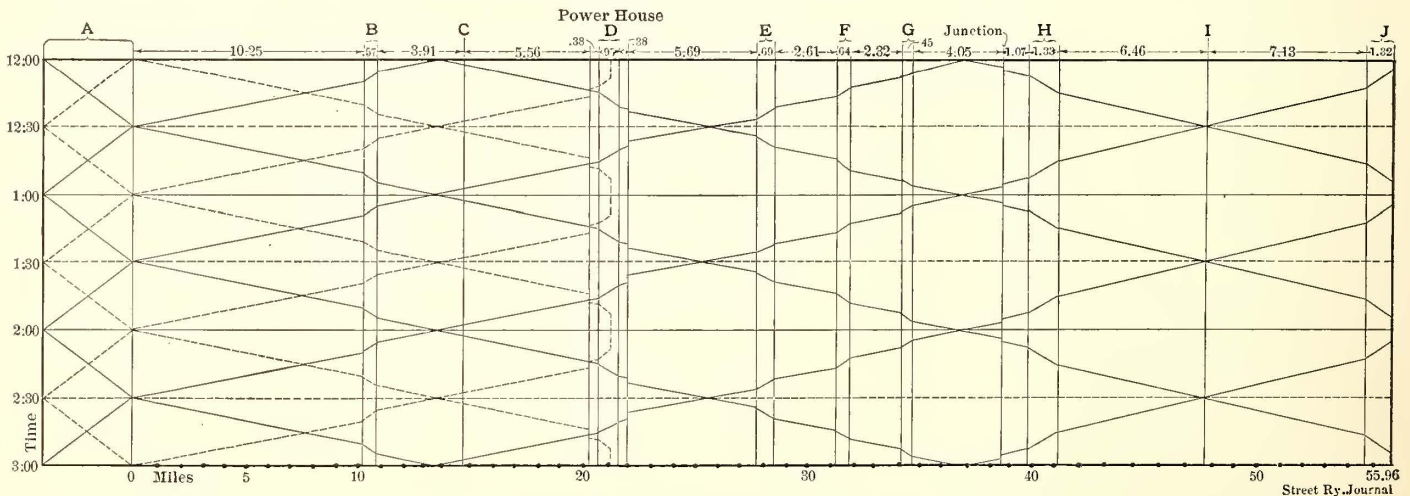


FIG. 3.—TRAIN DIAGRAM FOR ROAD WITH A BRANCH

seldom placed within a town or city, but located near same, and it is preferable to be outside of the city because of taxes.

The natural or existing causes for shifting the power house from a point otherwise desirable may be somewhat varied, such as a marsh, a mountain, or other obstructions to a good site, but the principal and most usual ones are the supplies of water and fuel. The former is all important, and has destroyed the practicability of many an otherwise advisable design. If the fuel is taken from a steam road, the cars may be transferred to the electric road and carried several miles without great cost, but where the coal supply is brought upon water, the transfer to cars is expensive, and, if possible, the coal barge should unload direct into the

therefore the relative first cost and cost of operation of a considerable number of possible solutions of the problem should receive more or less careful consideration.

The economy of operation is very closely allied to the first cost, and must be considered in conjunction with same—the interest on the first cost being balanced against the expense of operation, while depreciation, repairs, etc., are given their proper weight according to the nature of investment called for by the respective designs. What has been said for the direct-current system relative to the economy or convenience of operation in the grouping of building and proximity of same to towns is equally true for the alternating current. There also arises here an additional advan-

tage in having the sub-stations placed in the towns along the road when baggage is to be handled and tickets sold, for the sub-station attendant may act in a double capacity, since the machines require but little of his time.

The supply of water and fuel apply only to the power house and agree in general for both direct-current and alternating-current systems, except that for the latter the location of the power house may be substituted for any sub-station, and not disturb the direct-current feed—only the high voltage transmission losses being affected.

The foregoing is but a general classification of the factors most frequently affecting the location of the power house and sub-stations, though some other unusual conditions always arise on every road, and are of more or less importance, sometimes even deciding the matter definitely. For instance, the most important city on the line may demand in its franchise that the power house be located in or near the city. Exceptional problems are continually arising and the engineer must adjust his design thereto, giving due consideration to all. In order to obtain the best design he must stand in intimate relation to the finances of the road and have all the information attainable, for it is to the interest of both parties, not only that every dollar invested shall bring a maximum income, but that every chance for further profitable investment may at least be considered.

The use of despatcher's diagram has merely been suggested in the above outline of the factors determining the location of the power house and sub-stations, and a few concrete examples will show the importance of same.

The profile as shown in Fig. 1 above the train diagram should accompany each diagram in actual practice. It is given in the one figure only to show a convenient form of same, and but few remarks will be made relative to it, as the effect of grades on any road is apparent.

Fig. 2 is the despatcher's diagram of a road on which the design employed called for a direct-current generating station placed near one end of the road. In this figure is shown a complete round trip of a train leaving each end of road at 12 o'clock, and the location of all other trains between the hours of 12 o'clock and 2 o'clock. In this, as in the other figures, the path of the trains for the hourly schedule is shown by solid lines and for one-half hour headway the additional trains to be added are designated by broken diagonal lines. The initial length of the road being 16.72 miles, one direct-current power house would easily take care of the half-hour schedule, and a glance at the diagram will show that for economy of power and best voltage along line, the power house would be located at or near station "B." But the determining factors in this case were the future extensions to be made from the city "C." There are two future lines to diverge from this city, which will leave the power house located in the fork of a "Y" instead of its present uneconomical point for distribution. Also good water was to be had at this point, and a fuel supply from three steam roads. The power house is located just outside of the city limits, the offices being in the town, and the car house adjacent to the power house. Two generators and a motor booster will be installed, each generator of capacity to take care of the hourly schedule. The diagram shows the passing points of cars for hourly schedule to be at the power house and at station "B." One generator with certain feed wire can very well take care of the voltage on the hourly schedule, for when the cars are passing at station "B" there is no other car beyond, and when one car is at further end of road the second car is drawing in opposite direction from the power house. It is at the left-hand end of road where minimum voltage is obtained for motors, but 1.64 miles of the extreme end is in the town "A" where motors would be running in "series," as the high speed to which they are geared would not be permitted in town. Thus the voltage drop would be reduced and not serious in the town "A," and when this car is out of "A" the feeders have to take care of only one car for 12½ miles, which is not bad. Later, when the half-hour schedule is adopted, the diagram shows for same a crossing point ten miles from power house, and a total of four instead of two cars on the road. The second generator will be used and the motor-booster will take care of the voltage on the distant end of the road.

In Fig. 1 the power house and the two sub-stations are very well located as regards economy of power and distribution of voltage. "D" is a town of considerable size, and the power house is located within city limits of same. In the city "A" the inter-urban car will receive power from the street railway, and therefore the sub-station 1 is located nearer the power house than it other-

wise would be. The most objectionable grade is the long 3 per cent grade shown at right-hand end of condensed profile, but this is not serious because it came in the city "H" where the motors will be run in series.

Fig. 3 shows a road of 56 miles straightaway length. At the station "H," marked "Junction," a ten-mile branch leads off at right angles. A diagram was made for the branch and used in the design, but is not given here, as it simply represents one car making the round trip hourly, leaving the junction two minutes after the arrival of the last car, and on return arriving at the junction at the same time as the first car—a two-minutes' lay-over being allowed at the end of the branch, and ten minutes' lay-over of same car at the junction. Thus the arrival of the branch line car at the junction is simultaneous with that of the car coming from the shorter end of the main line, and the departure is at the same time as that of the main line car going toward the shorter end of the main line.

Evidently this road requires the alternating-current system, and

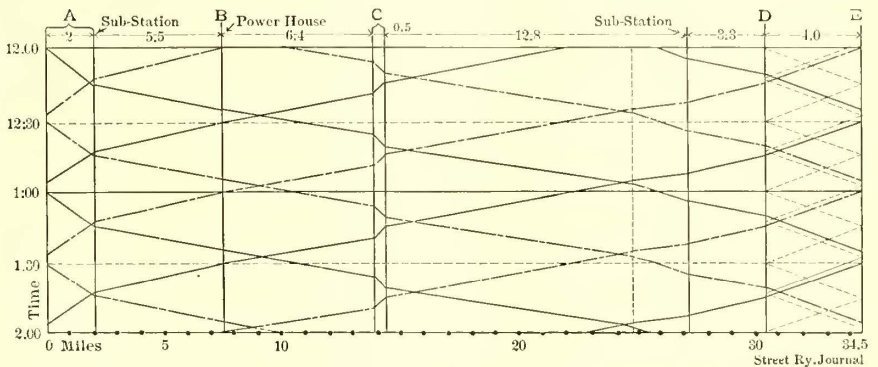


FIG. 4.—TRAIN DIAGRAM FOR LONG ROAD WITH SHORT HEADWAY

the junction tends to locate the power house near that end of the road. The hourly schedule will first go into effect throughout the full length of the road, but a half-hour headway will soon be put in only on one end of the road, as shown in the left of the diagram. This tends to locate the power house away from the junction, which, with several other factors, determined the present design. The probability of the radiation of several branches from the city "D," and the convenient supply of water and fuel, together with the advantage of being near the city, were sufficient to justify the present design. Also, the franchise obtained from this city for admission into same called for the location of the power house near the city. This location of power house also gave a convenient distance between same and a sub-station placed at the junction, which has been noted as a point of economical distribution. As it happened, the conditions of the franchise could be complied with in this case without affecting the best location of the power house and sub-stations.

The cars are taken care of in the city, and by the street railway circuit, and no serious objections were met in placing sub-station 2 approximately one-third the distance from the city limits of "A" toward the power house, as this gives good economy and voltage distribution. The sub-station is near a village on the road.

Fig. 4 is a diagram for a road 34 miles in length, and having no branches, but a quarter-hour headway is to be maintained for 4 miles on one end of the road, and power house supplied to a street railway system at the other end. The original design is obtained from several designs worked out more or less in detail, called for a power house to be placed at station "C," where water could be had, or a sub-station within 7 miles of the end at the right of diagram, and another sub-station at the city limits of "A." A small creek afforded the water supply at the power house, but the lay of land was such that a reservoir could be easily made and the same used for a lake for summer resort—thus building up traffic for the summer months.

Because of other considerations the power house had to be shifted to station "B," where water could also be had and a lake made. This makes, electrically considered, a less desirable location, for it is too far from the city "A" to use direct-current transmission to the center of the city railway system, and the distance from the power house to the end of the road in the opposite direction approximate the limit where two sub-stations are needed.

The final design called for sub-stations as shown in the diagram. The grades were a considerable factor in this determination. It so happened that the total capacity of the electric machinery in the sub-stations had to be materially increased, and the load factors of the machine decreased, more especially as to the rotaries in the power house and the sub-stations to the right.

With the power house at "C" and operating hourly schedule, one car was always fed from same, but at "B" there are two cars in this section for half an hour and none for the succeeding half hour. Also the change placed more load on the sub-station at the right, and the power house was less useful in helping at such time, as two cars between the power house and sub-station are both climbing grades. Also to maintain the voltage more feed wire had to be installed.

An important consideration when deciding as to the location of the power house, and, if alternating current be used, of the sub-stations, and if storage batteries be used, as to their location, is the amount of feeder wire. The more sub-stations the less the feeder, but also the greater the salary account. For the same first cost it is better to put money into feeder than into machinery, as the repair and depreciation account is less, and in considering this point, not only should the first cost of the sub-station machinery be taken, but also the salaries of attendants should be capitalized as representing the interest on a certain investment. The fact that greater length of sections also improves the ratio of average to maximum load must also be noted and given value for each design considered.

To design the feeder system the train sheet is invaluable. Above the profile should be marked the amperes necessary at each short section to move one car in a certain direction over such portion at the required speed, and below the profile the amperes necessary to move same in the opposite direction, and at the base the total necessary for the train schedule desired; from this, and not forgetting the track losses, the feeder system can be accurately planned.

Many details may be placed on a diagram, such as turnouts intermediate to the regular passing points of trains, difference in speed due to long grades, and many other matters the usefulness of which suggest themselves to the designer. The amount of useful data that can be placed on a diagram of convenient size, and thereby made a convenient means of keeping the details of a road, makes the diagram most useful memoranda for the engineer, after having served its purpose as a tool when deciding as to the best location of the power house and sub-stations.

New Road Between Providence and Fall River

The Providence & Fall River Street Railway Company is one of the latest roads of James F. Shaw & Company, and has been in operation since June, carrying passengers between Fall River and Providence by a direct interurban trolley line without change of cars. The length of track is 12.57 miles, including sidings, and the officers are: President, John J. Whipple; secretary and treasurer, George A. Butman; general manager, James F. Shaw; purchasing agent, B. D. Sumner; superintendent, George P. Dole, Swansea, Mass.

The cars of the company leave Market Square, Providence, under a traffic agreement, running over the tracks of the Union Railroad, and reach the State line in about twenty-two and one-half minutes. The second section is from the State line through Seekonk, Rehoboth and Swansea to Somerset, a distance of 10 $\frac{1}{4}$ miles, which is made in thirty minutes. The cars run from Somerset via Slade's Ferry bridge to City Hall, Fall River, over the tracks of the Old Colony Street Railway Company, the schedule calling for twenty-two and one-half minutes. The total running time between the centers of the two cities is one hour and fifteen minutes, and the fare is twenty-five cents. There is also a branch from Swansea Center to Warren, R. I., where connections are made with the Providence and suburban lines for Crescent Park, Riverside and all Providence River resorts.

Of the 10 $\frac{1}{4}$ miles of main track a little over one-third is operated over private right of way, owned by the company. The track is laid with 60-lb. T-rails, with Weber joints, are double bonded with 0000 bonds, and are laid on ties, 6 ins. x 6 ins. x 7 ft., laid 24 ins. between centers. The overhead construction is flexible bracket throughout, with 0000 grooved trolley wire, held by General Electric mechanical ears. Power is taken from the Barrington station of the Providence Suburban Company, using 500,000 circ. mil cables.

The rolling stock consists of ten twelve-bench open and six vestibule closed cars, mounted on Peckham double trucks, and equipped with G. E.-67 motors, four-motor equipment and Christensen air brakes complete. The company also owns three Taunton snow plows.

The contract for electric headlights and signal lamps for the Manhattan Railway equipment has been placed with the Dressel Railway Lamp Works, of New York. The order amounts to over 4800 lamps.

The Reading Sunday Case

The decision given in the prosecution of William Gottshall, an employee of the Reading Union Traction Company, from operating a car on Sunday, in what is popularly known as the Reading Sunday Case, and which was published in our issue of Nov. 2, has been appealed. The original decision was in favor of the railway company, and the case which is now before the Superior Court is to be tried in Philadelphia.

The argument of the attorneys of the railway company to confirm the decision cover several legal points connected with the prosecution, and also the broad question of the definition of a "work of necessity," as contained in the Sunday statute. As the wording of this statute does not differ greatly from that in many other States, the argument, which is given below, will be of general interest:

THE SUNDAY LAW

The act of April 22, 1794 (3 Sm. L. 177), commonly known as the Sunday Law, enacts in sec. 1 that,

If any person shall do or perform any worldly employment or business whatsoever on the Lord's Day, commonly called Sunday (works of necessity and charity only excepted), * * * * every person so offending shall forfeit and pay four dollars, etc.

The act does not define worldly employment or business, nor does it define the exceptions, wisely and indeed necessarily leaving the interpretation of the law to the courts, in its application, from time to time, to particular cases. There is a proviso that limits the power of the courts, by stipulating that the act "shall not be construed to prohibit the dressing of victuals," etc., but this proviso only emphasize the purpose and intent to leave to the courts the construction in all other cases.

This being obvious, how shall the courts, in the administration of justice for the common welfare, determine what is a work of necessity on the Lord's day? a day set apart for rest from ordinary labor, and for the observance of religious offices and services, and recognized as one of the most salutary regulations of our social system.

In physics and metaphysics, the definition of necessity is absolute, as

(1) Being such in its nature and conditions that it must exist, that cannot be otherwise, impossible to avoid, inevitable.

(2) Being such that it must be believed; necessitated by the constitution of the mind; transcendental; intuition; as a necessary idea is one the contrary of which cannot be entertained by the mind.

But such is not the legal definition or interpretation. The word necessary in law is a flexible term and not absolute, depending upon the conditions and circumstances of each particular case to which it is applied.

In the familiar cases of alimony or other allowances, the necessities of the beneficiary are determined by the court according to the person's financial or social condition, and not merely by such things as are necessary to sustain life. So in granting licenses to sell liquor, the law stipulates "that the place to be licensed is necessary for the accommodation of the public," but in the interpretation of that law we know necessity is given a very broad and liberal construction, very far from being absolute.

The reason, however, for the liberal interpretation of this last-named statute is that the necessity is not that of the individual who prays for the license, but for the accommodation of the public, and that same reason distinguishes the case at bar from the ordinary cases of individual employment.

It may be no more necessary for an individual, as such, to conduct or operate a street car on Sunday than to build a house or engage in any ordinary work of manufacturing or merchandizing; but a conductor is a public servant, and, as such, the inquiry is not as to his own necessity, but that of the public which he serves.

How, then, is the court to determine the public necessity? The only answer is—from the well-settled and established customs and habits of the people of all classes and conditions.

It was quite unnecessary to offer evidence to show what is a street car, or what are its uses, or what labor is required to operate it, or to what extent the public uses these instrumentalities for their transportation on Sunday as well as on other days. It is a subject of such notoriety and universal knowledge as to render testimony superfluous, and if the courts will take notice of any existing political, social, and economic conditions, they need not be informed of the essential relations of street railways to all modern cities. It would be as useless as to offer to prove the existence of the cities themselves.

Nothing has so tended to civilize mankind or to render communities homogeneous, as cheap and easy methods of transportation, and, without commenting upon the indebtedness of commerce and the marvelous prosperity of our country to these facil-

ities on a larger scale, it may well be noted that our street railway systems, within the last forty years, have relieved the congestion of our cities and scattered the people from center to circumference, from crowded and unwholesome tenements into comfortable homes in the suburbs, extending the areas of populous towns almost indefinitely; the street railway system of Reading covering a trackage of more than 50 miles.

With the convenience, economy, and comfort of these facilities, however, has come a corresponding dependence upon them, and to suspend their operation on Sunday or any other day amounts to a public disaster. An illustration of this was afforded in Philadelphia some years ago, when a turbulent and disorderly set of men violently interrupted the street railway service for several days, and as a consequence thereof the business of the city was practically suspended, the City Councils could not get together to hold their appointed meeting, and on Sunday the churches were empty because the congregation were deprived of their accustomed means of reaching their places of worship.

The learned judge of the court below recognized all this, and said the court would take judicial cognizance of what a street car is, and of the social conditions of the present day, without requiring proofs.

At the hearing, counsel for appellant, then appearing for the prosecutor, was unable to produce any authority to show that operating a street car on Sunday had ever been held to be a violation of the act of 1794, or that in all the forty years last past, such a construction had ever been made.

The three cases cited in appellant's paper book were the only ones presented to the court below at the hearing.

The first, *Johnston vs. Commonwealth*, 22 Pa. 109, decided in 1853, was the case of the driver of an omnibus. That was a private enterprise, and not the exercise of a franchise. The driver owed no duty to the public and it did not appear that the public had any interest in or was in any way dependent upon this single vehicle for the necessity of transportation. The court, indeed, treated it as entirely a private venture and likened it to the opening of a tavern, a store, or workshop on Sunday. It is manifest, therefore, that the case does not apply, without regard to the altered customs and habits of the people which have ripened into necessary conditions since that time, nearly half a century ago. The maxim, "*Tempora mutantur et nos illis mutamur*," applies, and the courts in interpreting ancient statutes must temper them to the changed conditions of the times, and even if it be necessary to avoid a great mischief, declare them obsolete and ineffectual.

In *Wright vs. Crane*, 13 S. & R. 452, Chief Justice Tilghman says:

It must be a very strong case to justify the Court in deciding that an act standing on the statute book, unrepealed, is obsolete and invalid. I will not say that such a case may not exist; where there has been a non-user for a great number of years; where, from a change of times and manners, an ancient sleeping statute would do great mischief if suddenly brought into action, where a long practice, inconsistent with it, has prevailed.

The extreme case of declaring a statute invalid does not, of course, arise here; but, if the interpretation of the statute in *Johnston vs. Commonwealth*, supra, had any application, then "the change of times and manners" since that decision would warrant the court in disregarding it.

The second case, *Commonwealth vs. Jeandell*, 2 Grant 506, decided in 1859, was not a case under the act of 1794, but of a street car driver arrested and bound over to the Quarter Sessions for a breach of the peace, and needs no comment.

The third case, *Sparhawk vs. Union Passenger Railway Company*, 54 Pa. 401, was not a case under the act of 1794, and therefore does not apply.

That case was a bill in equity by a property owner, to restrain the company from running its cars on Sunday, and the court decided that the complainant had no standing in equity and refused the injunction prayed for.

Although that case did not involve the question raised here, viz., the interpretation of the statute, and therefore could not decide it, the subject was discussed in all its bearings and separate opinions were filed by several of the judges. Mr. Justice Read discussed the question of public necessity involved in the interpretation of the act of 1794, in the light of conditions existing when the case was decided in 1867, and an extract from his opinion concurring in the refusal of the injunction, seems, therefore, appropriate. He said (450):

Having established the absolute necessity, in the present state of our city, of passenger railways, and the utter impracticability of doing without them, why should there be one day in seven in which that necessity must cease, and not operate? All that ceases on Sunday is common toil or labor, and the intention is to protect the laboring man, who earns his bread by the sweat of his brow. Besides worship and prayer, there are hours for healthful and innocent recreation. These are protected by the constitutional provision.

We have public squares and a great public park owned by our fellow-

citizens, and intended for their benefit, and that of their wives and children. Clergymen, lawyers, physicians, merchants, and even judges, have six days in the week in which they may enjoy all these and other similar advantages, and which they may do so cheaply by means of the passenger railways. The laboring man, the mechanic, the artisan, has but one day in which he can rest, can dress himself and his family in their comfortable Sunday clothes, attend church, and then take healthful exercise; but, by this injunction, his carriage—the poor man's carriage, the passenger car—is taken away, and is not permitted to run for his accommodation. The laboring man and his children are never allowed to see Fairmount Park, a part of his own property.

The cars are required on Sunday to carry persons to and from church, and are not these church-going people entitled to have them? The necessity for this clearly exists on Sunday, and so it does enable persons to partake of the fresh air in the squares and parks and in the country.

But we should not oblige the working man to confine himself to his own narrow, stifling room, and forbid him to enjoy the fresh air of heaven. We have three long months of summer which the laboring man cannot escape. Merchants, manufacturers, lawyers, judges and physicians run away from them, and even clergymen leave their churches, and go to the seashore or to the mountains, to avoid the torrid months of July and August. Shall not the operative have the poor privilege allowed him of a passenger car on Sunday?

The same necessity exists on Sunday as on any other day, enhanced by the fact that you are preventing thousands from attending houses of religious worship.

I place my opinion, therefore, of the entire legality of running passenger cars on Sunday on the same footing with the Sunday trains of the steam railroads, as being clearly within the exceptions both of necessity and charity. The mail protects nothing but the mail car on the steam railroads, and many of the trains carry no mail at all.

I am deeply impressed with the necessity of a proper observance of Sunday as a day of worship and prayer, and of rest from labor; but living under the new dispensation, and not under the old dispensation, I feel no inclination to turn the Lord's day into a *Jewish Sabbath*.

The refusal of the court to enjoin the company from running its cars on Sunday, after such an exhaustive discussion and consideration of the subject, was accepted as a final determination of the matter, and the question has never since been raised in any form.

That was thirty-four years ago, and although the universal custom of using street cars on Sunday is not immemorial, the present generation is "to the manner born," and the custom has settled into a habit as fixed and essential to the comfort and happiness of the people as any other which modern civilization has contrived. If the street cars may not run on Sunday, then the telephone must be silenced, the electric light extinguished and towns left in darkness or remitted to the methods of a hundred years ago. Questions of public necessity must be resolved by the public. The common usage is the only evidence upon which the court can reach a conclusion. The whole system of our common law is based upon the customs and habits of the people, and the laws have changed with the varying conditions of society from time to time. The courts have always recognized this and conformed their decisions to the exigencies and requirements of the public for whose welfare the laws are administered. This is notably the rule for the English-speaking countries of the world, but it is in some measure the rule for all nations. Wolsey, in the introduction to his international law, says:

Customs within each country existed before statutes, and so observances come imperceptibly and control the conduct of a circle of nations.

We have shown that in Pennsylvania the usage has obtained, by common consent, without a declaration of the courts, and the same is true of nearly all of the States, for the street cars run on Sunday in all the cities of the country without exception. In Kentucky and Georgia, however, where similar statutes are in force, the courts have had occasion to interpret the meaning of necessity. In *Commonwealth vs. Louisville & Nashville Railroad Company*, 44 Amer. Rep. 475 (1882), it was held that:

It is lawful for a railway company to run trains for passengers, mail and express freight on Sunday. It is a work of necessity.

Mr. Justice Pryor, in delivering the opinion of the court, said:

The law regards that as necessary which the common sense of the country, in its ordinary mode of doing business, regards as necessary. The change in the habits and customs of the people, and the mode and character of transportation and travel, make that a necessity at this day that half a century since would not have been so regarded.

So in reference to the use of street railroads in towns and cities on the Sabbath day. Those who have not the means of providing their own horses or carriages travel upon street cars to their place of worship, or to visit their friends and acquaintances; and such is the apparent necessity in all such cases that no inquiry will be directed as to the business or destination of the traveler.

In *Augusta Railroad Company vs. Renz*, 55 Ga. 126, the court said:

In view of the dependence of the people for travel, in the cities where street railroads have been established, by that mode of conveyance in going

to church, visiting the sick, etc., we are not prepared to hold that the running of street railroads in cities and the vicinity thereof, where the same have been established, on Sunday, is not a work of necessity, as contemplated by the 4579th section of the act, and that it is unlawful to run on that day.

In the case of *McGatrick vs. Wason*, 4 Ohio St. 566, it was held:

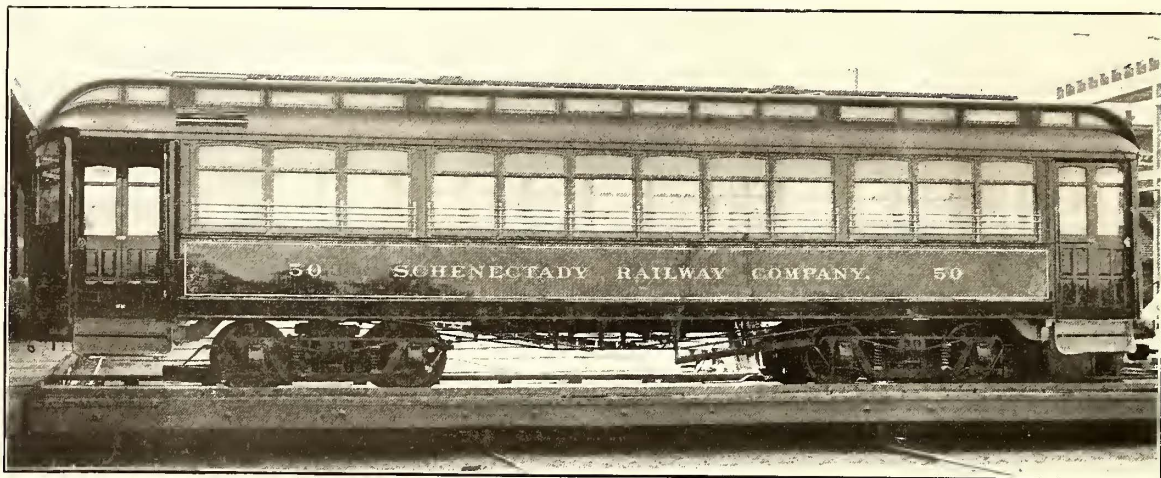
That works of necessity are not limited to the preservation of life, health and property from impending danger. The necessity may grow out of, or indeed be incident to, the general course of business, or even be an exigency of a particular trade or business, and yet be within the exemption of the act.

In *Philadelphia, W. B. & R. R. Co. vs. Steam Towboat*, 23 Howard 209, the court said:

We have shown, in our opinion delivered at this term, that in other Christian countries, where the observance of Sundays and other holidays is enforced by both church and State, the sailing of vessels engaged in commerce, and even their lading and unloading, were classed among the works of necessity which are excepted from the operation of such laws.

Schenectady Railway's New Cars

A recent order of motor cars for the Schenectady (N. Y.) Railway Company, given to the St. Louis Car Company, comprises six cars, each 45 ft. 4 ins. over all. The car bodies proper are 34 ft., with 5-ft. vestibules, and are mounted on the St. Louis Car Com-



NEW CAR WITH SMOKING COMPARTMENT FOR SCHENECTADY

pany's latest patent, No. 23, truck. An interior partition is placed in the car to form a smoking compartment, which contains four seats on each side. The car has twelve windows on each side, with four double-post spaces, two in the center and one at each end. The ends of the car have stationary glass each side of the doors. The cars have double doors, with stationary glass, and the edges of the doors are finished with tongued and grooved brass strips. The door tracks are arranged so that the doors will work separately, and not automatically. The vestibules, which are 5 ft. long, have three drop sash. The center opening of the vestibule is one sash, and the other two openings have a top and bottom sash. The vestibules have double folding doors at each side. The plate glass used in the windows is imbedded in felt on all edges. The ventilator is of white florentine. Each car has four folding gates, which are to be used in summer, when the folding doors are removed from the car. The finish of this car is of mahogany, and the trimmings, both interior and exterior, of solid bronze. Bronze underguards are placed outside of the car. The trucks on which these cars are mounted have 33-in. wheels, with 3-in. tread and 7-in. flange.

Illinois Franchise Tax Suit

A bill has been filed in the United States District Court at Springfield, on behalf of the Chicago Union Traction and the Chicago Consolidated Traction Companies, for an injunction to restrain the State Board of Equalization from reassessing the companies for the year 1900. The bill will apply not only to these two companies, but to all their underlying corporations as well.

This step will take the whole franchise tax matter before the United States Courts, and, whatever the ultimate result, probably will keep the question open for a long time.

Only the assessment for the year 1900 is mentioned in the bill, but the idea is that if a decision is obtained against a reassessment for that year, it will cut off any possibility of reassessment for all preceding time. This fear of possible back taxation has been the greatest menace to the corporations.

Massachusetts Roads to Consolidate

One of the most important street railway consolidations that has been effected in Massachusetts during the past year will be consummated as soon as the necessary legal details can be arranged, and the authorization of the Railroad Commissioners secured. The interests of five roads operating in Newton are to be combined in the hands of a joint board of trustees with a view to ultimate amalgamation. The roads involved are the Newton Street Railway Company, the Newton & Boston Street Railway Company, Wellesley & Boston Street Railway Company, Commonwealth Avenue Street Railway Company, and the Lexington & Boston Street Railway Company. These roads serve the entire suburban districts west of Boston, and operate from Lowell, on the north side, to Needham, on the south, and west to Concord, connecting at six points with the surface lines of the Boston Elevated Railway Company.

The systems to be consolidated now control about 70 miles of track, and the roadbed, equipment, etc., is thoroughly modern. The earnings of the system are expected to reach over \$500,000 per year on the basis of 10,000,000 passengers carried in the past twelve months. The new organization will take the form of a

parent association with a board of trustees, the directors and officers of the various companies being the same in each case.

The originator of the consolidation is President A. D. Clafin, of the Commonwealth Avenue Street Railway Company, who has been seriously considering the matter for some time past. The consolidated companies will be known as the Boston Suburban Electric Railway Company. The main offices of the company will probably be located at Newtonville, and a large power station will be erected at Waltham. Mr. Clafin will be president of the new company, and F. H. Lewis, of Brookline, will be treasurer. The consolidation has been effected without the aid of underwriters, all the stock being taken by the stockholders of the existing companies.

The company will continue the management of Norumbego Park, at Riverside, now operated by the Commonwealth Avenue Street Railway Company, and will develop a large tract of land along the borders of Bedford and Lexington, along the same line. The free transfer system now in operation will be done away with as far as possible, direct lines to the various points in the system being the ultimate object. Several new lines will be put in operation as soon as franchises can be secured.

Knoxville Traction Sold

Control of the Knoxville Traction Company, of Knoxville, Tenn., is reported to have passed into the hands of the Railways & Light Company of America. Baltimoreans are largely interested in the company, Frank S. Hambleton, of Baltimore, being president of the company; and the Baltimore Trust & Guarantee Company is trustee of a \$850,000 mortgage of the company. It was from the latter company, Hambleton & Company, of Baltimore, and Kountze Brothers & Company, of New York, that control of the road is said to have been bought. The purchasers, the Railways & Light Company of America, was organized under the laws of New Jersey, with an authorized capital stock of \$25,000,000, part of which only has been paid in. The company is empowered to do a

general engineering and contracting business, and to purchase electric railway, light and other properties. The company is interested in a number of plants in the South. The officers of the company are: J. Wm. Middendorf, president; R. Lancaster Williams, vice-president; A. H. Rutherford, treasurer; H. P. Page, secretary; E. C. Hathaway, general manager.

New High-Speed Electric Road Between Trenton and Princeton

The Trenton, Lawrenceville & Princeton Railroad, extending from the capital of New Jersey to Princeton, was formally opened for passenger traffic on Nov. 17, by the running of the first of the company's new trolley cars. The distance, 12 miles, was covered in twenty-five minutes on the first trial trip, and a schedule of twenty minutes for the entire run has been adopted.

The car with which the trip was made is one of a number ordered from the St. Louis Car Company by the Lehigh Valley Traction Company, with which the new road is identified through the interests of the late Albert L. Johnson. At several points on the road a speed of 60 miles per hour was attained.

The road is built entirely upon a private right of way under a railroad charter, and is constructed in a most substantial manner. Rails weighing 70 lbs. to the yard are used, and the roadbed has been ballasted with gravel, over which a coating of cinders is being placed.

The new road is a part of the through line from New York to Philadelphia, which the late A. L. Johnson proposed, and has been under construction during the past summer. A steam locomotive was run over the road, which is standard gage, to haul the material used in the construction, and is now used in hauling freight, which traffic already amounts to several carloads daily, although no efforts have as yet been put forth to develop this branch of the business.

Street Railway Patents

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

UNITED STATES PATENTS ISSUED NOV. 12, 1901

686,241. Car Replacer; R. E. Alexander, Forest City, Pa. App. filed Feb. 20, 1901. A double ended block having guiding grooves for directing the wheel on to the rail.

686,247. Center Plate for Car Trucks; J. C. Barber, Chicago, Ill. App. filed June 3, 1901. Abutting concave and convex surfaces, one of which is provided with radial grooves for the escape of water, dust, etc.

686,379. Side Bearing for Car Trucks; F. B. Agler and A. G. Steinbrenner, St. Louis, Mo. App. filed March 18, 1901. A carriage containing the rollers is permitted to move a limited extent against the action of the springs.

686,473. Side Bearing for Trucks; J. S. Pearce, Roanoke, Va. App. filed Aug. 17, 1901. A box containing two round-ended blocks, upon which the body bolster rests.

686,643. Vehicle Brake Mechanism; W. Winkler, Syracuse, N. Y. App. filed July 9, 1901. A gearing interposed between the drum and the brake staff for multiplying the power.

686,651. Trolley Wire Hanger; G. W. Gurten, Piqua, Ohio. App. filed March 21, 1901. Details.

ENGINEERING SOCIETIES

CANADIAN SOCIETY OF CIVIL ENGINEERS.—An ordinary meeting was held on Thursday, Nov. 21, at which a paper was read by F. P. Shearwood on "The Superstructure of the Interprovincial Bridge, Ottawa."

NEW YORK RAILROAD CLUB.—A regular meeting was held at 12 West Thirty-First Street, New York, on the evening of Thursday, Nov. 21. The paper presented was by F. J. Cole, assistant mechanical engineer of the American Locomotive Company, on "Recent Locomotive Construction and Performance."

NEW YORK ELECTRICAL SOCIETY.—The 218th meeting will be held at the College of the City of New York on Tuesday, Nov. 26, at 8 p. m. A paper on "The Electrical Operation of Modern Tools and Machinery" will be presented by Robert Lozier, of the Bullock Electric Manufacturing Company.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.—The Institute will hold a meeting on Nov. 22, at 12 West Thirty-First Street, at 8:15 o'clock, at which the general subject of distribution systems will be discussed. The meeting will

be opened by President Steinmetz, with an introduction of the topic, and a number of short papers will be presented by the following gentlemen: Louis A. Ferguson, of Chicago; Henry G. Stott, of New York; Charles F. Scott, of Pittsburgh; Harold W. Buck, of Niagara Falls; W. F. Barstow, of New York, and W. L. R. Emmet, of Schenectady. It is expected that other members of the institute will also prepare papers especially for this meeting, while a most interesting discussion will undoubtedly follow.

BROOKLYN ENGINEERS' CLUB.—A very pleasant excursion was made by the club to the new East River bridge on Saturday afternoon, Nov. 9. Through the courtesy of the Brooklyn Heights Railroad Company, the party was taken by special trolley car from the Borough Hall to the bridge anchorage. Here it was augmented by several other members and their friends, and a trip across the river over the foot bridges was made. About eighty persons enjoyed the invitation of the bridge engineers, among whom was a large percentage of ladies. On Thursday, Nov. 21, there was an informal discussion in the Club's rooms, on the subject of "Asbestos and Its Uses," introduced by F. J. Jewett, manager of the H. W. Johns Manufacturing Company. The next excursion will be made on Saturday afternoon, Nov. 23, when the work on the Rapid Transit tunnel in Manhattan will be inspected. Members and guests will meet at 2 p. m., at Fifty-Ninth Street and Broadway.

PERSONAL MENTION

MR. HUGH J. MCGOWAN, president and general manager of the Indianapolis Street Railway Company, is paying a visit to New York City, where he is staying at the Waldorf-Astoria.

MR. H. E. RAYMOND, who has been in charge of the erection of the General Electric apparatus at Sao Paulo, Brazil, returned to Schenectady a short time ago.

MR. JAMES FITZGERALD, private secretary to H. A. Everett, and A. Kittle, of Keen, Van Cortland & Company, the New York bankers, have just returned from a trip over the entire properties of the Everett-Moore syndicate.

MR. C. F. HOLMES, general manager of the Metropolitan Traction Company, of Kansas City, is taking a short holiday in the East. He has been spending the past week in New York City, where he is staying at the Holland House.

MR. WILLIAM McMILLAN, president of the American Car & Foundry Company, died in St. Louis Nov. 15, of pneumonia. He was born in Hamilton, Ont., sixty years ago, and was a brother of United States Senator James McMillan of Michigan.

MR. G. E. BARKER has resigned as superintendent of the Columbia & Montour Electric Railway Company, of Bloomsburg, Pa., to accept a position with the Union Traction Company, of Philadelphia, Pa. Mr. D. G. Hackett has been appointed to succeed Mr. Barker.

MR. ANTHONY HENRY METZELAAR was married to Miss Rae Sloman on Wednesday, Nov. 20, at the bride's home, in Coldwater, Mich. Mr. Metzelaar is manager of the Knell Air Brake Company, and the hearty good wishes of his numerous friends in street railway circles are with him.

MR. L. J. HIRT, formerly assistant chief engineer of the Metropolitan Street Railway Company, New York, and later connected with the New England Gas & Coke Company, sailed on the steamship *Buffon* on Nov. 4 for Brazil, to make an inspection of the works of the Sao Paulo Tramway, Light & Power Company.

MR. H. L. COOPER, after having successfully completed his work in Sao Paulo, Brazil, returned to this country recently, and is now in Canada investigating other water powers. Mr. Cooper's management of the hydraulic development at Parnahyba for the Sao Paulo Tramway, Light & Power Company has lasted considerably over a year.

MR. CHARLES H. MACLOSHIE, engineer of the Union Electric Railway, of Berlin; Mr. E. D'Hoop, director of the tramways in Brussels, and Mr. I. Pedrilali, chief engineer of the electric railway in Brussels, last week inspected the system of the Union Traction Company of Indiana. The visitors intend to make a thorough investigation of American practice.

MR. W. M. BROWN, who entered the employ of the Twin City Rapid Transit Company in 1892, has resigned from the company. Mr. Brown entered the shops of the company, holding a menial position, and his marked ability was rewarded by rapid advancement until he was appointed master mechanic, which position he held at the time of retirement.

LEGAL NOTES

LIABILITY FOR NEGLIGENCE

CALIFORNIA.—Collison with Vehicle—Evidence—Sufficiency.

Defendant's electric car collided with the rear end of a heavy truck drawn by a four-horse team, causing the leaders of the team to run away against the plaintiff. The conductor, who was called as plaintiff's witness, testified that the track was dry, and that a reversed current could have stopped the car in 30 ft. The result of the collision, which occurred while the car was coming down grade at a speed of more than 6 miles per hour, demonstrated that the motorman, who was inexperienced, did not slacken the speed, and that the cars were pushed more than 60 ft., half of that distance being on level ground. The driver of the wagon testified that no signal was given of the approach of the car, as stated by the conductor and motorman. Held, sufficient to sustain a verdict that the motorman's negligence contributed directly to plaintiff's injury.—(Horgan vs. Jones et al., 63 Pac. Rep., 835.)

GEORGIA.—Violation of Ordinance—Evidence—Carriers of Passengers—Diligence Required—Personal Injuries—Instructions—Unavoidable Accident.

1. Proof of facts collaterally pertinent to the issue on trial is, though they are not alleged in the plaintiff's petition, admissible in his behalf.

2. Evidence of the violation by a railroad company of a valid municipal ordinance is, if the same was a part of the *res gestæ* of an occurrence under investigation, admissible, and may be made the subject-matter of appropriate instructions to the jury.

3. It is not erroneous to instruct a jury that, relatively to passengers, it is the duty of a railway company to use "extreme care and caution," when, in connection with the words quoted, the court employs language appropriately limiting and explaining their meaning.

4. The rule of law requiring railway companies to exercise extraordinary diligence in protecting their passengers from injury applies as well to the construction and maintenance of tracks as to the operation of cars thereon.

5. A judge, in stating to a jury what are the plaintiff's contentions, may properly call their attention to any allegations of the petition which have not been demurred to and stricken therefrom, and which are supported by evidence.

6. An instruction, in the trial of an action against a railway company for personal injuries, that, if the plaintiff shows a *prima facie* right to recover, it is incumbent upon the defendant "to establish by a preponderance of the evidence one of two facts, either that it was without negligence, or that the plaintiff could have avoided the consequence of the negligence by the exercise of ordinary care," is not rendered erroneous because of a failure to charge in the same connection upon the law of contributory negligence and apportionment of damages, the more especially when the legal rules bearing upon this subject are, in connection with instructions given upon the measure of damages, fully and fairly stated.

7. When, in such a trial, the court explains to the jury what constitutes an unavoidable accident, and instructs them that if the injury to the plaintiff was the result of such an accident the defendant is not liable, an instruction in the language above quoted is not open to the objection that "it did not permit the jury to consider the defense that said injury was caused by an unavoidable accident."

8. A jury is not bound to accept as true the literal statements of witnesses, but may reject the same, when inconsistent with reason, or with facts which have been duly established to their satisfaction.

9. It is not erroneous to refuse to give in charge a written request setting forth a proposition which is an absurdity, though it may be manifest that this is the result of a palpable and unintentional error upon the part of counsel in framing the request.

10. Even if error be committed in compelling a party to produce a paper, it will not, if harmless to him, entitle him to a new trial.

11. The requests to charge not dealt with above were, so far as legal and pertinent, sufficiently covered by the general charge given in the present case. The charge as a whole was a fair presentation of the law, and embraced no error which could have been prejudicial to the defendant.

12. The evidence warranted a finding in the plaintiff's favor, and, after a careful review of the same, it does not affirmatively appear that the trial court abused its discretion in holding that the verdict was not excessive in amount.—(Macon Consol. St. R. Co. vs. Barnes, 38 S. E. Rep. 756.)

INDIANA.—Injury to Passenger While Alighting—Negligence—Pleading—Variance—Argument—Waiver of Objection.

1. A complaint alleging that a street car was stopped to allow a passenger to alight, and that while she was in the act of getting off, and before she had a reasonable time to do so, it was started, with a sudden, quick jerk causing her to be thrown, "all of which was without any negligence on her part contributing thereto," sufficiently negatives contributory negligence.

2. Under a complaint alleging that, as plaintiff was alighting from a street car, it was started forward, with a sudden, quick jerk, which threw her to the ground, it need not be shown that it was started forward. It is enough that it gave a sudden jerk, causing the accident.

3. Even if the declination of defendant's counsel to make any argument would deprive plaintiff of the right to further argument, where the court allowed each side one and one-half hours for argument, and one of plaintiff's counsel having made an argument of twenty minutes, defendant's counsel declined to present his view, the right to object to plaintiff's other counsel being allowed to make further argument is waived by defendant's counsel replying thereto.—(Citizens' St. Ry. Co. vs. Huffer, 60 N. E. Rep., 316.)

IOWA.—Master and Servant—Personal Injuries—Instructions—Earning Capacity—Life Tables.

In a suit by a servant for personal injuries, an instruction that "if you find for plaintiff, you will consider the age he would probably have reached if he had remained in good health, as ascertained by the tables of the expectancy of human life introduced in evidence," is erroneous, as making the life tables conclusive as to the "age he would probably have reached," whereas such tables are only evidence thereon.

In a suit by a servant for personal injuries, an instruction that "you will consider the extent to which plaintiff's earning power as a laboring man would be lessened and diminished by the character and nature of his injuries," is erroneous, as limiting his future earning power to manual labor.—(Trott vs. Chicago R. I. & P. Ry. Co., 86 N. W. Rep., 33.)

MAINE.—Collision—Contributory Negligence.

There is no absolute rule of law that a person riding along a street must look and listen for an approaching car before entering upon the track of an electric railway. Whether his failure to look or listen amounts to negligence must be determined from all the facts and circumstances proved.

The defendant is the owner and operator of an electric street railway, its track running along Central Street, in Bangor, at a grade of 9 ft. in the 100. The plaintiff's intestate was the proprietor of a store on the southerly side of Central Street.

On the morning when he met with the accident which caused his death he was driving down the northerly side of that street, seated in an open delivery wagon, his horse at a walk. When nearly opposite his store, he turned to cross the defendant's track in front of a car approaching on the down grade. As he turned, he had an unobstructed view of the track, and, had he looked, he could not have failed to see the approaching car.

He continued to walk his horse across the track until the front end of the car struck his near hind wheel, by the force of which he was thrown from his seat, and fatally injured. The testimony convinces the court that there was no negligence on the part of the defendant's servants, and that the intestate met with the injuries which caused his death solely by reason of his own negligence, and that the verdict for the plaintiff was manifestly wrong.—(Fairbanks vs. Bangor, O. & O. Ry. Co., 49 Atl., 421.)

MARYLAND.—Death of Party—Substitution—Street Railroads—Negligence—Jury.

1. Under Code, art. 75, sec. 25, providing that no action brought to recover damages for injuries to the person by negligence shall abate by reason of the death of the plaintiff, but that the personal representatives of the deceased might be substituted; and Id. art. 5, sec. 73, authorizing the proper party to suggest the death of either party after appeal, and to appear and prosecute or defend the same—the administrator of a plaintiff in such an action, who died after he had appealed, may be substituted to prosecute the appeal.

2. The plaintiff, four years and three months of age, was playing on a bar under and near the rear of a horse street car, which, with two or three other cars in front of it, had stopped in the street for about half an hour, when the car started forward, without warning, and the rear wheels passed over plaintiff's arm and leg. None of the defendant's employees were on the side of the car where the plaintiff was playing, or knew or had reason to think

that he was under the car, nor could they see him from their proper positions in managing the car. Held, that there was no negligence on the part of defendant contributing to the injury, and an instruction for the defendant was proper, as the defendant owed no duty to plaintiff to signal when about to start the car, or to anticipate that he might be playing under the car.

3. To entitle plaintiff to recover for injuries caused by being run over by a street car, some negligence must be shown on the part of the defendant which directly contributed to the injury complained of.

4. Where, in an action for damages for injuries resulting from being run over by a street car, there is any legally sufficient evidence of defendant's negligence, the question should be submitted to the jury.—(Siacik vs. Northern Cent. Ry. Co., 48 Atl. Rep., 149.)

MARYLAND.—Contributory Negligence—Instruction.

Plaintiff was handing a cooling board, which was 37 ins. long and 27 ins. wide, over the gate of a south-bound electric car, when a north-bound car slowly approached. The motorman of the approaching car told plaintiff to look out, and he replied, "All right," and stepped on the step of the standing car, but got down, and started alongside of it to the rear, when the motorman on the standing car told him to go around in front. Plaintiff was caught between the two cars, and his ribs fractured. Held, that it was error to modify an instruction that plaintiff could not recover if the jury should find him guilty of contributory negligence by inserting, "Unless the defendant's motorman could have avoided the accident by the exercise of due care after he saw, or ought to have seen, plaintiff's peril," since the instruction, as modified, was not warranted by the evidence.—(Baltimore Consol. Rys. Co. vs. Armstrong, 48 Atl. Rep., 1047.)

MASSACHUSETTS.—Master and Servant—Providing Safe Place for Work—Assumption of Risk—Taking Case from Jury.

1. A street railway company can not be charged with failure to provide a safe place for the conductor, by reason of a tree close to the side of the car; the location of the tracks being determined, not by the company, but by the selectmen and road commissioners of the town, and it not appearing that the company had any right to remove the tree.

2. A conductor on a street car, who has been some time in the service, and knows of the presence of a tree close to the tracks, assumes the risk of the danger therefrom.

3. The court, in a negligence case, may take it from the jury at the close of plaintiff's case, without defendant resting. His resting is necessary only that he may except if the court refuses to take it from the jury.

4. A conductor on an open street car assumes, as part of the risk of the employment, any enhancement of the danger from the presence of a passenger on the running-board along the side of the car; and it makes no difference that the passenger is a superintendent of the railroad company, superintending at the time, to the extent of having an eye on the way the car is managed, and that there are seats in the car, so that it is not necessary for him to be on the running-board.—(Hall vs. Wakefield & S. St. Ry. Co., 59 N. E. Rep., 668.)

MASSACHUSETTS.—Ejecting Passengers—Negligence.

1. A passenger on a street car, who acts in such a manner as to justify the inference that he is intoxicated, and falls into a sleep or stupor, which the conductor fails to break by shaking him, may be ejected.

2. Pub. St. c. 112, sec. 197, relating to passengers on street railways, and providing, "whosoever does not on demand first pay such toll or fare shall not be entitled to be transported for any distance, and may be ejected from a street railway car," governs wherever the railway is located.

3. Where a passenger on a street car is drunk, and can not be aroused to pay his fare, it is not the due and proper care, required of the company in ejecting him, to put him, on a dark and stormy night, in an unlighted road, some distance from buildings, but where street cars are passing in each direction and teams are likely to be.—(Hudson vs. Lynn & B. R., 59 N. E. Rep., 647.)

MASSACHUSETTS.—Crowded Car—Assisting Passenger to Alight—Duty of Conductor—Evidence.

1. Plaintiff fell, on alighting from a crowded car at a transfer point, by tripping over something on the rear platform. Plaintiff weighed over 200 pounds, and was prevented from holding to the hand rail by the number of passengers; and the conductor, who was in the middle of the car, did not assist her to alight. Held, that the evidence was not sufficient to show negligence on the part of defendant.

2. Where plaintiff was injured, while alighting from a crowded street car, by tripping over something on the rear platform, and there was no evidence that she was jostled by anyone, evidence that the button on her companion's jacket was torn off by brushing against the passengers as she was alighting just before plaintiff,

was properly excluded as irrelevant.—(Jacobs vs. West End St. Ry. Co., 59 N. E. Rep., 639.)

MASSACHUSETTS.—Carriers—Injury to Passenger.

Where a passenger, alighting from a train, slips on a banana skin, and there is no evidence as to the length of time it had been on the platform, he is not entitled to recover.—(Goddard vs. Boston & M. R. Co., 60 N. E. Rep., 486.)

MASSACHUSETTS.—Injuries to Passenger.

A carrier is not liable to a passenger for injuries received by reason of being tripped by a drunken passenger, who was being ejected from the car by the conductor in the exercise of due care.—(Cobb vs. Boston Elevated Ry., 60 N. E. Rep., 476.)

MASSACHUSETTS.—Duty to Look and Listen—Injury to Pedestrian.

The look-and-listen rule applicable to steam railroad track crossings should be extended to street railways with great caution. Whether a party is guilty of negligence in attempting to cross a street railway track without first looking and listening for approaching cars is ordinarily a question of fact.—(Riley vs. Minneapolis St. Ry. Co., 85 N. W. Rep., 947.)

MINNESOTA.—Right of Way—Collision with Street Car.

1. A street car company operating cars upon public streets and other persons lawfully occupying such streets have rights alike, in the main. The cars can not turn out, as can persons driving or walking, so that in this respect it may be said that the company has a paramount right over its tracks. Beyond that, the duties of the parties are reciprocal, and so are their rights. Except as before indicated, they are charged with the same measure of care and the same duties.

2. A certain assignment of error directed to a ruling of the court upon the admission of the evidence considered and disposed of. Held, that the court did not err.

3. Held, that, from the evidence, it did not conclusively appear that the driver of a horse injured in a collision with a street car was guilty of contributory negligence.—(Armstead vs. Mendenhall, 85 N. W. Rep., 929.)

MINNESOTA.—Negligence—Injury to Passenger—Strike.

1. A street railway company is not, as to his passenger, guilty of negligence in attempting to operate its cars during a strike of its employees, unless the conditions are such that it ought to know, or ought to reasonably anticipate, that it can not do so and at the same time guard from violence, by the exercise of the utmost care on its part, those who accept its implied invitation to become passengers.

2. Rule applied, and held, that the evidence in this case is not sufficient to support a finding of the jury to the effect that the defendant was guilty of negligence in attempting to operate its cars during a strike.—(Fewings vs. Mendenhall, 86 N. W. Rep., 96.)

NEW JERSEY.—Injury to Passenger—Negligence—Evidence.

The plaintiff sued the defendant, operating an electric street railway, for personal injuries received in an attempt to board a car as a passenger. The evidence showed that at the lower corner of a street, intersecting that on which ran the line of the railway, a group of intending passengers stood awaiting a car; that the plaintiff crossed to the upper corner, and stood there with others, as a car was approaching; that he waved his hand toward the car, which slackened its speed, but did not stop; that two passengers got safely on the car; that the plaintiff seized the hand-rail, and placed one foot on the step, and, with the other on the ground, was dragged along until he came in contact with some railroad ties near the track, in the middle of the intersecting street, when he lost his hold, and received severe injuries. The plaintiff and one witness testified that the speed of the car increased after he had taken hold of the railing; another witness for the plaintiff and several witnesses for defendant testified that there was no increase, but instead a decrease of the speed of the car. No proof was offered that the motorman in any way indicated that he meant to stop at the upper corner, and he testified that he did not notice anyone there. Held, that a verdict in favor of the defendant should have been directed, (1) because, on the facts stated, a jury could not fairly find negligence chargeable to the defendant, and (2) because, with the railroad ties in full view, the plaintiff assumed all risk of injury from them when he attempted to get on the moving car.—(Schmidt vs. North Jersey St. Ry. Co., 49 Atl. Rep. 438.)

MISSOURI.—Death by Negligence—Resulting Damages—Recovery—Right of Action.

1. No action will lie, either at common law or under the statute, in favor of parents, to recover damages resulting from the prevention of the performance of a contract by their adult son to support them, due to his death through defendant's negligence.

2. An action to recover damages resulting from the prevention of the performance of a contract of plaintiff's son to support them will not lie, the damages being too remote.—(Brink et ux. vs. Wabash R. Co., 60 S. W. Rep., 1058.)

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

WALL STREET, NOV. 20, 1901.

The enormous exportation of gold to Europe was the principal feature of the past week in the money market. Since the movement started in the last week of October, \$17,500,000 has been withdrawn, \$7,000,000 of which was taken for shipment by Tuesday's steamer alone. The causes of this outflow have already been explained; they are not to be found in any change in the commercial trade balance, which is still running heavily in favor of this country, but they represent entirely the repurchase of foreign-held securities, part of which were unloaded on this market last spring, and carried along since then by sterling loans, and part of which have issued from foreign sources during the last month or two. It is a mistaken notion, of course, to regard the movement as an unfavorable sign, for it means nothing more than that we are paying off a long-standing indebtedness abroad with gold, instead of with an excess of merchandise exports, which is no longer adequate for the purpose. It is also an error to regard the operation as being forced upon this market by Europe's money exigencies. This may have been true when gold started to move abroad a month ago, when London was hard pressed by demands from Paris and Berlin, and sought to shift the burden upon this country. But since the London market has reduced its buying price for gold to a minimum figure, and since sterling exchange at the Continental centers has risen well above the import level, it is obvious that there is no longer any compulsion about the American shipments. These shipments will probably continue some time longer, but it will be because the local market is availing itself of a favorable opportunity to liquidate its immediate obligations, and not because the condition of the foreign markets requires it. This distinction is all important because it removes whatever ground there might seem to be for uneasiness over the gold exportations. Along with this it is to be noted that so far the loss to Europe has been more than offset by treasury disbursements on account of bond redemption; by the arrivals of gold at the Pacific Coast cities, and by the return of funds from the interior, which now seems to have set in earnest. Bank reserves are likely to remain low, and money rates firm for the rest of the year, but nothing approaching a stringency is at all feared. Call loans are made freely at 4 per cent and $4\frac{1}{2}$ per cent, and time loans for all periods on good security collateral command $4\frac{3}{4}$ per cent.

The Stock Market

Dealings in the stock market have fallen off decidedly in volume during the week, and whatever outside interest there was a week ago has disappeared. Except in a few individual stocks, notably the local tractions and the anthracite coal issues, in which operations for a rise on a large scale have been in progress, realizing sales have exceeded new buying orders, and prices have fallen off in consequence. The vigorous declaration of the Governor of Minnesota that he will contest the legality of the new Northern Securities Company is made light of by the principal parties to the deal, but it has undoubtedly influenced speculative sentiment for the time being against the stocks of the Union Pacific and St. Paul companies, as well as those of the other Western roads which are not so directly concerned in the new alliance. This incident cannot, however, be said to be the main cause for the week's reaction on the Stock Exchange. It seems to be pretty plain that the financial powers which originate and support "bull" campaigns are not disposed to act until money conditions are more favorable to a general speculation. On the other hand, the comparatively slight effect of the enormous exports of gold shows that the money market is a negative influence only in the security dealings. The best informed observers are inclined to look for the continuance of the present traders' market for some little time, with such activity as there may be confined to special stocks.

Among these individual issues, one of the prime favorites is Manhattan. The report of earnings made public last Wednesday, and reprinted in last Saturday's issue of this paper, has given the critics an opportunity for some exceedingly rosy predictions concerning the immediate future of this property. It was especially noteworthy that the rate of increase in earnings was greater during the latter half of the year than the first, and that on the basis of the results for the September quarter the company was earning fully 6 per cent on the stock. President Gould's statement that electrical equipment would be installed pretty thoroughly by the end of another year recalled the estimate which he gave out some time ago, that the change from steam to electric motive power would add at

least 1 per cent to the net income of the company. It would be reasonable to assume, therefore, that at the expiration of another twelve months, Manhattan will be able to show a dividend surplus equal to 7 per cent on its share capital. This calculation has been the main inspiration in the week's advance in the stock. Other stories have been circulated to explain the strength in this and the other local traction shares, one of them that a holding company is to be formed to take over the combined stock issues, but they are obviously of an unsubstantial and purely speculative character. The rise in Metropolitan can be easily set down to the anticipated new issue of stock to provide for the installation of electricity on the remaining horse car lines, and to the desire of speculative interests to make the subscription privileges for the new stock as valuable as possible. In the case of Brooklyn Rapid Transit, which has advanced less than the others, the show of strength is mainly sympathetic.

Philadelphia

The directors of the Union Traction company adjourned on Monday without announcing any decision regarding the call for an assessment of \$5 a share on the stock. It is predicted by some that this action will be taken at the December meeting, that the required payments will be divided into two equal instalments, and that a dividend will be declared at the same time, which will cover the amount of one instalment. The assessment of \$5 a share would raise \$3,000,000, which, presumably, would be used to compensate the company for the sum, slightly in excess of this total, which they have deducted from earnings during the last year or so to make improvements in the property. The market for the stock has apparently acted on the theory that the worst is now out, and that with the modifying provision for the dividend, the situation is not so bad after all. The price rose on Monday to $31\frac{3}{4}$, the highest level reached since the early part of last summer. Trading throughout the week has been heavy. Philadelphia Traction showed sympathetic strength, going up $\frac{3}{4}$ of a point to 97. The increase in the annual rate of dividend on American Railways, from 4 per cent to 5 per cent, had evidently been partly discounted in the previous week's advance. The stock rose to $44\frac{3}{4}$, but realizing sales prevented a further rise. Scarcely anything has been done in Consolidated of Pittsburgh shares. Two hundred of the common sold at $23\frac{1}{2}$, and a like amount of the preferred at $65\frac{1}{2}$, and later at $63\frac{1}{2}$, ex-dividend. The only other transactions in stocks were small sales of Railways Company General at $5\frac{3}{4}$ and $5\frac{1}{2}$. Bonds have not displayed much activity. Indianapolis Railway 4s were strong at $87\frac{3}{8}$, and Citizens Passenger, of Indianapolis, 5s at $109\frac{1}{4}$. Electric Peoples Traction 4s changed hands rather freely at $97\frac{1}{2}$, and United Railways 4s at $89\frac{1}{2}$. A single sale of Wilmington and Chester Traction 5s was reported at $105\frac{1}{2}$.

Chicago

The traction share market in Chicago has been irregular, but stronger in the main than it was a week ago. On Friday it was announced that the Union Traction Company had brought an injunction suit against the State Board of Equalization, restraining them from taking action under the recent franchise tax decision. The common stock, which had sold as low as $12\frac{1}{2}$, rose quickly to 14, and the preferred recovered from $49\frac{1}{2}$ to 54. That the injunction will hold seemed doubtful, in the view of some operators, and reflecting this doubt the Union Traction shares dropped back again to 13 for the common, and 51 for the preferred. West Chicago sold down also from 96 to 95. Among the elevated stocks Metropolitan has been the strongest feature, the common selling freely at $40\frac{1}{4}$, and scattered lots of the preferred as high as 93. Small sales of Northwestern common at 40, the preferred at 90, and South Side Elevated at $109\frac{3}{4}$ were recorded during the week. Lake Street continued rather heavy around $12\frac{3}{4}$. Investment sales in moderate quantity were reported in City Railway at 190. Traffic on both surface and elevated lines keeps on showing remarkable gains over a year ago. Union Traction is said to be earning \$2,000 a day more.

Other Traction Securities

The sharp rise in Twin City Rapid Transit on the New York Stock Exchange this week is associated with the plans mentioned some time ago for increasing the electric lighting capacity of the company. Interest has subsided somewhat in the St. Louis securities. Transactions were reported on the New York curb in the latter half of last week at $88\frac{1}{2}$ for the preferred, and 31 for the common, and business at these figures was fairly brisk. Nothing has been done in them, however, during the last few days. In Boston traction dealings have been extremely light, with sales of

Massachusetts Electric preferred at 94, the common at 36, and Boston Elevated at 165, a decline of a point. The feature of the Baltimore market has been a sharp advance in Knoxville Traction 5s to 99 $\frac{3}{4}$, a gain of twelve points during the last fortnight. New interests are said to be buying into the property, with the idea of getting control and putting it on a better paying basis. No dealings are reported in New Orleans Traction, and quotations are unchanged, at 29 $\frac{3}{4}$ bid for the common, and 105 bid for the preferred. Louisville Railway common, which sold a week ago at 106, recovered to 107 $\frac{3}{4}$ bid, but with no stock offered under 108 $\frac{1}{2}$. The preferred was firmer at 116. Syracuse Rapid Transit common is up a point on the bid price to 26, but New York specialists are not offering the stock below 30.

Security Quotations

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

	1901	
	Closing	Bid
	Nov. 12	Nov. 19
American Railways Company.....	42	44 $\frac{1}{4}$
Boston Elevated	165 $\frac{1}{2}$	165
Brooklyn R. T.	68 $\frac{1}{4}$	68
Chicago City	190	188
Chicago Union Tr. (common).....	12 $\frac{3}{4}$	12 $\frac{7}{8}$
Chicago Union Tr. (preferred).....	50	52 $\frac{1}{4}$
Cleveland City	111	111
Cleveland & Eastern.....	..	31
Cleveland Electric	86	86
Columbus (common)	44	45
Columbus (preferred)	100	100
Consolidated Traction of N. J.	65	67 $\frac{1}{2}$
Consolidated Traction of N. J. 5s.....	109	109 $\frac{3}{4}$
Consolidated Traction of Pittsburgh (common).....	..	23 $\frac{1}{2}$
Consolidated Traction of Pittsburgh (preferred).....	65 $\frac{1}{2}$	*63 $\frac{1}{2}$
Detroit United	75	76
Detroit United certificates	75	..
Electric-People's Traction (Philadelphia) 4s.....	97	97 $\frac{1}{2}$
Elgin, Aurora & Southern	40
Indianapolis Street Railway	42	42
Indianapolis Street Railway 4s.....	87	..
Lake Street Elevated	12 $\frac{5}{8}$	12 $\frac{1}{2}$
Louisville (common)	106 $\frac{1}{2}$	107 $\frac{1}{4}$
Louisville (preferred)	115	115 $\frac{3}{4}$
Manhattan Ry.	128 $\frac{1}{2}$	130 $\frac{1}{2}$
Massachusetts Elec. Cos. (common).....	36 $\frac{1}{4}$	36
Massachusetts Elec. Cos. (preferred).....	92 $\frac{1}{2}$	94
Metropolitan Elevated, Chicago (common).....	39	40 $\frac{1}{2}$
Metropolitan Elevated, Chicago	91 $\frac{1}{4}$	92
Metropolitan Street	166 $\frac{1}{4}$	168 $\frac{5}{8}$
Nassau Electric 4s.....	97 $\frac{1}{2}$	97 $\frac{1}{2}$
New Orleans (common).....	29 $\frac{1}{4}$	29 $\frac{3}{4}$
New Orleans (preferred)	105	105
North American	96	92
Northern Ohio Traction (preferred).....	..	88 $\frac{1}{2}$
North Jersey	22 $\frac{1}{2}$	22 $\frac{1}{2}$
Northwestern Elevated, Chicago (common).....	39	39
Northwestern Elevated, Chicago (preferred).....	89	90
Philadelphia Traction	96 $\frac{1}{4}$
Rochester (common)	32	34
St. Louis Transit Co. (common).....	30 $\frac{1}{8}$	30 $\frac{3}{4}$
South Side Elevated (Chicago).....	108	109 $\frac{1}{2}$
Syracuse (common)	25	26
Syracuse (preferred)	63	63
Third Ave.	120	120
Twin City, Minneapolis (common).....	102	105 $\frac{1}{2}$
United Railways, St. Louis (preferred).....	87 $\frac{1}{8}$	88 $\frac{5}{8}$
United Railways, St. Louis, 4s.....	91	90 $\frac{3}{4}$
Union Traction (Philadelphia).....	29 $\frac{5}{8}$	31 $\frac{1}{4}$

* Ex-dividend.

Iron and Steel

The United States Steel Corporation has announced that the entire output of its steel rail mills for 1902 is already booked. This statement in itself is sufficient proof of the phenomenally strong situation in this branch of the steel industry. In other branches conditions are hardly less strong. The scarcity of steel, which has been apparent for a number of weeks past, threatens to become serious in consequence of the prospective shutting down of a number of pig iron furnaces in the Central West. These furnaces are forced to bank because the supply of coke is curtailed by the shortage of railway transportation facilities. The consumptive demand for pig iron is without a parallel in the history of the country. In face of an output of 1,400,000 tons—or 16,800,000 tons per year—during October, stocks on hand declined during the month by 76,700 tons. Prices could, of course, be easily advanced, but the leading producing interests have the market well in hand, and are keeping them down. Bessemer pig is quoted at \$16, steel billets at \$27.50, and steel rails at \$28.

Metals

Copper is steady at 16 $\frac{2}{3}$ cents, tin has risen very sharply from 25 $\frac{1}{4}$ cents to 27 cents, lead is dull at 4 $\frac{3}{8}$ cents, and spelter is unchanged at 4.30 cents.

LOS ANGELES, CAL.—The Los Angeles Land Company, which was recently incorporated, was organized with the idea of ultimately combining all of the interests of the Los Angeles Railway Company. It is intended, in time, to operate all of the company's local street railway lines and interurban electric lines from one central power station. The Los Angeles Land Company has a capital stock of \$250,000, of which one-half is paid up. H. E. Huntington is the principal stockholder, holding \$38,500 of stock. Among the incorporators are: I. W. Hellman, A. Borel, C. de Guigue, Epes Randolph, John D. Bicknell and J. S. Slausson. The construction of a number of new electric lines is projected.

DENVER, COL.—The Denver City Tramway Company reports earnings as follows:

	1901	1900
October		
Gross receipts	\$141,366	\$114,373
Operating expenses	77,403	62,121
Earnings from operation	\$63,963	\$52,252
Fixed charges	32,569	32,111
Net earnings	\$31,394	\$20,141
Ten months ending October		
Gross receipts	\$1,255,921	\$1,077,960
Operating expenses	686,012	603,149
Earnings from operation	\$569,909	\$474,811
Fixed charges	318,312	311,613
Net earnings	\$251,597	\$163,198

COLUMBUS, GA.—The Chattahoochee Falls Company, better known as the Clapp Factory property, near Columbus, is reported to have been sold to a Boston syndicate represented by George J. Baldwin, president of the Columbus Railroad Company. It is said that this purchase means the investment of \$1,000,000 at Columbus in a new power company, the extension of the lines of the Columbus Railroad Company and the building of new mills and manufacturing plants.

MARION, ILL.—The Coal Belt Electric Railway Company has certified to an increase of capital stock from \$100,000 to \$300,000.

CHICAGO, ILL.—A representative of the New York interests identified with the Northwestern Elevated Railroad is quoted as stating that less than \$4,000,000 of the proposed \$5,000,000 issue of 5 per cent bonds will be offered to stockholders; that while \$5,000,000 of the present 5 per cent bonds are to be retired at 105, fully \$1,000,000 of these bonds already have been purchased, and that the company is bidding 105 and interest for them, having nearly \$1,000,000 still on hand for that purpose. For the \$10,000,000 4 per cent bonds sold some time ago at 90, \$9,000,000 was received. Of this amount \$6,250,000 was used to take over the Union Loop Company and \$750,000 to pay certificates of indebtedness, leaving \$2,000,000 cash on hand, which has been used to retire bonds. Though every large holder of this company's bonds has been approached, all have responded slowly to the bids of 105 and interest, although they will have to turn in their bonds Jan. 1.

MICHIGAN CITY, IND.—By agreement a mortgage has been foreclosed in the Federal Court at Indianapolis against the Lake Cities Electric Railway Company. The suit was brought by the Metropolitan Trust Company, of New York.

FORT WAYNE, IND.—Negotiations for the purchase of all franchise rights of the Indiana & Ohio Traction Company have been closed by a Toledo syndicate. J. S. Yost, W. C. Brewer, J. C. Bonner and Milton Taylor, of Toledo, are the purchasers. The purchasers are at the head of a company which is going to build a line from Toledo to Hicksville. The Indiana & Ohio has a right of way from Hicksville to Marion, Ind., and it is possible that the interests will be combined. This would mean the construction of a through electric railway from Toledo to Marion, and very likely further West.

OTTUMWA, IA.—The Ottumwa Traction & Light Company has filed for record a mortgage for \$500,000, given in favor of the United States Mortgage & Loan Company, of New York. The mortgage is given to secure an issue of \$500,000 5 per cent gold bonds. The proceeds of the issue are to be used in improving and extending the property of the company.

SPRINGFIELD, MASS.—The Railroad Commissioners have approved the proposed issue of \$455,000 stock by the Springfield & Eastern Street Railway Company for the purpose of providing for the payment of the floating debt incurred in the construction of the road. The Springfield & Eastern Street Railway is the successor of the Palmer & Monson Street Railway.

NORFOLK, MASS.—The Norfolk & Bristol Street Railway Company has filed a certificate that its capital stock, \$200,000, is all paid in. E. D. Codman is president of the company and H. F. Smith, treasurer.

CONCORD, MASS.—The Concord & Clinton Street Railway Company has filed a certificate that all its capital, \$60,000, has been paid in. W. R. Davis is president of the company, and W. S. Reed treasurer.

BOSTON, MASS.—The West End Street Railway Company has petitioned the Railroad Commissioners for the approval of an issuance of 4 per cent bonds due 1915, to the amount of \$1,800,000, for improvement of the company's property required under the lease to the Boston Elevated. The board will give a hearing on the matter Nov. 26.

DETROIT, MICH.—The much-mooted sale of the Detroit, Ypsilanti & Ann Arbor Railway to the Everett-Moore syndicate is said to have finally been consummated Nov. 19. The road is owned by the Hawks-Angus syndicate, and the Everett-Moore syndicate has made several unsuccessful attempts to purchase the road. No confirmation of the story can be obtained.

NEW ORLEANS, LA.—The New Orleans City Railway continues to show large increases in earnings. The gross earnings for October were \$126,783, against \$115,462 in October, 1900, a gain of \$11,321. For the first six days of November the gross earnings are said to show a gain of \$4,645.

NIAGARA FALLS, N. Y.—The Niagara Gorge Railroad Company reports earnings as follows:

	1901	1900
Quarter ended Sept. 30		
Gross receipts	\$154,223	\$43,883
Operating expenses	26,136	16,273
Earnings from operation	\$128,087	\$27,610
Receipts from other sources	2,870	2,685
Gross income	\$130,957	\$30,295
Fixed charges	13,917	13,403
Net earnings	\$117,040	\$16,892

The Pan-American is, of course, responsible for the large increase in earnings.

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

	1901	1900
Quarter ending Sept. 30		
Gross receipts	\$3,053,801	\$3,101,714
Operating expenses	1,930,997	1,723,536
Earnings from operation	\$1,122,804	\$1,378,178
Receipts from other sources	111,062	93,703
Gross income	\$1,233,866	\$1,471,881
Fixed charges	1,068,585	1,158,595
Net earnings	\$165,281	\$313,286

Operations of Brooklyn, Queens County & Suburban not included in 1901, it having been operated independently since.

CLEVELAND, OHIO.—Recent stories relative to the sale of bonds by the Everett-Moore syndicate have been greatly exaggerated according to a member of the syndicate who is in a position to know. Absolutely the only bonds which were sold by the heads of the syndicate while on their trip to New York last week were \$3,000,000 of Detroit & Toledo Shore Line, and \$2,000,000 of Lake Shore Electric. No Federal Telephone bonds were disposed of, although it is admitted that negotiations for the sale of some of these securities is under way. It is also stated that other negotiations are under way which will probably result in the sale of other syndicate securities. The report that a large block of Detroit United bonds have been sold is branded as ridiculous, as it is stated the Detroit United has no outstanding bonds, and the big Michigan consolidation has not yet been fully effected.

PHILADELPHIA, PA.—The American Railways Company has declared a quarterly dividend of 1¼ per cent, payable Dec. 15, thus increasing the annual dividend rate from 4 per cent to 5 per cent.

PITTSBURGH, PA.—The Consolidated Traction Company reports earnings as follows:

	1901	1900
October		
Gross receipts	\$277,007	\$257,179
Operating expenses	126,200	108,137
Earnings from operation	\$150,747	\$149,042
Receipts from other sources	28,744	28,098
Gross income	\$179,491	\$177,140
Fixed charges	90,117	89,687
Net earnings	\$89,374	\$87,453
Seven months		
Gross receipts	\$1,847,327	\$1,732,845
Operating expenses	878,494	797,582
Earnings from operation	\$968,833	\$935,263
Receipts from other sources	200,972	197,870
Gross income	\$1,169,805	\$1,133,133
Fixed charges	629,325	620,372
Net earnings	\$540,480	\$512,761
Preferred dividend	420,000	420,000
Surplus	\$120,480	\$92,761

DETROIT, MICH.—The Detroit United Railway Company has no outstanding bonds, but has assumed and agreed to pay the bonds upon the properties purchased by it from various other companies at the time of its organization. The plan of organization of the Detroit United Railway contemplates a transfer by it of its property to a new corporation, in consideration of stock and bonds of the new company, which will then be divided among the stockholders of the Detroit United Railway. Before this can be done, in order to properly protect

the equitable lien of the holders of its underlying bonds upon the present property of the Detroit United Railway, a mortgage is to be given, conveying for this purpose all of the property of the Detroit United Railway as security for such underlying bonds. This has been contemplated by the syndicate managers from the first, and there has been no change whatever in the plan of reorganization of the Detroit United Railway. The capital stock of the new Michigan company will be \$12,500,000, and the total authorized bond issue will be \$50,000,000.

PITTSBURGH, PA.—The terms under which the "Mellon" lines are to be absorbed have just been made public by the official circular of the Philadelphia Company to its stockholders. By agreements made with Mr. Mellon the lines of the Monongahela Street Railway Company, the plant of the Monongahela Light & Power Company, the lines of the Pittsburgh & Birmingham Traction Company and the lines of the Pittsburgh & Charleroi Street Railway Company will pass to the control of the Philadelphia Company, all for 999 years at good rentals. Mr. Mellon also agrees, upon the execution of this last lease, to sell all the shares of stock of the Charleroi line to the Philadelphia Company for \$709,000. He also agrees to transfer the Philadelphia Company without further compensation the shares of stock of a number of street railway companies organized by him, the construction of which has not been commenced. In addition, the owners of almost the entire capital stock of the Southern Traction Company (West End and Carnegie lines) have agreed to sell their shares to the Philadelphia Company. Further, negotiations are pending between the owners of shares of several smaller companies and a committee of directors to whom the matter was referred, and the report to be made to a meeting of Philadelphia Company stockholders called for Dec. 4, 1901, to ratify the agreements enumerated, will probably call for the absorption of these smaller corporations. Thus it is proposed to acquire control of all the traction interests in the two cities and those reaching out into the three valleys, and also control of all artificial lighting facilities. For the purpose of acquiring the shares of the several companies and to provide the money to make the cash payments, increases of the bonded debt and common stock will be necessary. No increase of preferred stock will be required, as there remains of the present authorized issue \$2,000,000 available for use in the acquisition of preferred shares of the Consolidated Traction Company. In conformity with law the board of directors of the Philadelphia Company has declared it to be the purpose of the company to increase its bonded debt to a total of \$22,000,000. And the board has also declared it to be the purpose of the Philadelphia Company to increase its capital stock to a total of \$36,000,000. The present capital is \$6,000,000 of preferred stock and \$15,000,000 of common stock. The increase will therefore be \$15,000,000, all to be common stock. Of the bonded debt, \$6,500,000 will be reserved to take up the existing issue of bonds when they may mature; \$12,000,000 will be available only for the purpose of acquiring preferred shares of the Consolidated Traction Company. The remainder of the bond issue will be available to provide funds for the improvement, betterment or extension of the properties of the Philadelphia Company or of the companies of which it owns the majority of shares. As previously stated, the holders of a majority of the shares of the Consolidated Traction Company have agreed to sell their shares to the Philadelphia Company upon the following terms: Two shares of common stock of the Consolidated Traction Company for one share of common stock of the Philadelphia Company, and twenty shares of preferred stock of the Consolidated Traction Company for \$1,000 in a gold mortgage bond of the Philadelphia Company at its par value, to be dated Nov. 1, 1901, maturing Nov. 1, 1951, and bearing 5 per cent interest; three shares of the preferred stock of the Philadelphia Company, one share of the common stock of the Philadelphia Company and \$60,000 in cash. The last operating report of the company follows:

	1901	1900
October		
Gross receipts	\$223,015	\$167,259
Operating expenses	156,874	135,469
Earnings from operation	\$66,141	\$31,790
Receipts from other sources	21,210	13,820
Gross income	\$87,351	\$45,610
Rentals, fixed charges, etc.	39,719	27,866
Net earnings	\$47,632	\$17,744
Dividend on preferred stock	16,667	16,666
Surplus	\$30,965	\$1,078
Ten months		
Gross receipts	\$2,458,771	\$1,996,909
Operating expenses	1,488,455	1,183,962
Earnings from operation	\$970,316	\$812,947
Receipts from other sources	507,425	346,990
Gross income	\$1,477,741	\$1,159,937
Rentals, fixed charges, etc.	419,071	382,699
Net earnings	\$1,058,670	\$777,238
Dividends on preferred stock	166,584	166,584
Surplus	\$892,086	\$610,654

RAPID CITY, S. D.—E. H. Hammond, of Kansas City, has purchased the Rapid City Railway. The line is 2 miles long, and is operated by horses.

NASHVILLE, TENN.—The Nashville Street Railway, under foreclosure proceedings on account of a debt of \$2,500,000, has been ordered sold by the United States Court.

TABLE OF OPERATING STATISTICS

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

Table with columns: COMPANY., Period, Total Gross Earnings, Operating Expenses, Net Earnings, Deductions From Income, Net Income, Amount Avail-able for Dividends. Rows include companies like AKRON, O., ALBANY, N. Y., BINGHAMTON, N. Y., BROOKLYN, N. Y., BUFFALO, N. Y., CHICAGO, ILL., CLEVELAND, O., CORTLAND, N. Y., DENVER, COL., DETROIT, MICH., DULUTH, MINN., ELGIN, ILL., HAMILTON, O., LONDON, ONT., MILWAUKEE, WIS., MINNEAPOLIS, MINN., MONTREAL, CAN., NEWBURGH, N. Y., NEW YORK CITY, OLEAN, N. Y., PITTSBURG, PA., PHILADELPHIA, PA., RICHMOND, VA., ROCHESTER, N. Y., ST. LOUIS, MO., SCRANTON, PA., SYRACUSE, N. Y., TOLEDO, O., and W. NEW BRIGHTON, S. I.

NEWS OF THE WEEK

CONSTRUCTION NOTES

FORT SMITH, ARK.—The Fort Smith Rapid Transit Company has been incorporated, with a capital stock of \$2,000,000. The object of the company is to construct an electric railway to connect Fort Smith and Spring Hill, Central City, Lavaca, Greenwood, Jenny Lind, Witcherville, Dayton, Hartford, Huntington, Mansfield, Montreal, Hackett City, Excelsior, Bonanza, Red Rock and Prairie Creek, Sebastian County; Van Buren, Crawford County, and Charleston, Franklin County. The directors are: George Sengel, Frank Parke, Tom L. Cannon, ex-Governor William M. Fishback and James F. Read. T. L. Cannon is president of the company.

SAN FRANCISCO, CAL.—San Jose and Alviso are to be connected by an electric railway which will handle freight and passengers. Eastern capitalists are interested in the project, and they have purchased the right of way obtained a few years ago by the San Jose & Alviso Railroad Company for a steam railroad. Just who is back of the project is not known, and one rumor has it that the road will be used for the Santa Fe, which will make boat connection at Alviso.

LOS ANGELES, CAL.—The incorporation of the Pacific Electric Railway Company on Nov. 13, with a capital stock of \$10,000,000, has caused much speculation. The purpose of the company, as stated in the articles of incorporation, is to build urban and interurban electric railways, and it is understood that H. E. Huntington, a nephew of the late Collis P. Huntington, is the principal stockholder. As Mr. Huntington is connected with the Market Street Railway, the control of which is to pass into the hands of an Eastern syndicate early next year, the incorporation of the new company would indicate that the Huntington interests have in contemplation operations of a large scale.

REDDING, CAL.—T. G. Parker has applied for a franchise for the construction of an electric railway over a specified route in Redding.

SAN LUIS OBISPO, CAL.—J. W. McLean has submitted a proposition for the construction of an electric railway here.

DOVER, DEL.—The purchase of a small tract of land about 1 mile south of Dover, over which there was a dispute between a property owner and the Delaware General Electric Railway Company, will enable the company to proceed with its work between Dover and Camden, a distance of 3 miles. One hundred laborers are now working on the road, and it is intended to have it completed by March 1, 1902, a distance of 35 miles, running through one of the most fertile sections of country known in Delaware. Work on the power house will commence in a few weeks, and it is proposed to have the line from Camden to Dover in running order by Jan. 1, 1902. For various reasons the work on the road has not been pushed with rapidity, but it is expected that the work will now proceed without delay.

CEDARTOWN, GA.—The Council has granted a franchise to C. J. James and others to build an electric railway on several streets.

BUFORD, GA.—Application is to be made to the Secretary of State for a charter for the Cumming & Buford Electric Railway Company. The purpose of the company is to construct an electric railway from Main Street, Buford, in a northwesterly direction, crossing the Chattahoochee River and continuing to Cumming. The company also intends to generate power for commercial and lighting purposes. The proposed electric railway will be about 16 miles long. The company will be capitalized at \$500,000. Among those interested in the company are: J. G. Pucett, R. W. Shadburn, John H. Hockenull and H. L. Patterson, of Cumming; H. D. Jaquish, of Gainesville; M. S. Garner, G. W. Thompson, Charles H. Smith, Jr., R. J. Owens, J. O. H. Brown, of Buford.

DANVILLE, ILL.—Charles M. Cole and his associates have been granted a franchise for the construction of an electric railway through Danville. The plan of Mr. Cole and his associates is to build an electric railway from Danville, Ill., to Covington, Ind. The road must be completed by April 1, 1903.

PORTLAND, IND.—At a recent conference between the members of the City Council and President George, of the Fort Wayne, Dayton & Cincinnati Railroad Traction Company, a franchise was agreed upon. The proposed line will run through Butler, Hamilton, Darke and Mercer Counties, Ohio, and Allen, Jay and Randolph Counties, Ind., covering in all 320 miles. Its construction will require an expenditure of \$7,000,000. It is said that three different Eastern parties are anxious to take all the bonds.

WABASH, IND.—The Wabash & Rochester Electric Railway Company, which has been organized with Hon. D. A. Dangler, of Cleveland, president; James Lynn, of Wabash, Ind., vice-president, and Thomas W. Latham, of Cleveland, secretary-treasurer, is to build an electric railway from Wabash to Rochester, a distance of 25 miles, and the uncommon feature is that the towns and townships along the route have not only given ninety-nine-year franchises, and in some places private right of way, but have raised a cash bonus of \$100,000 to insure the construction of the road. The road will traverse a rich farming and dairy country which at present is without steam road connections, and, in connection with other roads under construction, it will form a direct route to Chicago and a link in a through line from Chicago to Indianapolis. The road will be financed by Clevelanders who are identified with the Century National Bank, and it is probable that no bonds will be issued. W. F. Forsyth, a Philadelphia engineer, will shortly make preliminary surveys. Construction work will start next spring.

MUNCIE, IND.—The Chase Construction Company, which has been granted a contract for the construction of the Muncie, Hartford City & Fort Wayne Electric Railway to Montpelier, a distance of 32 miles, is preparing to begin construction work. The new road will parallel the Lake Erie & Western Railroad from Fort Wayne to Muncie.

INDIANAPOLIS, IND.—The Indianapolis & Martinsville Rapid Transit Company has succeeded the Indianapolis & Martinsville Traction Company, and has 30 miles of road under construction. Charles Finley Smith is president of the company; Emmett M. Smith, vice-president and treasurer, and Amory T. Irwin, secretary. It is hoped to have the road running by next spring. The power station will be located at Mooresville, and the rolling stock contemplated is ten motor cars and two trailers. The company has notified the Secretary of State that it has raised its capitalization from \$100,000 to \$750,000, and that \$749,300 of this amount in stock, together with bonds to the amount of \$750,000, are to be paid and delivered for the purchase of rights of way, for the payment of lands appropriated and condemned for rights of way and for the cost of construction of the road.

INDIANAPOLIS, IND.—The Indianapolis Street Railway will install a new generating unit in its power house.

ANDERSON, IND.—The Union Traction Company will build a large car house and repair shop soon.

LAFAYETTE, IND.—Articles of incorporation have been filed with the Secretary of State for the Lafayette & Indianapolis Rapid Railway Company. The plan of the company is to build an electric railway to parallel the Big Four from Indianapolis to Stockwell, from which place it will extend to Lafayette via Dayton. The line will be 75 miles long, traversing four counties. The expectation is to raise the money for construction by the aid of subsidies from a tax in each township. The capitalization of the road is \$250,000, and its directors are: George P. Haywood, William C. Mitchell, C. E. Ruger and Adam O. Behm, of Lafayette; R. A. Clark and J. M. Waugh, of Colfax; L. C. W. Riley and Fremont Wells, of Thornton; James P. Staley and James M. Zion, of Lebanon.

UNION CITY, IND.—The Council has finally granted a franchise to the Richmond, Union City & Portland Interurban Company to operate over the streets of this city.

MARION, IND.—The County Commissioners have granted the Eastern Indiana Traction Company the right to construct an electric railway through the county. The road will pass through Upland, entering the eastern part of the county, and will follow along the north side of the Panhandle Railroad from Upland to Gas City. The company is buying its right of way and is making rapid headway between Upland and Gas City. The franchise requires that the road be completed and placed in operation within a year from date, and there is a clause providing that the fare shall not exceed 1¼ cents per mile for passenger travel on trips of 5 miles or more and not more than 5 cents per mile when the trip is 5 miles or less.

INDIANAPOLIS, IND.—The Union Traction Company has filed a written acceptance of the franchise offered to the several interurban roads now entering the city. The other three companies have declined to accept the franchise, on the ground that the terms and tax are unreasonable. These companies say they will take the matter into the courts to test the right of the city to tax them for the privilege of entering over the tracks of the local company, to which they now pay a substantial fee. The interurban companies have also asked for admission to the city over independent tracks, which they are desirous of building. This right is disputed by the local company, which claims an exclusive right to all the streets. Thus the franchise muddle becomes more complicated, and litigation may result.

DES MOINES, IA.—The citizens of Mitchellville have voted a franchise and a subsidy to the Des Moines, Colfax & Eastern Railway Company. The subsidy will amount to about \$3,500, and is to be paid in three annual instalments. The franchise proposition contemplates a twenty-five-year franchise, non-exclusive, for the operation of an electric railway on the streets of the city as a part of the interurban line from Des Moines to Colfax.

DES MOINES, IA.—The Des Moines, Colfax & Eastern Railway Company has submitted a franchise ordinance to the City Council. The ordinance has already been considered by the railway committee of the Council, and the members of the committee have reported unanimously in favor of its passage, recommending several changes. The most important change recommended by the committee is the addition of a section requiring the company to build local lines to Highland Park, University Place, and other outlying residence districts, and to operate them in connection with the Colfax line, with transfer privileges. In the ordinance submitted the company asks for terminal privileges in the city, with no specific mention of names of streets to be occupied. The opinion of the committee is that the Council should make adequate provision for transportation from the interurban line to the suburbs of the city. The committee recommends that the ordinance should designate the number of miles of road to be completed in one, two and three years, respectively, and that work should begin within six months after the passage of the ordinance, and that the company should pay into the city treasury 2 per cent of the gross receipts, either upon the beginning of the operation of the road, or at such time as other companies operating in the city may be compelled to pay the same percentage upon gross receipts. The matter has been referred to the committee of the whole, but no time has been set for a hearing. There seems to be no doubt but what the ordinance will be amended as recommended by the committee and that it will pass in that form.