

American peaks have no near views like those furnished by the Alps, but there are certainly many cases more encouraging from a financial standpoint.

Akin to mountain roads in function are those roads which are deliberately built to accommodate summer or winter residents. We have often wondered why this field has not been more actively and thoroughly worked. The key to the solution of such problems in railroading is cheap construction. The earning capacity is often very great for a short season, but it stops almost short at a definite time, and the road must earn dividends in whatever time is available. There is no more reason for building such a road along ordinary interurban lines than there is in building a summer hotel as if it were to do a metropolitan business. The whole subject of light railways has been generously neglected in American practice, as we have often had occasion to remark, although from the viewpoint of rural traffic it is by no means unimportant. If a road can be built and equipped for \$8000 or \$10,000 a mile, it stands an excellent chance of paying where an ordinary road would fail, and on even earnings the cheaper line will be much the better investment. It is certain that in many summer resorts electric roads could be made thoroughly profitable. The only serious objection to their construction would be on the part of those who use the roads for driving, but the coming of the automobile has already made driving in many districts unpleasant and dangerous, and automobiles certainly have no rights that electric roads are bound to respect.

Electric Terminal System

We have already referred to the very important discussion of the New York Central terminal situation by Mr. Arnold, but there are a few more points in this valuable contribution to which we wish to call attention at this time. The more one studies this report the more favorable is the impression produced by the thorough and business-like tests there recorded. Guessing at the data in such a serious problem is very uncertain business, and the first step toward results is to make a searching investigation as to the fundamental facts. This Mr. Arnold was enabled to do, and the data thus secured are of great importance in the art.

In a general way the facts are not widely different from what would have been predicted on theoretical grounds. The comparisons instituted between several plans for the distribution of power were immensely instructive, and perhaps the most striking thing about them was the exceedingly good showing made by the storage battery as a sub-station auxiliary. It has taken a good many years of hard work to bring the battery to its present condition, but the time has come when it has made an important place for itself wherever it has a fair chance. Without some small safeguard the transmission of power to sub-stations from a single-generating plant is a rather precarious business, when one considers the disastrous results of a tie-up. We are sorry in this connection that the case of two quite independent generating stations was not considered for the sake of completeness. Although the aggregate power demanded for the work under immediate consideration was rather small, as railway power goes, we are more than half inclined to think that an examination of the case in its broader aspects would have shown that there was something still to be said for distributed stations as against transmission to sub-stations with rotaries. For, in spite of the thoroughness of Mr. Arnold's work, we must still remind our readers that there is in the discussion of the application of electricity to terminal working a broader problem, which in this instance was left quite untouched. The mere replacement of steam by electric locomotives is a makeshift, improving the situation in the tunnel, it is true, but not applying electric traction to its most important uses. The reorganization of the entrance of traffic into the metropolis ought to imply a full and adequate development of the suburban system. With this worked out by the methods of modern electric traction, the whole situation changes. It is a big problem in the technique of electric railroading, not merely the substitution of one motive power for another. When finally worked out it will probably involve a complete and

radical change in the whole method of operation, the results differing from the present system as decisively as does this from that in use before the days of the telegraph. Of course, such deep seated changes are not in the least necessary to the adoption of electric motive power in the tunnel, but they lie along the line of improvement, and while they may be put off for a while they are bound to come sooner or later. Meanwhile we may be thankful that the study of the lesser problem has led to favorable results.

Steam Railroads Must Make Connections with Electric Lines

The opinion of the Court of Appeals of New York, which was prepared by Justice Haight, and in which his associates fully concurred, defines the legal rights of electric railway companies to compel steam railroads to make connections and interchange freight business with the electric lines, and confirms absolutely the right of the electric companies to compel such connections. The decision will have a far reaching effect upon the development of interurban lines for freight service in New York, as it will open up an extensive field and afford connections of great value.

In the case under consideration an effort had been made to compel the Boston & Maine Railroad to make connection with the Stillwater & Mechanicville Street Railway Company, which is an electric trolley line controlled by the Hudson Valley Railway Company. The steam railroad officials contended that the law did not authorize the court to compel them to work in conjunction with the electric line and permit the latter to use their system. Justice Haight, however, decided that the electric companies have this right under the Railroad Law of 1890, and he very clearly defines the relative positions of electric and steam roads under this act.

The decision takes the broad ground that the public good requires the utmost extension of the application and utilization of every improvement in transportation, and that the use of improved methods should be encouraged. "The provisions of the statute authorizing the courts to compel connections or the intersections of tracks between railroads, to our minds, was intended to promote the public interests independent of that of the railroad companies. Travelers and the distributors of merchandise and freight have the right to make use of all the facilities provided for in the articles of incorporation and the provisions of the statute pertaining thereto in the conduct of their business." This, the court thinks, is made clear by the provisions of the statute which requires that all railroad corporations whose roads are or shall be intersected shall receive from each other and forward to their destination all goods, merchandise and other property intended for points on their respective roads with the same despatch and at the same rate of freight not exceeding the local tariff rate.

The court next reviews the several laws relating to the establishment and management of railroads, and discusses their bearing upon the present case. In construing these statutes the opinion says: "It does not become us to shut our eyes to the purposes sought to be accomplished or the discoveries that have been made and the improvements accomplished in the transportation facilities of the country in recent years." It is pointed out that while the great steam railroad systems extend across the continent, and have become the great arteries of trade, it has not been considered profitable or practical for steam roads to be extended to every village, hamlet or productive district in the country, and that communication with many of these points is now being established by means of electric roads. The court recognizes the advantages which the farmer, the mill owner and the vendor of merchandise in distant places will enjoy because of their ability to reach the steam railroads, and through them the great markets of the larger cities. The advantages arising from this arrangement are not confined to the patrons of the electric road but will be enjoyed by the steam roads themselves, as they will thus be afforded an excellent feeding and distributing system with points which they could not otherwise conveniently reach.

Another point of special importance to the street railway industry which is touched upon in the opinion is the confirmation of the right of street railways to operate cars loaded with merchan-

dise and freight over street surface lines. The court holds that while it may be necessary to provide additional regulations by statute or ordinance limiting the time in which cars of this character should be permitted to run over street surface railroads, especially in cities and large villages, the legal right to do so is certainly vested in street railway companies, as was established by the ruling of the Court of Appeals in the case of De Grauw against the Long Island Railway Company.

Altogether, the decision is an important one in every respect, as it puts the electric railway companies of this class in New York upon exactly the same footing as the steam lines, and enables them to compel recognition of their rights, which has long been denied them. Just what influence the decision will have outside the State is hard to forecast. The opinion deals with a concrete case and not with an abstract proposition, but there can be no doubt that the attitude of this eminent legal authority will produce a profound impression on the judiciary throughout the country.

Storage Batteries for Small Roads

The use of storage batteries on a large scale in connection with railway power stations has now become so familiar that a suggestion of their usefulness in smaller plants seems almost needless, and yet there are radical differences involved in the mere question of size. The storage battery, which has now just attained its majority, has had in many respects a peculiarly checkered career. No electrical invention was ever given a more enthusiastic welcome and none was better advertised, and yet it has taken years for it to win its present stable place. Heavy depreciation has been the hoodoo to which its evil fortunes must be charged, and not until bitter experience had taught the immense importance of solidity and sound mechanical, as well as electrical design, was the spell broken. For years a fetish was made of extreme lightness to the sorrow of all concerned, but experience, though a costly instructor, is thorough, and the lesson of sound design was finally learned. Of the place which the battery has now earned there is little need to speak in general terms, but it is certainly a fact that the small roads which can most benefit from it are somewhat slow in taking due advantage of their opportunity.

The principles that govern the problem of successful battery installations are really very simple. An electric railway power station finds itself possessed of a thoroughly bad load factor. Its load is fluctuating from morning till night, and on the average is far below the capacity of its engines and dynamos. The result is an enormously wasteful use of steam, great inefficiency in the dynamos and a resulting very high cost of power—high enough, when based on the mere cost of production—still worse when one considers the fixed charges and depreciation on the needlessly large plant.

In small systems the cost of power is generally high even under the most favorable circumstances, and when the conditions are aggravated by a very low load factor the case is far worse. Now the battery ought to be able to relieve such a condition, and so in fact it does. In cases which have actually come under our observation the effect of the battery has been not only to reduce the fluctuations of power at the prime mover to about 20 per cent of their former value, but to raise the general load factor by between 30 per cent and 40 per cent. This latter feature of battery practice is the important one from the standpoint of economy, although the checking of the fluctuations doubtless has a good effect on repairs. Of course power delivered through the battery is subject to losses incurred therein, so that taking the battery efficiency at 75 per cent all energy delivered via the battery costs on the line a third more than that delivered directly. Even so, since in a well planned plant the battery will handle only say half the total output in kilowatt-hours, the gross effect of the losses in the battery will be to raise the total cost of power by perhaps 10 per cent to 15 per cent, while the saving effected by the improved load factor is likely to be 30 per cent to 50 per cent.

The net result, therefore, is a considerable saving which is relatively greater in small stations than in large ones, and the

general effect on the regulation of the system is most beneficial. Of course a battery equipment costs money, but on the other hand it largely increases the capacity of the station, which increase should be set off against its cost. And now comes the ever present question of depreciation. We have never quite understood why roads which have never in their history charged off one cent for the depreciation of their power station apparently should grow suddenly squeamish over a battery. But granting that they ought to be punctilious in reckoning with depreciation, the annual saving which can be effected by a skilfully planned battery auxiliary is enough to pay interest on the investment, and to allow for replacing the plates annually with a large margin over for profit. And even the most hardened enemy of the storage battery could scarcely protest that due allowance for depreciation had not thus been made. A battery of ample size, carefully installed and given proper attention, has a considerably lower depreciation than is allowed it by popular fancy, based on automobile practice. But good care must be regarded as essential, and when a railway plant puts in a battery it behooves the management to see that there is somebody available who has some practical knowledge of its limitations.

Storage batteries are not yet fool-proof, and a large proportion of the troubles which have come to them are due to lack of ordinary care in their management.

It would be an excellent thing if some of our technical schools would make a point of giving good, sound, practical instruction in modern battery practice, so that a body of trained men would in a few years be available, who would understand batteries and be able to put them to the best use. At present, specialists in this line are painfully rare.

Parsons' Bridge Terminal Relief Plan

The plan proposed by Chief Engineer Parsons, of the Rapid Transit Commission, for providing adequate transportation facilities between New York and Brooklyn, and relieving the present crush at the bridge terminal, is in many respects a radical departure from the lines along which other investigators have sought relief. It is proposed to lower the grade of the western approach, to open communication with the other bridges to the north for trains by means of a subway, to provide a similar tunnel running southward through Nassau Street for the trolley cars, and to erect a municipal building on the site of the existing station.

The details of this plan, as represented in Mr. Parsons' report to the Rapid Transit Commission, are given elsewhere in this issue. As compared with the reports of other experts who have studied the problem, it must be admitted that the Parsons plan is much more comprehensive and complete; that it makes greater provision for future development of traffic between New York and Brooklyn, and that it not only relieves the dangerous congestion of traffic at the bridge, but it eliminates another great defect by providing for subway connections and extensions instead of placing obstructions in the form of additional elevated structures in the already crowded downtown streets. It does this, however, at great expense, involving increased cost of construction, greater time consumed in construction, and a protracted interference with the bridge traffic during the period of construction. These objections were seriously considered by the Board of Experts, which reported on this subject some time ago, and whose recommendations formed the ground work for subsequent plans. The Board tried to keep the cost down to such a point that the city debt limit would not stand in the way of the project, to keep the time of construction down to the lowest possible limit, to begin to produce relief even before the construction was completed, and, finally, to permit practically no interference with the use of the bridge. These are all very important considerations and must be taken into account before any practicable plan can be evolved. It should be explained that Mr. Parsons report was not intended as a final plan, but rather as a series of suggestions indicating lines along which the chief engineer of the Rapid Transit Commission considered relief could best be obtained.

Recent Improvements on the Schuylkill Valley Railway

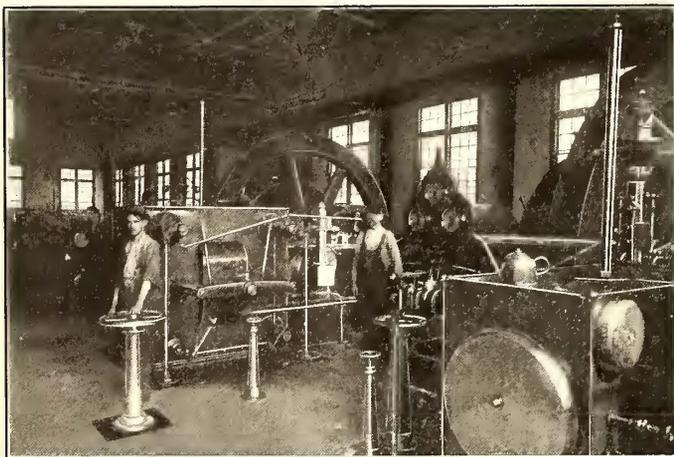
A handsome new power station has just been completed by the Schuylkill Valley Traction Company, at Collegetown, Pa. The road runs from Chestnut Hill, Philadelphia, to Sanatoga, and the Collegetown power house supplies the portion of the road west of it, which has been open but a short time, and easterly as far as Norristown. The present equipment consists of two direct-connected units, having a normal output of 500 kw each, but the building is



FRONT VIEW OF NEW CAR HOUSE

intended for five such units, and it is expected that the present capacity will be increased in the near future.

The power station is but a few hundred yards from the tracks, and is located near the bank of Perkiomen Creek, from which water for both boiler and condensing purposes is obtained. The building consists of two distinct sections, one for the engines and one for the boiler, the engine room being considerably the higher. Both parts of the building have peaked roofs. The walls of the engine room are strengthened by lattice columns, which support girders carrying the track for a traveling crane which spans the entire room. This crane has a capacity of 25 tons, and was built by the Reading



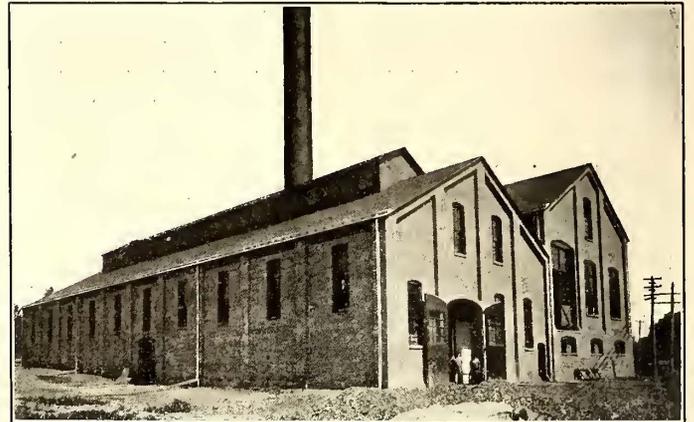
INTERIOR OF ENGINE ROOM

Crane & Iron Works. The floor of the engine room is of concrete resting upon corrugated iron arches supported from I-beams. The roofs are made of steel trusses covered with slate. Both sections of the power station are therefore strictly fireproof. The equipment so far installed is placed near the front of the building, taking up about two-fifths of the space available. In the boiler room is a battery of four Heine boilers of 300-hp capacity, placed in one row on the side of the room nearest the engine room. The floor of the engine room is considerably higher than that of the boiler room, so that the steam piping is carried from the tops of the boilers underneath the engine room floor to the cylinders. Three Smith-Vaile feed pumps, made by the Stilwell-Bierce & Smith-Vaile Company, of Dayton, Ohio, are used, and one Webster feed-water

heater, made by Warren Webster & Co., of Camden, N. J. The stack is made of steel and is self supporting. It is placed near the center of the boiler house, and is 125 ft. high.

The two direct-connected units installed consist of cross-compound, condensing engines, direct-connected to 500-kw, 555-volt compound generators. The engines are furnished by the Pennsylvania Iron Works, of Philadelphia, and are of 750 hp each, at a speed of 100 r. p. m. The generators are from the Westinghouse Electric & Manufacturing Company, of Pittsburgh, Pa., which concern also furnished the switchboard. This consists of standard railway panels, and is placed at one side of the room, where space is allowed for increasing its capacity by the addition of extra panels, as the power station equipment is completed.

The new Trappe & Limerick section of the Schuylkill Electric Traction Company's system has recently been opened, and is a very



THE NEW POWER STATION

handsome example of standard interurban railway construction through a rather thickly settled country. Nearly all the route is laid out following the country roads, and in but one or two places is the track placed on the company's own right of way. This section of Pennsylvania is of an undulating nature and some very steep grades are encountered on the way. One of the steepest of these is about 13 per cent, a short distance from Collegetown, and therefore near the power station.

The opening of this section of the line has made it possible to operate through cars between Chestnut Hill and Sanatoga, and nineteen semi-convertible, double-truck interurban cars have been

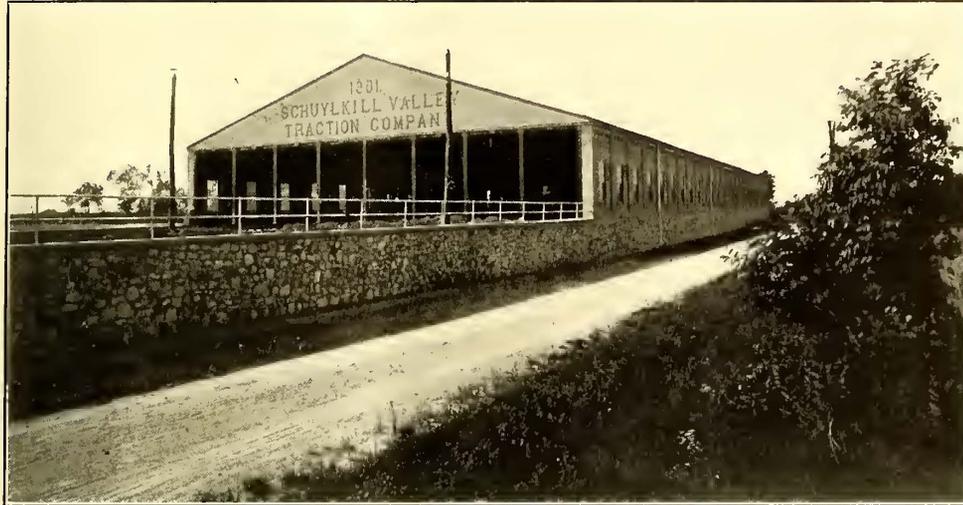


INTERIOR OF BOILER ROOM

purchased from the J. G. Brill Company, of Philadelphia, for this purpose. These cars have a 30 ft. 8 in. body, and are 41 ft. over all. They are 8 ft. 6 ins. wide, the gage of the track being 5 ft. 2½ ins. The cars are equipped with four G. E. 1000 motors, mounted on Brill 27-G high-speed trucks, and have Brill sand boxes and Christensen air brakes with motor-driven compressors. The cars will seat forty-four passengers, the seats being made by the United States Railway Supply Company. They are of the walk-over pattern, covered with rattan. There are no grab handles at the corners of the backs of the seats, but hold straps from a rod near the transom are used in the same manner as in ordinary city service. The same car equipment is to be used in both summer and winter, the semi-convertible feature being very popular with the

management. The Brill semi-convertible car has a double sash, both upper and lower sash sliding into a receptacle in the roof when the car is open and giving as much open space above the passenger's elbow as can be obtained by any ordinary cross-bench open car. In the summer months when the windows are open smoking will be allowed on the three rear seats on each side of the aisle, the same as in regular open car work. International registers are used.

The road is single track throughout, with turnouts every five minutes; it is possible to run cars, therefore, on ten-minute headway, and at present the Sunday and holiday traffic requires that this



GENERAL VIEW OF CAR HOUSE AND APPROACH

be done. At other times a twenty-minute headway is made. The Ramsay block signal system, made by Williamson & Co., Allegheny, Pa., is employed. With the exception of some 9-in. girder rail, which is laid in the streets and towns through which the road passes, the track is composed of 75-lb. T-rail with Continuous joints. The bonding is all done by protected rail bonds.

In addition to the new power station, a handsome new car house has been built on the outskirts of Norristown. Considerable property is owned here by the company, and the capacity of this car house, which is now seventy-five cars, may easily be doubled, as the house is set so far back that a long approach of track is necessary to reach it. If found desirable these yard tracks may be covered in by building the car house forward. The building is built of brick, and all of the car tracks entering it have pits their full length, the rails being supported on stringers resting on brick piers. Complete repair shop facilities have been placed in the car house as well as accommodations for the men, superintendents, etc. The various divisions of the shops are separated by steel rolling doors, made by the Kinnear Manufacturing Company, of Columbus, Ohio, so that danger from fire is eliminated as far as possible.

The Schuylkill Valley Traction Company is controlled by the United Power & Transportation Company, of Philadelphia, of which John A. Rigg is president, and F. L. Fuller general manager. The superintendent of the Schuylkill Valley road is George Hoeger.

Terms for a Second Tunnel Between New York and New Jersey Approved

The Rapid Transit Commission has passed the application of the New York & New Jersey Railroad for a franchise to build an underground road from a terminal in Christopher Street to Morton Street, to connect with the tunnel which it is building under the North River, and through which the North Jersey Street Railway Company will operate into New York.

It has been decided to give the company a franchise in perpetuity, the right being reserved to readjust the rental charges every twenty-five years. The tunnel will be less than a mile long and the company will pay 50 cents a linear foot of single track for the first ten years and \$1 a foot the next fifteen years. A payment not asked for from the Pennsylvania Railroad for its franchise into the city has been imposed upon the New York & New Jersey, which will be required to pay 3 per cent of the gross receipts for the New York-end of the railroad for the first ten years and 5 per cent for the following fifteen. The annual payments for the first ten years will be \$14,386, and for the second period of fifteen years, \$25,673, and the total revenue for the twenty-five years from the franchise will be nearly \$530,000. The franchise now goes to the aldermen for approval,

Providence Strike Declared Off

The strike of the employees of the Union Traction & Electric Company has been declared off, and as many of the men will return to work as can be utilized by the company. The old rate of wages and the old regulations will remain in force. The men gain nothing. The union loses everything. The employees who went out have suffered considerably, as they received very little financial assistance, and many of the old men will have to look elsewhere for employment, as the company will not dismiss the new hands taken

on during the strike. Ever since the scenes of disorder and violence were enacted that have been reported in part in the STREET RAILWAY JOURNAL from week to week, the more experienced leaders have realized that their case was hopeless, and at a meeting of the union, in Providence, Saturday, it was voted to declare the strike off. The vote in favor of ending the matter is said to have been 141 to 47. The members of the union who come from Pawtucket participated in the meeting, and in the main cast their ballots in favor of continuing the strike. After the meeting had adjourned the Pawtucket men held another meeting. At this gathering a ballot was taken, and by a vote of 41 to 10 it was decided to remain on strike. This action, it was stated, was due to a considerable degree to Pawtucket dissatisfaction with the management of the Providence union, as well as with the action of many of the members in returning to

work. The Pawtucket men by refusing to abide by the decision of the union placed themselves outside the organization. The future action of the Pawtucket men will necessarily be outside of any labor body, and their organization, if they maintain one, will be independent of any regular union. It has since been announced that the Pawtucket strikers had reconsidered their action and are now willing to return to work.

It is now five weeks since the strike was inaugurated. There is no doubt that the people are getting rather tired of the inconveniences caused by the boycott, and would gladly welcome a return to normal conditions. The barge system of transportation, which is being patronized by many in place of the electric cars, is an unsatisfactory makeshift, and anything but a physical comfort. Business interests continue to suffer for the reason that women, who constitute the shopping majority, debarred from the usual means of transportation, either remain at home or, taking the steam cars, do their purchasing in Providence, and this is a condition of affairs which is likely to prevail as long as the strike continues, with no inconsiderable financial loss in consequence.

The ranks of the striking motormen and conductors still remain unbroken, but many of the men, some of whom would like to recede and go back to work if they dared, are beginning to look about for some other sort of occupation beside railroading. Receiving no strike pay from national headquarters, and obtaining only a small pittance through the union's methods resorted to to raise revenue for their benefit while out of employment, they are beginning to realize that the conflict is an unequal one, and feel that they are beaten in all but name.

The opinion is now generally prevalent that unless a compromise can be effected and the men return to work, as it is said they will before another week, the only alternative that is presented is to await the action of the State and Federal Courts.

Since it was announced that no benefits would be forthcoming from the International Union because the strike had not received the sanction of that body in the first place, there has been more or less dissatisfaction and discontent. The Pawtucket strikers organized independently, secured rooms and have held their meetings in Pawtucket, although in the early stages of the struggle they attended the meetings in Providence.

Sub-committees on soliciting funds were appointed, and at the end of the third week of the strike about \$600 had been collected. From this fund each Pawtucket striker received \$5 and since that time very little financial assistance has been given the strikers.

The Everett-Moore syndicate has closed its New York office, and Guy M. Walker, who has been in charge, will return to Cleveland.

Improvements and Extensions of the Colorado Springs Rapid Transit System

When the control of the Rapid Transit System of Colorado Springs passed to W. S. Stratton and his associates about a year ago, the Colorado Springs & Suburban Railway Company was formed to take over its business, improve the present system and extend its lines so as completely to cover the territory. The old equipment was considered one of the best of its kind, and for the size of the city one of the largest and most complete in the country, but under the new management it is proposed to extend and improve this service materially.

During the last year plans have been prepared providing for a complete revision of the present method of handling the passenger service of this district and introducing many improvements in the



NEW STREET RAILWAY POWER PLANT AT COLORADO SPRINGS

equipment and operation of the road. A large number of new cars, furnished by the J. G. Brill Company, have already been put in service, and more will be added as the extensions are completed. It is proposed to lay 90-lb. rails throughout the entire system, and at the present time several miles of new track are being built. A new power house is being constructed which, together with the equipment, will represent an investment of \$300,000. In the accompanying illustrations an exterior view of this power plant is presented, together with views of the engine and boiler rooms, which were taken while the apparatus was being installed.

The power house is 168 ft. long and 102 ft. wide, built of brick, with a stone foundation and a steel roof. It will be noticed that the chimney is a very conspicuous feature of the power plant. It is 150 ft. high and 10 ft. in diameter, standing upon a brick and concrete base 30 ft. high, which gives it a total height of 180 ft.

A complete system of handling coal and ashes by machinery has been provided. The coal is brought to the station on cars, and is dumped into a huge bin directly beneath the car rails, where it is crushed by automatic machinery. It is then raised by an endless chain of buckets into the suspended coal-conveying bins, from which it is delivered at any point desired in front of the boiler furnaces. The ash conveying plant is carried out along the same principle, the ashes being dumped into the bins below the grate, from which they are carried automatically out of the building.

In the boiler room there is a battery of six boilers, of the Cahall horizontal water-tube type, having an aggregate capacity of 2000 hp. They include four boilers of 300 hp each and two of 400 hp, made by the Aultman & Taylor Company, of Mansfield, Ohio. There are also two Marsh feed pumps, each 12 ins. x 17¼ ins. x 12 ins., with a capacity of 216 gallons per minute, and a Cochran heater furnished by the Harris Boiler Works, of Germantown, Pa. The steam piping was done by McLeod & Co., of Chicago.

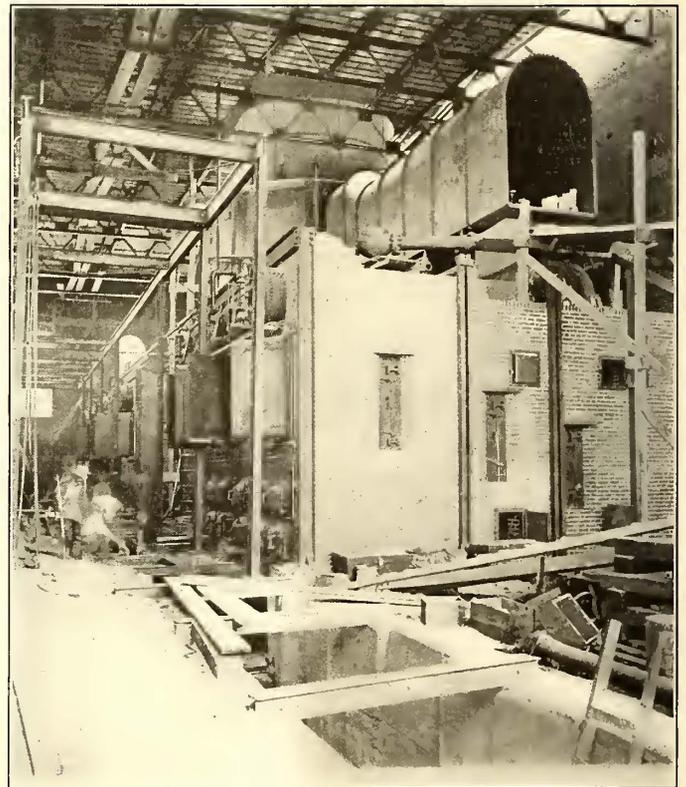
The engine room is designed for four 750-hp generating units. At the present time two of these engines are in place. They are of 750-hp each, cross compound, and were built by the Allis-Chalmers Company. They are directly connected to two 500-kw generators,

furnished by the General Electric Company. One 450-hp engine directly connected with a 300-kw generator has also been installed. This gives the company 1800 hp capacity at the present time, with ample space for increasing the equipment as the road is extended and the needs of traffic demand additional power.

All machinery throughout the building is oiled by the gravity system, so that from the time the oil is emptied from the barrel into the receiving tank it is not touched by hand.

The same standard that has been followed in station design and construction is found in the line equipment and road bed. Many lines are being rebuilt, others are being extended, and a great deal of new construction is being done in entirely new territory. Of the new lines the Cheyenne Canon route is especially worthy of attention. It is considered one of the finest pieces of street railway construction in the country. The five miles of road from the college reservation to Cheyenne Canon is doubled tracked, and is laid with 90-lb. rail. The bed is graded to a nicety, and sharp curves have been entirely eliminated throughout the line. The Prospect Lake line is entirely new, affording connection with the lake, where many attractions will be found. The Institute line is also new, and considerable work is yet to be done. Work is being rushed as rapidly as possible on the Platte Avenue Bridge, over which this line runs. The new Wahsatch Avenue line is completed. This line reaches a thickly settled part of the city. All cars will run from the loop in the business center of the city to their respective districts and suburbs. A system of transfers will be used across the city.

Another improvement which is being pushed vigorously is the building of another car house adjoining the present one. The new house will be 90 ft. wide by 180 ft. deep, and will conform in architecture to the rest of the building as it now stands. This will leave 80 ft. clear between the new house and the ground on which the office buildings and accommodations for the men will be built later. The office building will be one story in height, and will include accommodations for the operating and auditing departments



BOILER ROOM OF NEW STREET RAILWAY POWER PLANT AT COLORADO SPRINGS

of the street railway company. Back of these offices it is proposed to build a complete gymnasium and club room for the use of the employees of the company.

It is said that the purchasers of the Camden Interstate Railway have in contemplation the construction of a network of electric railways that will traverse five counties in West Virginia and connect them with Pittsburgh, and that over 200 miles of line will be built. In addition to the Camden Interstate Railway, whose organization will be maintained, the Morgantown Electric Light & Traction Company has been organized, and this company will build a number of the lines projected.

Street Railway Legislation in Massachusetts

The Massachusetts Legislature of 1902, which was prorogued June 28, equaled if not eclipsed its recent predecessors in the amount of street railway legislation which it enacted. From the opening of the session until practically its closing days, there were street railway bills in the calendars of the two branches or engaging the closest attention of various committees; the street railway committee, of course, having most of the bills to consider.

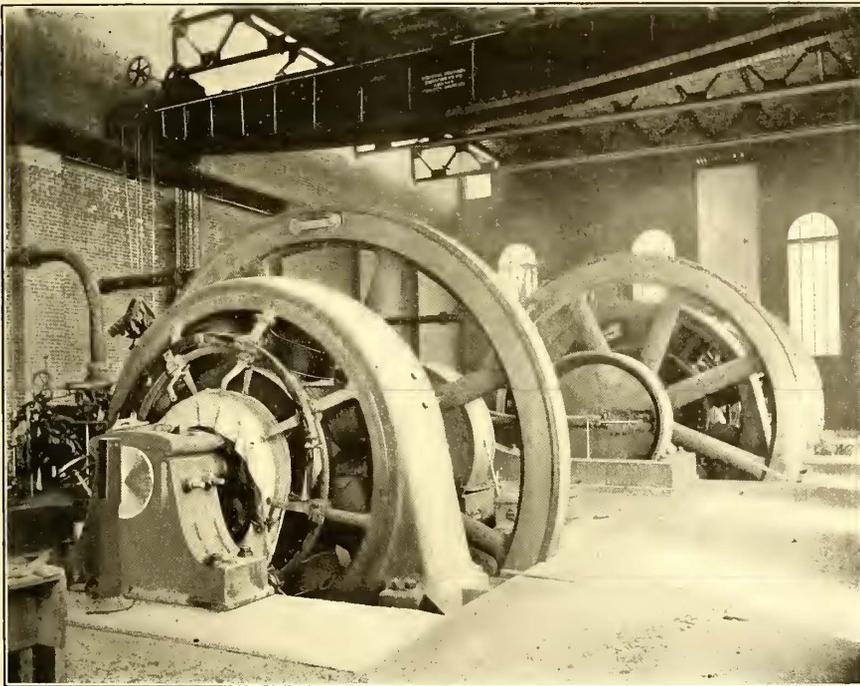
The recommendation of the Governor that the Commonwealth authorize the expenditure of \$5,000,000 additional for its share of the expense of the elimination of grade crossings of railroads and highways was accompanied by the suggestion that wherever street railways had locations on crossings thus separated they should be brought in as a fourth contributing party to meeting the expense. This general court has reflected the views of Governor Crane in numerous ways, and the stamp of his individuality is on a very large amount of the legislation suggested; and therefore it was not strange that the committees on railroads and street railways, sitting jointly, should have agreed in reporting legislation on the lines he laid down. A bill was reported April 30, and the House committee on ways and means took it in hand as a matter of secondary reference. Then it was discovered that a great many committees were interested in that provision of the measure which permitted

pany or corporation has tracks duly located in that part of the public way in which the crossing or crossings sought to be abolished, discontinued or altered are situated. Under the bill, as it finally came from the ways and means committee and was enacted by both branches, grade crossing commissions may, in future, assess 65 per cent of the expense of abolishing crossings upon steam railroads, not exceeding 15 per cent. upon street railways and 10 per cent upon cities and towns, while the balance shall be paid by the commonwealth from the \$5,000,000 provided. The provision referred to, that the street railways shall only be brought in in such proceedings as have already begun where commissions have not as yet been appointed, eliminates street railways from any expenditure in proceedings in progress in New Bedford, Worcester, Fall River, Haverhill and other places, and as a result it is assumed that very few street railway companies will be affected during the next ten years, as the work of eliminating crossings in the places mentioned will practically use up the \$500,000 which the commonwealth, under the provisions of the bill, can annually expend. Of course the work which it is proposed to begin as soon as possible in Lynn, Malden and elsewhere will include the street railway companies, but it is difficult to see how anything but the preparation of plans, etc., can go on in these places during the next decade.

Another recommendation of the Governor was that in future the railroad commissioners be granted supervision over new locations of street railway companies in all cities and towns. Some years ago a law was passed to provide that no extension of locations should be granted in Boston, Cambridge and Brookline without the concurrence of the Board, and it was through the recommendations of this body that the Governor was led to ask that this law be extended to all cities and towns. There was a disposition on the part of the local authorities to protest against this measure, and, therefore, it was referred for a hearing to a special committee, consisting of members of the committees on street railways, cities and towns. This committee finally reported a bill for this supervision, which took all its readings and was approved May 15. While this matter was pending a number of bills and petitions were offered to provide for a referendum in cities and towns on the question of locations granted by the authorities, but these were all adversely reported upon and rejected. Another measure affecting street railway locations provided for their revocation after petition and hearings, and this was very hotly urged by representatives from the West Roxbury district, which, for some years, has been seeking to secure 5 cent fares to Boston; these men assuming that if certain locations of the Old Colony system could be revoked and the Boston Elevated system extended, the 5-cent fare would be obtained. While the discussion was in progress the Railroad Commissioners sent in a recommendation that a bill be passed to permit the Elevated Company to lease the Old Colony locations within the limits of Boston, and this bill was passed. The street railway location revocation bill was thereupon adversely reported upon and rejected. Another bill relative to revocation of street railway locations was petitioned for by Revere parties, who felt that it was time that the association organized to build between Chelsea and Revere proceed with its work of construction or abandon its charter. The bill reported upon this petition provides that if in any city or town the original location of tracks of a street railway company already organized or in process of organization expires, is revoked, or otherwise becomes void before or after the passage of the act, the provisions of section 7 of chapter 127 of the Revised Laws shall apply for a new petition in the city or town unless the petition is brought for an extension or alteration of the tracks of the company. This provision in the street railway chapter referred to simply puts the petitioners on the same basis as though they never before had filed a petition.

A resolution was adopted providing that the Railroad Commission shall investigate and report on the merits of street car fenders. A bill to compel the use of automatic brakes on street cars was referred to the next General Court after hearings and some debate. Another enactment provides that the Railroad Commissioners shall be authorized and directed to investigate the advisability and necessity of having all street railway cars equipped with jack screws or other implements of machinery of sufficient power to raise the cars to such height as will allow the removal of injured persons from under them, and to report thereon by January 15 of next year.

A bill to regulate the speed of electric cars was referred to the



ENGINE ROOM OF NEW STREET RAILWAY POWER PLANT OF COLORADO SPRINGS

the Attorney General to ask dismissal of proceedings already begun under the grade crossing act where the grade crossing commission had not reported to the court. The section read as follows:

Any case now pending in the Superior Court under the provisions of section 149 of chapter III of the Revised Laws, in which the final report of the commission has not been filed in said court under the provisions of section 152 of said chapter, may, upon motion of the attorney-general, and after such notice as the court may order to the other parties, be dismissed by said court without prejudice to the right of any subsequent party under said section 149, as amended by this act, to file a new petition for the abolition of the same crossing: Provided, however, that in the proceedings upon any subsequent petition, no person shall be appointed a member of the commission referred to in said section 149 who was a member of such commission appointed in the proceedings in the case so dismissed, unless all parties to the proceedings upon such subsequent petition assent to such appointment.

The section further provided for a division of the expense among the contributing parties so far as any had been incurred. The city of New Bedford had spent many years in preparing to eliminate her grade crossings, and the commission was about to report, and to set aside the work at this time would mean to lose the benefit of \$50,000 which had already been expended. As a consequence her Mayor and other officials protested against this section remaining in the bill, and it was stricken out by the ways and means committee, which reported in its place a provision that street railway companies should be brought in as a fourth contributing party upon all petitions hereafter filed and upon all now pending "on which no commission has been appointed," where the street railway com-

next General Court. A bill was approved at the very close of the session to provide that hereafter street railway companies shall bear a part of the expense of building bridges on highways upon which they have locations. This measure was the cause of a good deal of discussion, and an effort was made to amend it so as to provide that but 15 per cent of the expense should be met by the street railway company, but this was defeated, and the matter is left to the settlement of the several interested parties.

A very important measure was passed providing that a street railway corporation may increase its capital stock or issue bonds beyond the amount fixed and limited by its agreement of association or its charter or by any special law to the extent the Board of Railroad Commissioners shall determine will realize the amount which has been properly expended, or will be reasonably required, without an appraisal of its entire property for the following purposes: Building a branch or extension, acquiring land for pleasure resorts, building power houses or car houses, park buildings, acquiring and equipping additional rolling stock, changing motive power, abolishing grade crossings, paying betterment assessments for the widening and construction of streets, complying with any requirements lawfully imposed under delegated legislative authority, making permanent investments or improvements, acquiring additional real or personal property necessary or convenient for its corporate objects, refunding its funded debt, and payment of money borrowed for any lawful purposes.

A bill to provide that street railway companies shall pay a part of the expense of maintaining the streets they use was engrossed by the House, but was referred to the next General Court by the Senate.

The street railway committee refused to recommend the enactment of a bill to provide that school children, other than those attending the public schools, shall be carried at reduced rates by the street railway companies.

A bill was enacted which will permit street railway companies not only to carry road making material, for their own use, but to deliver it to any connecting street railway company, and they may transport such material for cities and towns.

A bill was passed upon the recommendation of the Railroad Commissioners to increase from \$1,500 to \$2,000 the salaries of railroad and railway inspectors, so as to make it possible for the board to retain the services of men in whom they have confidence, who are greatly desired as employees by some of the corporations.

A bill was reported by the joint judiciary committee to provide that the breaking of any part or attachment of a car or locomotive on a railroad or railway, shall be deemed prima facie evidence of negligence on the part of the person or corporation, owning, controlling, directing or operating it, in any action to revoke for the injury or death, or both caused thereby. This measure was engrossed by the House, but was finally rejected in the Senate.

The committee on banks and banking reported a bill, which was enacted and approved, to permit savings banks and institutions for savings to invest in the bonds of any street railway company incorporated in this commonwealth, which has earned and paid annually for the five years last preceding dividends, and not less than 5 per cent per annum upon all of its outstanding capital stock, providing that such bonds have been certified first by the Board of Railroad Commissioners, on or before January 15 of each year, are to submit to the Board of Savings Bank Commissioners a list of all street railway companies that appear from the returns made to have properly paid their dividends without impairment of assets or capital stock, and the Savings Bank Commissioners are to prepare a list of bonds issued by any street railway company which the board shall deem good and safe securities for investment. This new law will at present affect the bonds of fifteen street railway companies now in operation.

Among the special acts passed were bills to extend the corporate powers of the Conway Electric Street Railway Company, the Dartmouth and Westport Street Railway Company, the Worcester, Rochdale, and Charlton depot, and the Worcester & Southbridge Street Railway Companies, the Greenfield & Deerfield Street Railway Company, the Springfield & Eastern Street Railway Company, the Lowell, Acton & Maynard Street Railway Company, the Pittsfield Electric Street Railway Company, the Framingham Union Street Railway Company, the Providence & Fall River Street Railway Company, the Stoughton & Randolph Street Railway Company, and the Hampshire Street Railway Company.

The Rockingham Light & Power Company, of Portsmouth, N. H., was given authority to furnish electricity for power to street railway companies along the Merrimac River which enter Massachusetts from New Hampshire.

An extension of time was granted for completing the Haverhill & Southern New Hampshire Street Railway Company and the Lawrence & Methuen Street Railway Company connecting with the systems above referred to; also for the construction of the West-

ern Hampshire Street Railway Company, the Waltham Street Railway, the Mt. Wachusett Street Railway, the Barre Street Railway, and the Berkshire & Canaan Street Railway.

Charters, with special powers, were granted the Deerfield, Whately & Hartford Street Railway Company, and the Danvers & Georgetown Street Railway Company. The charter of the Barnstable County Street Railway Company was extended.

The General Court declined to permit the Haverhill, Georgetown & Danvers Company to lease to the Exeter, Hampton & Amesbury Company, but passed a bill to permit the Haverhill & Plaistow Company to lease to the Exeter, Hampton & Amesbury Company. Another petition which was refused was that of the Hartford & Worcester Street Railway Company, that it might do an express and common carrier business.

An effort to secure amendments to the law permitting street railways to acquire land to avoid grade crossings failed; as did an effort to provide for a license for every street railway and elevated road; several efforts to secure street railway express charters; to secure lower fares at certain hours of the day; State or municipal ownership of street railways, and the transportation of street superintendents by street railways.

An important measure, which was passed, permits the Grafton & Upton Railroad Company, the Upton Street Railway Company, the Milford & Uxbridge Street Railway Company, and the Milford, Holliston & Framingham Street Railway Companies to make contracts for lease and sale, etc. This in effect, permits a steam railroad company to absorb three street railway companies and operate them together. The conditions in the vicinity of Milford are peculiar, and, therefore, the Legislature consented to this special act, but declined to pass a bill, which was heard by the committees on railroad and street railways sittings jointly, to provide that railroad corporations may purchase and vote the stock of street railway companies. Had the latter general bill passed it would have almost revolutionized railroading in Massachusetts.

The most important bill considered by the General Court provides for the construction of a new subway or tunnel under Washington Street, in Boston, for use by the Boston Elevated Railway Company. This measure was not considered by the street railway committee, by the committee on metropolitan affairs, and for over five months it was under consideration before the Elevated Company, the Mayor of Boston, and the Governor came to an agreement as to its provisions. The Boston Associated Board of Trade was greatly interested in the proposition, and its counsel appeared at all the hearings and in the conferences which followed. Finally a bill was agreed upon by all, and was reported, and passed its readings in both branches with but one amendment of a material character. The provisions of the bill, as approved, were outlined in the last issue.

A bill was passed on the recommendation of the Railroad Commissioners to permit the board to employ its own experts in determining the value of the property of railroad and street railway companies seeking approval of securities. This was much aided in its passage by the fact that during the time the Legislature was in session two street railway companies sought approval of bond issues through testimony of an expert engineer who acted as appraiser, who, by his own testimony with that of others, conclusively proved that he had fixed a value upon some of the property through the statements of officers of the companies rather than by his personal investigation.

Perhaps the most important charter granted, as it replaced a petition for a steam railroad charter over the same route, which has been pending for some years, but was abandoned when this was granted, incorporates the New York & Berkshire Street Railroad Company, with a capital of \$600,000, Roscoe C. Taft, W. C. Dalzell and J. F. Whiting being leading incorporators. The company has the right to locate on private land, in part, and may do an express and freight carrying business in Mount Washington, Egremont, Great Barrington, Monterey, Otis, Sandisfield, Tolland, Granville, Russell, Blandford, Southwick, Westfield and Agawam.

An Immense New Plant for Baltimore

A deal which contemplates the absorption of the United Electric Light & Power Company and the Mount Washington Electric Light Company, and which provides for the erection, on the Susquehanna River, of an immense new power plant, that will supply power for operating the lines of the United Railways & Electric Company and for lighting the city, has just been closed. The deal has been pending for over a year, and the company that will carry it to completion will be organized under the direction of the Continental Trust Company, of Baltimore, it is said. The reported purchase price is \$900,000.

Parsons' Solution of Brooklyn Bridge Problem

The Rapid Transit Commission is considering a report made by its chief engineer, William Barclay Parsons, providing for permanent relief from the congestion of traffic at Brooklyn Bridge, and offering additional transportation facilities between the two boroughs. The plan calls for a tunnel from the Brooklyn Bridge through Nassau Street to Maiden Lane, and a tunnel from Maiden Lane to Brooklyn for the exclusive use of trolley cars if they are to remain on the bridge. If they are to be removed, Mr. Parsons recommends the moving platform. The cost of the improvement, exclusive of the work that would be necessary to grade the bridge properly, is estimated at \$2,750,000. The plan prepared by C. C. Martin, then chief engineer of the bridge, would have cost \$2,405,300, but Mr. Parsons believes that a considerably larger sum would be granted for abutting damages than that estimated in the Martin

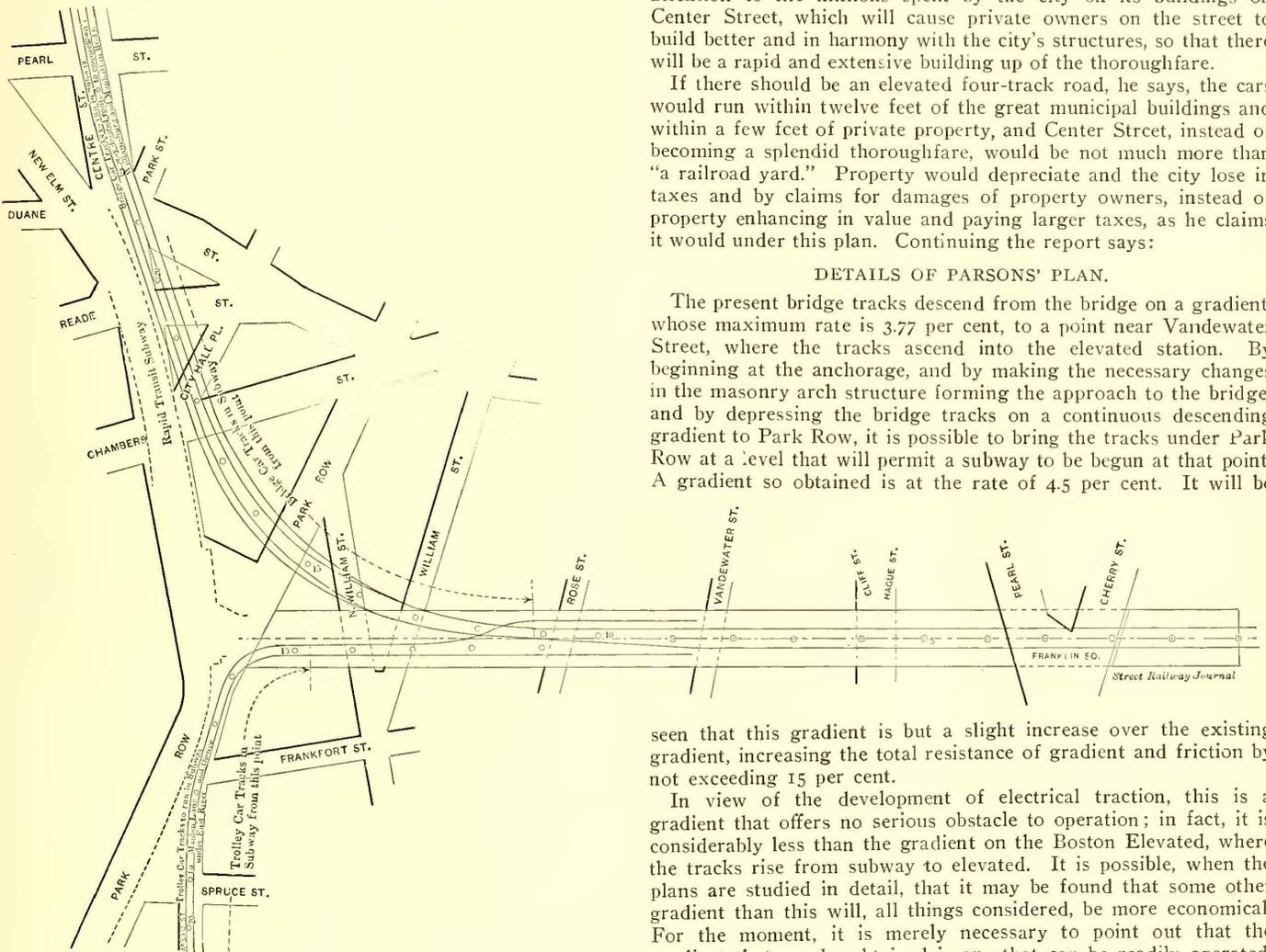
arms—one of which diverges at White Street and the other near Howard Street—converge into Canal and thence pass along Canal to Chrystie Street, where connection would be made with Bridge No. 3. Mr. Lindenthal disapproved of this plan on the ground "that a four-track elevated railroad on Center Street would needlessly ruin the costly and architecturally monumental city property on that street."

Mr. Parsons then outlines the plan of Commissioner Lindenthal, including tracks to be above those of the Manhattan tracks over Park Row and the Bowery to Delancey Street, and thence to the Williamsburg Bridge, and another elevated structure to run from Bridge No. 3 to the Hudson River at West Street, and then to pass over the Manhattan elevated lines, where passengers could be transferred to the Manhattan system. He partially approves of Mr. Martin's plan, but mainly as to the route, believing that Center Street would serve the public better than any other street. He calls attention to the millions spent by the city on its buildings on Center Street, which will cause private owners on the street to build better and in harmony with the city's structures, so that there will be a rapid and extensive building up of the thoroughfare.

If there should be an elevated four-track road, he says, the cars would run within twelve feet of the great municipal buildings and within a few feet of private property, and Center Street, instead of becoming a splendid thoroughfare, would be not much more than "a railroad yard." Property would depreciate and the city lose in taxes and by claims for damages of property owners, instead of property enhancing in value and paying larger taxes, as he claims it would under this plan. Continuing the report says:

DETAILS OF PARSONS' PLAN.

The present bridge tracks descend from the bridge on a gradient, whose maximum rate is 3.77 per cent, to a point near Vandewater Street, where the tracks ascend into the elevated station. By beginning at the anchorage, and by making the necessary changes in the masonry arch structure forming the approach to the bridge, and by depressing the bridge tracks on a continuous descending gradient to Park Row, it is possible to bring the tracks under Park Row at a level that will permit a subway to be begun at that point. A gradient so obtained is at the rate of 4.5 per cent. It will be



PLAN PROPOSED FOR RELIEVING CONGESTION AT BROOKLYN BRIDGE

plan. Mr. Parsons says that the present plan would enhance real estate values and increase the taxation. The removal of the Manhattan terminal of the bridge, as proposed in the Parsons plan, it is claimed by the engineer, would leave a piece of land upon which could be built a large municipal office building. After the report was read, Mayor Low presented a resolution recommending that the report be accepted as a solution of the bridge problem, and that Mr. Parsons be directed to co-operate with Bridge Commissioner Lindenthal for the perfection of the plan. This resolution was adopted.

In his report Mr. Parsons calls attention to the recommendations of Messrs. Boller, Prout and Whinery, comprising a special commission of experts on this subject, the report of C. C. Martin, superintendent of the Brooklyn Bridge, and Bridge Commissioner Lindenthal. He says that the suggestions of Mr. Martin are a modification of the report of the special commission, and he adds:

"Mr. Martin's plan proposes to carry the elevated tracks over Park Row to Center Street, thence with four tracks along Centre Street to Walker, and thence along Center to Grand, along Grand to Essex, and Essex to Delancey, to the terminus of Bridge No. 2. In connection with this line there is a projected Y branch, whose

seen that this gradient is but a slight increase over the existing gradient, increasing the total resistance of gradient and friction by not exceeding 15 per cent.

In view of the development of electrical traction, this is a gradient that offers no serious obstacle to operation; in fact, it is considerably less than the gradient on the Boston Elevated, where the tracks rise from subway to elevated. It is possible, when the plans are studied in detail, that it may be found that some other gradient than this will, all things considered, be more economical. For the moment, it is merely necessary to point out that the gradient that can be obtained is one that can be readily operated, is within the reach of the motive power equipment on the Brooklyn Elevated system, is less than that overcome on the Boston Elevated, and is but slightly in excess of the one now existing.

Once under Park Row the line can be made to curve to the north under private property between Park Row and Center Street, and thence, with four tracks under Center Street, to such point as may be desired, when two or any other number of tracks may be carried under Grand or Delancey or other street to the Williamsburg Bridge. In the case of the Williamsburgh Bridge the necessary arrangements to bring the cars from bridge to subway are easier and simpler than at the Brooklyn Bridge. The station near the Brooklyn Bridge should be located not upon the bridge itself, but under the private property between Park Row and Center Street, and on substantially the same level as the station of the Rapid Transit subway now being constructed. Approach to this station can be had from several points, and the portion of the travel that now seeks the bridge trains at the bridge would be taken care of before the bridge is reached. Additional stations could be located in Center Street and elsewhere, according to Mr. Martin's plan or upon such other plan as may be approved by the Bridge Commissioner.

The depressing of these bridge tracks would involve the closing of North William Street. This, however, is a short street, only one block long, running from Park Row to an archway beneath the

bridge, and the travel over it can be diverted, or if desired North William Street can be connected at small expense with William Street by a roadway running parallel to the bridge on the northern side. It would also involve a change in William Street itself, lowering the same by some few feet to an extent dependent upon the rate of the gradient adopted on the bridge approach. William Street, between the bridge and Duane Street, is now occupied by two warehouses and a number of old houses that were originally used as residences, but now are used as junkshops. The warehouses could be adapted at moderate expense to a change of grade.

In Mr. Martin's report an estimate is given by him as to the cost of constructing the elevated railway between the Brooklyn and Williamsburgh bridges, the total figures being as follows:

For construction, including station.....	\$757,000
Property, damages, etc.....	1,405,300
Total	\$2,162,300

The foregoing estimate will be seen to have a large proportion of the cost absorbed by abutting damages. The structural estimate made by Mr. Martin is, for the usual style of structure, correct; but the abutting damage estimate is necessarily an indeterminate figure, depending upon an award by jury. Personally, I believe that a considerably larger amount than this would be granted. The actual value of the property along the proposed four-track section is at least \$5,000,000, and the actual value of the property along the two-track section is at least \$12,500,000, amounting together to \$17,500,000, exclusive of any allowance for the city's own property. It will be noticed that Mr. Martin's estimate is only about 8 per cent of this amount.

When it is remembered how close the cars would run to the abutting buildings, I am forced to the conclusion that the damages would be considerably in excess of the estimate. Taking the same route and the same stations between the same points, I have computed the quantities that will be required for underground construction. Using the same unit prices that we are now paying on the Rapid Transit subway for similar work, and making a generous allowance for contingencies and extras, I place the cost of underground construction at \$2,750,000. This figure is somewhat in excess of Mr. Martin's estimate, but I do not believe it will be in excess of what the actual cost of the proposed elevated structure and damage allowance together would amount to. The abutting property would, in the case of the subway, be benefited and not depreciated, and the city would receive an increased and not a decreased revenue from taxation.

As to the trolley cars upon the Brooklyn Bridge; Mr. Lindenthal recommends for the present the construction of additional loops at the Manhattan end of the Brooklyn Bridge in order to provide more facilities for passengers to reach the cars, and suggests that on the completion of the two bridges now under construction, the operation of trolley cars should be limited to the Brooklyn side, and that passengers be carried across the present bridge by a movable platform. Additional loops or some similar rearrangement of the tracks at the Manhattan end is the only suggestion that I can see to provide for immediate relief. Such relief, however, would be temporary only.

A movable platform undoubtedly possesses great merit, and is capable of moving more people than any other device. As to whether it is better to withdraw the trolley cars entirely and substitute therefore the movable platform and so carry all the people away from Manhattan as fast as they arrive at the end of the bridge and arrange for their distribution in Brooklyn, where there is more space, is a matter which I do not enter into, as I deem it beyond the scope of my investigation. If, however, the trolley cars are to remain, I beg leave to call the board's attention to the fact that these trolley lines can be treated in a manner similar to what I have suggested for the elevated lines, namely, they too can be depressed, be brought under Park Row and carried in a subway south under Nassau Street to, say, Maiden Lane, and thence in a tunnel under Maiden Lane and the East River, to Brooklyn, rising to the surface at some desired point in the neighborhood of Borough Hall.

The Board of Engineers in their report recommended the construction of an elevated line south from the bridge and across the city, in order to supply facilities for passengers going to and coming from points below the bridge. This suggestion was most valuable, as such a line would intercept a large volume of traffic before it reaches the bridge. Mr. Martin, however, disapproved of it on account of difficulties of construction. By means of a subway for the trolley cars it is possible of accomplishment, and I have therefore included it.

Trans-fluvial facilities are being provided by the city by the building of three bridges across the East River above the Brooklyn Bridge, and by building the rapid transit subway from South Ferry to Joralemon Street. No provision has as yet been seriously projected to furnish continuous rail communication at any point

between the existing bridge and the south end of Manhattan Island, in order to connect the financial district with Brooklyn.

The board has directed me to prepare a general plan of extending the rapid transit facilities throughout the city. One of the features of such a plan will be a tunnel from Brooklyn to the vicinity of Maiden Lane and then crossing Manhattan to the Hudson River. Such a tunnel would more than double the facilities for trolley cars now offered by the bridge, and do so in the cheapest possible manner. By connecting this tunnel with the bridge there would be gained a relief to congestion by trolley car passengers, in the same way as the Center Street extension will relieve congestion by passengers at the train platforms. The two improvements are, however, quite distinct, neither depending of necessity upon the other.

The improvements here outlined can be completed, so far as the bridge is concerned, without any serious interference with the operation of either the elevated or the surface tracks.

The Bridge Commissioner has pointed out that the Second Avenue elevated line could effectively be brought over the tracks of the City Hall branch in Park Row, so as to make a double station at Park Row for both the East Side elevated systems. This is a most admirable suggestion, and one that I cordially indorse. Work is now in progress on the Blackwell's Island Bridge. If the Second Avenue line be brought to City Hall, additional express trains could be run not only to Harlem and The Bronx, but also, by constructing suitable connections across the new bridge, to the Borough of Queens, and thus bring that borough into direct and rapid communication with the City Hall. If this improvement were made, there would be a joint station of the Second and Third Avenue lines on one level and directly beneath them another joint station of the subway, the Brooklyn elevated and surface cars. Connection between the upper and lower levels could be made by moving stairways.

When these improvements are finished, both cars and trains will have disappeared from the surface of the bridge from Rose Street to Park Row, and the present terminal station with the bridge across Park Row can be removed. This station building is unspeakably unsightly and in every sense unworthy to constitute the approach to what is now the greatest bridge in the world. Aesthetic considerations would demand that when these buildings are removed the space be reserved to afford an uninterrupted view of the massive masonry towers and the graceful curve of the cables.

There is, however, a very general demand both on the score of economy and convenience for the construction of a great public building, in which can be located the various department bureaus, for which building no suitable site seems available. With the disappearance of trains from the Manhattan entrance of the bridge and the abandoning of the bridge approach as a station, for which it was never intended, the area covered by the present station, together with such private property as can be readily acquired to the north, forms an exceptional site for such a public building. This building, by proper architectural treatment, could be made a fitting approach for the bridge itself by piercing the building with a large arched way to form a spacious entrance to the bridge, which arch would afford a fine vista of the bridge from City Hall Park. Such a building would afford accommodation for all the city offices beneath a single roof. It would be near the City Hall and the general court house; it would face the City Hall Park; and, moreover, would have light and air on the other three sides. If a similar amount of land had to be purchased near by, the cost of the land alone would probably be nearly equal to the cost of the whole construction above proposed; whereas, by depressing the tracks as above suggested, this land becomes available practically without expense as an incident to such construction.

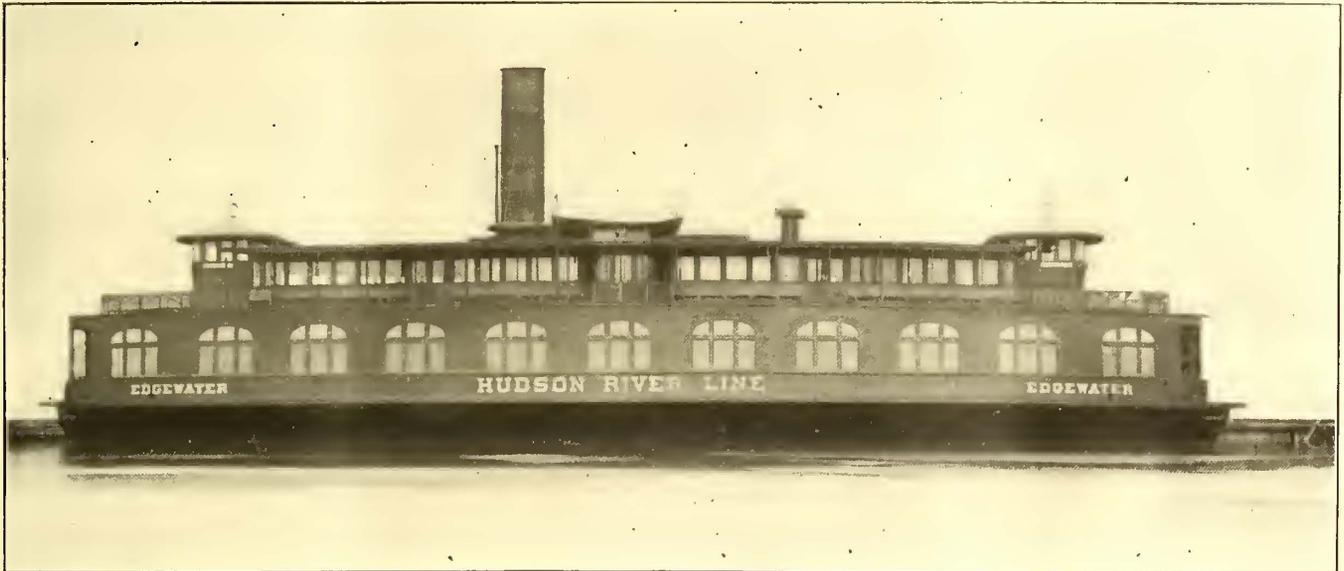
Boston Postal Service

The management of the electric mail car service in Boston was recently transferred from Edward J. Ryan, superintendent of the railway mail service, to Postmaster George A. Hibbard. The service consists of eight cars and fifteen men at present, and about 120,000 pieces of mail matter are handled daily. It was believed that the work performed by the clerks on the cars should be paid for by the Boston postoffice rather than the railway mail service, and this policy is in line with that now followed in other cities, the electric railway postal service being under the supervision of the postmaster. The clerks will thus be paid out of the first assistant postmaster general's appropriation, and the payment for the use of the Boston Elevated Railway Company's cars and tracks will continue to be charged to the second assistant postmaster general. Last year the revenue of the electric mail service to the Boston Elevated was \$21,600.08, or 11.2 cents per car mile, the total car mileage being 193,495.

The Ferryboat "Edgewater" of the New Jersey & Hudson River Railway and Ferry Company

One of the most complete and handsomely equipped ferryboats ever built has just been placed in regular service between 130th Street, in New York, and Edgewater, N. J. The New Jersey & Hudson River Railway & Ferry Company has its terminus at Edge-

the swiftest ferryboats in the harbor, besides forming a powerful ice breaker to force the way through the large ice floes encountered in this part of the "North River." The main engine is a three-cylinder compound of the marine type, developing at 150 r. p. m. of the propeller upwards of 850 hp. The engine shaft is coupled to the main shaft, extending through the entire length of the boat to a propeller at each end. Two additional engines, direct-connected to electric dynamos, furnish electricity for light, and blowing and



GENERAL VIEW OF THE "EDGEWATER"

water, and what was formerly the Fort Lee Ferry now lands there. On Thursday, July 3, a number of prominent men interested in the railway and in the district along the Palisades in New Jersey that it serves, at the invitation of the company made a very pleasant trip up the Hudson River on the new ferryboat, the "Edgewater," where every opportunity was given to make a thorough inspection of her original points of design, both in cabin furnishings and in machinery. Frank R. Ford, second vice-president and general manager of the railway company, was on board and explained the details to his interested guests.

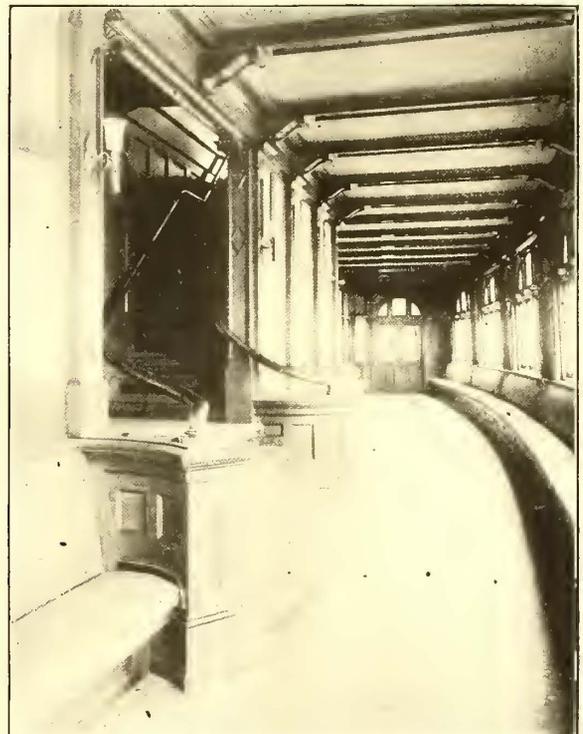
Contracts were awarded last November to P. Sanford Ross, Incorporated, of Jersey City, for the building of the dock work on both sides of the river, and to John Monk & Son, of New York, for the New York ferry house building. The work on the New York side has been delayed by the construction of the new bulkhead by the city at this point, but this has now been so far completed as to enable the ferry construction to proceed, and it is expected that the latter will be completed by the early winter. The ferry building at the foot of West 130th Street will be of the best modern design and construction and provided with all the most recent improvements. It will be a steel structure with copper front and clock tower, the latter to form a prominent feature of the shore front, both as seen from the river and the Riverside Drive viaduct over Manhattan Valley, directly behind it. The interior finish of the building will be of stamped metal and quartered oak, somewhat similar to that of the Desbrosses Street ferry house. Adjoining the building there will be a power house containing the necessary machinery for heating and electric lighting. The building will be located on the new bulkhead line directly at the foot of West 130th Street, but about 150 ft. further out in the river than the old Fort Lee ferry house. This provides sufficient space for the new marginal street at this location similar to West Street in lower New York. On the New Jersey side a new slip has been built south of the present one, and a new gangway house added, which practically doubles the capacity of the present building.

The new ferryboat "Edgewater," which was built for the company by the Harlan & Hollingsworth Company, of Wilmington, Del., has just been delivered. The boat is a double-decked steel ferryboat of the latest design, with upper works of somewhat similar appearance to the Pennsylvania Railroad ferryboats, the lower cabins extending to the extreme ends of the boat. The length over all is 180 ft., the width 60 ft. A corps of engineering specialists has been engaged in its design, Colonel E. A. Stevens, of Hoboken; Captain C. W. Woolsey and H. B. Roelker, supervising the design of the hull and machinery, and Ford, Bacon & Davis, the electrical equipment and interior arrangement and finish.

The hull of the boat has been so constructed as to make it one of

steering engines are also provided, besides the usual equipment of condenser, feed, bilge and fire pumps. Two marine boilers furnish steam to these engines and pumps.

The design and equipment of this ferryboat are such as to make it the safest of any in the harbor. The steel hull is constructed as



VIEW OF CABIN INTERIOR

a complete double shell at the water line, there being eight separate water-tight compartments divided by steel-plate collision bulkheads, rendering the boat practically unsinkable. The protection from fire is also perfect. A steel deck and steel center house, from hull to hurricane deck, would isolate any fire in the hull and prevent it from communicating to the cabins and decks until assistance could be obtained. Powerful fire pumps are connected to a special fire

pipe line with regulation New York Fire Department outlets and hose at eight points on the three decks. In addition to the old-fashioned hand buckets required by the government regulations, at four convenient points are provided standard fire extinguisher bucket tanks filled with chemical solution. Double the number of life preservers required by law are provided, in accessible locations, and in addition to the usual life boats there are carried ring buoys and life rafts which can be quickly thrown overboard.

As this ferry is a part of the "Hudson River Line" from New York to Englewood, Hackensack and Paterson, it has been the object of the management to provide a ferryboat which in convenience of arrangement and elegance of finish would be as notable as its electric cars. The main deck is in general of the usual arrangement. A cabin on each side extends the entire length of the boat, one being for smokers and one for non-smokers. Stairways in the center of each cabin lead to the upper cabins. Between the main cabins are the usual teamways, with accommodation for thirty average wagons. For sanitary reasons the company experimented with a number of waterproof paving materials for the teamways, including rock asphalt, asphalt mastic, vitrified brick, granite block and compressed cork brick, but these were found unsatisfactory on account of horses slipping on them when starting heavy loads. The paving material used is creosoted spruce, which is an improvement over the untreated wood. A portion of the center house between the teamways is used as a drivers' cabin, enabling these men to have a shelter in winter and still be close to their teams. The promenade deck is provided with the usual seats.

Great care has been taken in the design of the interior finish. All cabinet work is of specially selected quartered white oak, with plain moldings, giving a simple though elegant effect. The paneling of walls and ceilings is in burlap of natural color. A touch of bright color has been added in the elliptical transom windows of the lower cabin, which are of stained glass, made by the Tiffany Company. The hardware and fixtures are of solid bronze. The color scheme is uniform throughout, harmonizing with the natural wood color of the oak. All of the work is along honest and substantial lines, and the effect is most pleasing; a private yacht would not be more handsomely finished. The lower cabin and stairway floors are covered with rubber tiling in a simple design, and the upper cabin floors with cork carpet. Spring rattan seats, similar to those used in street cars, are provided in the lower cabins, a novelty for this service and affording additional comfort.

The boat is heated by the Sturtevant hot air system. Cold air, which is taken at an opening above the center house on the hurricane deck, is heated by being passed over steam coils in the hold, and is then blown into the cabins from outlets near the ceilings. On cooling, the heated air descends and is exhausted at openings under the seats and discharged into the open air by ventilating fans. The difference between this system and the usual heating by radiators under the seats, without any ventilation, is readily noticeable. The electric lighting of the boat is upon an unusually generous scale, there being 50 per cent more lamps used than on the best lighted ferryboats in the harbor. A sufficient supply of electricity has also been provided for search light and exterior electric signs.

The Seattle-Tacoma Interurban Railway

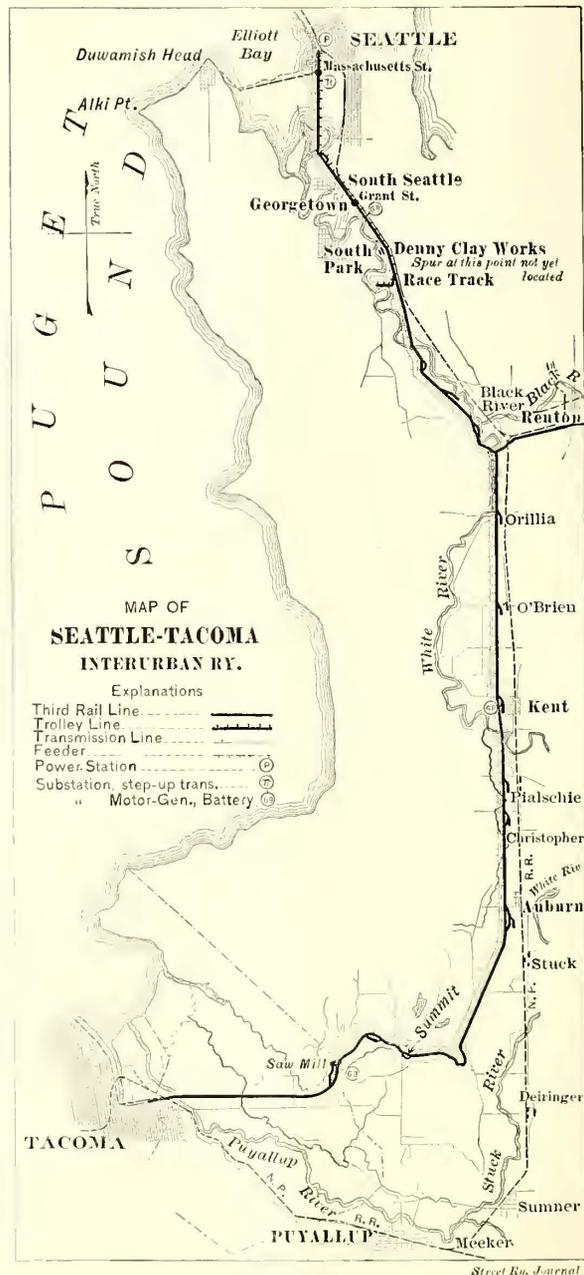
One of the most interesting high-speed electric railways now under construction in America is being built between the cities of Seattle and Tacoma, Wash. The line is about thirty-six miles long from end to end, and is to be equipped with the most modern apparatus available for quick transit.

Starting in the thickly settled part of Tacoma, the line runs easterly across the Puyallup Indian Reservation, through the valley of the Stuck River northerly to Auburn, about 14.5 miles from Tacoma, then passes to the town of Kent via Christopher and Thomas, Kent being about nineteen miles from the starting point. Thence the track extends through O'Brien, Orillia, Renton Junction, and follows the Duwamish River through Race Track, Georgetown and South Seattle to King Street, Seattle proper, the cars to operate on the tracks of the Seattle Electric Company within the city.

The road is being built largely on a private right of way, extending between the Tacoma city line and Race Track. Current for the trains will be taken from a 100-lb. per yd. third rail on the private right of way and from a 00 B. & S. trolley wire on highways. The third rail is to be supplemented by a 350,000-circ. mil cable. The track rails are 70-lb. Chase-Shawmut 500,000-circ. mil bonds will be used on the track and 750,000-circ. mil on the third-rail.

Sub-stations located at Saw Mill, Kent and Grant Streets, about 6.5, 19 and 32.4 miles from Tacoma, respectively, will serve as distributing points for the current supply. Current will probably

be generated in the new Post Street power station of the Seattle Electric Company in Seattle, transmitted about one mile over a 0000 B. & S. two-phase circuit at 2,200 volts to the Massachusetts Street step-up transformer station. Here four 500-kw water-cooled General Electric transformers will raise the voltage to about 27,500 maximum and feed the high-tension transmission line with 60-cycle, 3-phase current over three No. 1 B. & S. copper wires as far as Race Track, where the line will change to three No. 4 B. & S. copper wires and be carried through to Sawmill substation in this size. The step-up transformers in the Massachusetts Street sub-station are to be equipped with regu-



MAP OF SEATTLE-TACOMA LINE

lating dials giving various secondary voltages with variations in the primary between 2,000 and 2,200. Each transformer is guaranteed to regulate within 1 per cent at 100 per cent power factor, and within 3 per cent at 80 per cent power factor.

At each of the sub-stations there will be one 300-kw motor-generator set, fed by two 180-kw oil-cooled, step-down three-phase two-phase transformers. The machines consist of an eight-pole, 300-kw, 450-r. p. m., 600-volt flat-characteristic, direct-current General Electric railway generator direct-connected to a G. E. 16-pole, 450-hp, 2,200 volt, 2-phase induction motor. Each machine has a 50 per cent overload capacity for two hours. It is expected that the control of the railway current through motor generators instead of rotary converters will give an unusual flexibility in operation.

Supplementing the motor generators and taking up the fluctuations which the trains will superimpose upon each sub-station will be three storage batteries, made by the Electric Storage Battery

Company, of Philadelphia. The Grant Street and Kent sub-stations will each contain 288 cells with Type G17 plates, each battery having a capacity of discharging 640 amps. at the hour rate, and the Saw Mill battery will be 288 cells of Type G15, all plates in the three batteries, however, being in Type G23 tanks to allow for future growth. These batteries will be charged and discharged through differential boosters, General Electric Type MP 6-pole, 35-kw, 600-r. p. m. 50-volt to 110-volt generators direct connected to General Electric Type MP 4-pole, 53-hp, 600-volt motors.

These boosters will be designed to bring an average load upon the motor-generator sets. When the line current becomes great the booster's series ampere turns overpower the shunt turns, generating a voltage in the booster armature coincident in direction with the battery voltage, so that the battery discharges, taking up the fluctuations. At times of extremely light load, the shunt field overpowers the series, giving a voltage in opposition to the battery, and charging it from the generator. At average load the shunt and series fields just balance and the battery floats on the bus-bars, inactive, with the load coming on the generator. The batteries can also be operated without boosters by giving the motor-generators a falling voltage characteristic as the load comes on.

On the Seattle power station current will be derived from two 1600-kw Westinghouse 2,200-volt, 60-cycle alternators. The local cars in Seattle depending primarily on this station will be supplied through 500-kw rotary converters connected to step-down transformers.

The Seattle Electric Company has also at present a connection with the lines of the Snoqualmie Falls Power Company, which transmits power from the Falls thirty-one miles to Seattle and forty-four miles to Tacoma over a 30,000-volt, 3-phase line, using aluminum wire. A recent test on this line made by sending current from the Falls to Seattle, back to the Falls, then to Tacoma and back to the Falls, 153 miles in all, gave, with a line resistance of 241 ohms, 13½ per cent power loss at 60-cycles. The insulation resistance was 70,000 ohms, and the charging power 112 kw.

The interurban transmission line will be made up on red cedar poles 40 ft. to 45 ft. long, spaced 110 ft. to 120 ft. apart. The upper transmission cross-arms will be 8 ft. 6 ins. long by 6 ins. square at the ends, with two pins 7 ft. on centres. The lower arms will be 12 ft. long, 6 ins. x 6 ins. at the ends, with four pins 3 ft. 6 ins. on centres. Thus the transmission wires will be spaced on a 42-in. equilateral triangle. The telephone arm will be at least 4 ft. below the transmission arm and standard in size.

The railway feeders will be run on standard 4-pin arms. Pins are of eucalyptus, insulators are of the Locke type, with porcelain petticoats and glass supports, designed for a working pressure of 60,000 volts. Lighting arresters will be used in the sub-stations.

The passenger motor cars are to be combination smoking and baggage type, length over end panels 32 ft. 6 ins. and 41 ft. 6 in. over vestibules, equipped with Van Dorn automatic couplers, Ham sand boxes, and Hale and Kilburn walkover seats. They are mounted on Brill "27E" trucks. There are also similar cars without compartment to operate both as motor and trail cars. The multiple unit system of control will be used, each motor car having four G. E.-66 motors mounted on its trucks, giving a rated capacity per car, on the hour basis, of 500 hp. The equipment will probably attain a maximum speed of 60 miles per hour with a 30-ton motor car hauling a 20-ton trailer. G. E. Type M control is to be used on the cars. There will also be two 4-motor G. E.-66 freight equipments in operation, capable of hauling a trailing load of 275 tons behind a 35-ton locomotive at twelve miles per hour. The passenger gear ratio is 1.55, and the freight, 3.95. Two of the motors of each freight equipment are connected permanently in series.

The schedule time and train service of the road has not yet been given out, but the speed capabilities of the equipment and favorable characteristics of the right of way, as regards alignment and grade, except between Saw Mill and Auburn, where 2 per cent grades and sharp curves abound, should ultimately cut down the running time to within an hour and a half under favorable circumstances and perhaps better it. Boston capital, principally, is backing the enterprise.

New Car-Ahead Ordinance

The car-ahead ordinance, which was passed several months ago by the New York Aldermen, was pronounced invalid the first time it was submitted to the test of judicial consideration. Now, another ordinance has been framed, and its advocates claim that the

defects of the original law have been avoided. Here is the text of the measure which was adopted by the Board of Aldermen July 7:

Section 1. Every car owned, operated, managed or controlled by a street surface railroad company in the streets or highways of the City of New York, shall carry throughout its route, on the outside, in front and on top of each and every car so operated, a signboard or placard upon which shall appear conspicuously the destination of the said car. Every such company must carry for a single fare upon such car, without change therefrom, each and every passenger to any regular stopping place desired by him, upon said car's route, in the direction of the destination so designated; and for every violation of the ordinance there shall be recoverable against the company so offending a penalty of \$100 in an action to be brought in the name of the City of New York.

Sec. 2. This ordinance shall not apply to a transfer made to a connecting line, going in a different direction from that in which such car may be going, nor where, by reason of any accident, compliance with the ordinance is rendered impossible.

Sec. 3. This ordinance shall take effect immediately.

Operating Electric Cars on Steam Roads

One of the most important legal decisions affecting the electric railway interests was handed down by Justice Haight in the litigation over the effort of the Hudson Valley Railway Company to operate its lines in conjunction with the Boston & Maine Railroad. The opinion of the Court of Appeals, which accompanies this decision and in which Judges Parker, Gray, O'Brien, Vann Cullen and Werner concur with Justice Haight, confirms absolutely the right of electric railroads to compel the steam railroads to make connections and interchange freight business with electric railroads. The case came before the Court of Appeals of New York for revision upon motion of the Stillwater & Mechanicville Street Railway Company, which is one of the lines controlled by the Hudson Valley Railway Company, to set aside the decision of the Appellate Division, which had reversed the findings of the commissioners adjudging that an intersection and connection of the electric line with the steam road should be made. The case was carried through the courts by Thomas O'Connor, of Waterford, and was argued in the Court of Appeals by ex-Senator Hill, for the Hudson Valley Railway Company. The text of this important opinion follows:

JUDGE HAIGHT'S OPINION.

This proceeding was instituted by the Stillwater & Mechanicville Street Railway Company to obtain an order permitting it to unite and connect the tracks of its railroad with those of the Boston & Maine Railroad Company, in order to facilitate the free interchanging of cars between the two roads.

The Stillwater & Mechanicville Street Railway Company was organized under the General Railroad law of this State, with the right to transport both passengers and freight, and is operated as an electric railroad by the trolley system.

The Boston & Maine Railroad is a foreign corporation, organized under the laws of Massachusetts, and is operating a steam railroad. It is contended upon its behalf that the statute does not authorize the court to compel a connection of the tracks of the two roads. The question, therefore, raised for our review is, as to the proper construction of the statute.

The Railroad Law of 1890 (chapter 565, section 12) provides as follows:

Every railroad corporation, whose road is or shall be intersected by any new railroad, shall unite with the corporation owning such new railroad in forming the necessary intersections and connections, and grant the requisite facilities therefor; and if the two corporations cannot agree upon the amount of compensation to be made therefor or upon the line or lines, grade or grades, points or manner of such intersections and connections, the same shall be ascertained and determined by commissioners, one of whom must be a practical civil engineer and surveyor, to be appointed by the court, as is provided in the condemnation law; and such commissioners may determine whether the crossing or crossings of any railroad before constructed shall be beneath, at, or above the existing grade of such railroad, and upon the route designated upon the map of the corporation seeking the crossing or otherwise. All railroad corporations whose roads are or shall hereafter be so crossed, intersected or joined, shall receive from each other and forward to their destination all goods, merchandise and other property intended for points on their respective roads, with the same dispatch as, and at a rate of freight, not exceeding the local tariff rate charged for similar goods, merchandise and other property received at and forwarded from the same point for individuals and other corporations.

It will be observed that this statute contains two provisions, one for the crossing of the tracks of another railroad at, above or beneath grade; and the other provides for the intersection of the tracks of such railroads, and upon the making of such connections the roads shall receive from each other and forward to their destination all goods, merchandise and other property intended for points on their respective lines.

The court below seems to have been of opinion that this statute had reference to steam railroads, and did not pertain to roads

operated by electricity. In determining this question it becomes necessary to examine more fully the Railroad Law for the purpose of ascertaining the legislative intent. By referring to section 2 of the act we find provisions for the incorporation of railroads which is to be accomplished by the execution of a certificate of fifteen or more persons which shall contain the name of the corporation, the number of years it is to continue and the kind of road to be built or operated. The section contains other provisions, among which is sub-division 11, which provides that "if a street surface railroad, the names and description of the streets, avenues and highways in which the road is to be constructed." It is thus apparent that the articles of incorporation provided for have reference to all kinds of railroads for public use, including steam railroads, street, surface and electric roads.

Again, passing to section 4, sub-division 5, of the act, we find that every railroad corporation, in addition to the power given by the general stock corporation law, shall have power "to cross, intersect, join or unite its railroad with any other railroad before constructed, at any point on its route and upon the ground of such other railroad corporation, with the necessary turnouts, sidings, switches and other conveniences in furtherance of the objects of its connection."

Section 34. Every railroad corporation shall start and run its cars for the transportation of passengers and property at regular times, to be fixed by public notice, and shall furnish sufficient accommodations for the transportation of all passengers and property which shall be offered for transportation at the place of starting, within a reasonable time previously thereto, and at the junctions of other railroads, and at the usual stopping places established for receiving and discharging way passengers and freight for that train; and shall take, transport and discharge such passengers and property at, from and to, such places, on due payment of the fare or freight legally authorized therefor.

Sec. 35. Every railroad corporation whose road, at or near the same place, connects with or is intersected by two or more railroads competing for its business, shall fairly and impartially afford to each of such connecting or intersecting roads equal terms of accommodation, privileges and facilities in the transportation of cars, passengers, baggage and freight over and upon its roads, and over and upon their roads and equal facilities in the interchange and use of passenger, baggage, freight and other cars required to accommodate the business of each road, and in furnishing passage tickets to passengers who may desire to make a continuous trip over any part of its roads and either of such connecting roads. The Board of Railroad Commissioners may, upon application of the corporation owning or operating either of the connecting or intersecting roads, and upon fourteen days' notice to the corporation owning or operating the other road, prescribe such regulations as will secure, in their judgment, the enjoyment of equal privileges, accommodations and facilities to such connecting or intersecting roads as may be acquired to accommodate the business of each road, and the terms and conditions upon which the same shall be afforded to each road. The decision of the commissioners shall be binding on the parties for two years, and the Supreme Court shall have power to compel the performance thereof by attachment, mandamus, or otherwise.

It will be observed that each of these provisions of the statute, to which reference has been made, expressly refers to every railroad corporation, and thereby includes every railroad incorporated under the provisions of section 2 of the act.

The contention is now made that to compel a track connection of steam railroads by electric or street surface railroads for the interchanging of traffic, would be a burden and a hardship to steam railroads that was not contemplated when the statute was passed; that to permit connections with steam railroads by the large number of electric railroads which have been, or are being constructed, would result in confusion to the steam railroads and make their operation difficult.

The learned Appellate Division appears to have been impressed with this argument, for it states in its opinion that the proceeding and purpose is new, and obviously opens a field of inquiry of the greatest importance, not alone to railroad corporations, but to the general public, which has an interest in the streets and highways of towns, villages and cities of the State; that if the street surface railways are to be recognized as an integral part of the great system of steam railroads, that the purpose should be made clear by the Legislature. Travelers and the shippers of merchandise and freight have the right to make use of all the facilities provided for in the articles of incorporation, and the provisions of the statute pertaining thereto, in the conduct of their business. This, we think, is made clear by the provisions of the statute which requires that all railroad corporations whose roads are, or shall be intersected, shall receive from each other and forward to their destination all goods, merchandise and other property intended for points on their respective roads, with the same dispatch and at the rate of freight not exceeding the local tariff rate, etc. Bearing this purpose in mind, we pass to a consideration of the meaning of the law. As we have seen, by the statute authorizing the incorporation of railroads, the Legislature contemplated making provisions for all kinds of railroads, street surface, as well as steam railroads. By section 4, sub-division 7, all roads organized under the provisions of the act were empowered "to take and convey persons and property

on its railroad by the power or force of steam, or animals, or by any mechanical power." It is true that the statute contains numerous provisions which apply alone to steam railroads, and other provisions which apply alone to electric or street surface roads; but in most of these provisions there is specific reference either to steam or street surface roads. The great body of the statute was intended to apply to all railroads incorporated under its provisions, especially so far as those provisions were applicable. The revision of the Railroad Law of 1850 is of recent date and after the street surface railroads in our cities and villages had become very numerous. The Legislature in undertaking a revision of the railroad laws attempted so far as possible to establish a complete system under which all kinds of railroads could be operated and the public interests subserved. In construing these statutes it does not become us to shut our eyes to the purposes sought to be accomplished, or the discoveries that have been made and the improvements accomplished in the transportations of the country in recent years. The great steam roads have extended across the continent from ocean to ocean, and from the far North down to the tropics. These roads have become great arteries over which is transported the greater part of the commerce of the continent. It has not been considered profitable or practical for steam roads to be constructed to every village, hamlet or productive district in the country. This, however, is rapidly being accomplished by the numerous electric roads that are in process of construction, or are contemplated. By their means the farmer, the mill owner and the merchandise vendor in distant places may be able to reach the steam railroads, and through them the great markets of our cities, with their merchandise and products, and in this way one road may become a feeder and distributor of the other.

If one electric road were seeking a connection with another road operated by the same power, it would hardly be claimed that the provisions of section 12 did not apply. It is practically conceded that electric roads may be united with other roads of the same character and operated by the same power. But the statute has not limited the courts to the requiring of intersections and connections between roads of the same character. Very likely electric roads tendering cars to steam roads for transportation should only offer those properly equipped with brakes and couplers, so that they may be taken and transported readily and safely. It may be that additional regulations will become necessary in order that equal privileges, accommodations and facilities may be afforded in connecting and intersecting roads, but all this may be controlled by the Board of Railroad Commissioners, who, under the provisions of section 35, to which we have referred, is given full authority in the premises.

It is said that the rights of the public in the streets and highways of our cities, towns and villages should be protected, and that cars loaded with merchandise and freight should not be permitted to be run over street surface railroads. It may be that additional regulations should be provided either by statute or by ordinance, limiting the time in which cars of this character should be permitted to run over street-surface railroads, especially in cities and large villages; but that the power exists to run such cars is no longer an open question in this court.

This question was elaborately considered in the case of *De Grauw vs. Long Island Electric Railway Company* (43 App. Div., 502), which case was affirmed in this court on the opinion below (163 N. Y., 597).

Again, bearing in mind the legislative purpose, its intent, to our minds, appears reasonably clear, in the use made of the provision to cross, intersect, join or unite its railroad with any other railroad. The word "cross" is used in connection with the word "connect," and the Legislature could hardly have intended that one word should mean one kind of a railroad, and the other another kind. One of the most important rights which the Legislature undertook to provide for and to protect was that of the right of one railroad to cross the tracks of another which had previously been constructed. Were it not for this, one road running north and south through the State could absolutely prevent the constructing of another extending east and west. The Legislature was careful to make ample provision for crossings in the same section in which intersections were provided for, and these provisions, with reference to crossings, have been held to apply to electric and street surface roads crossing steam roads, or of steam roads crossing electric or street-surface roads. (*Buffalo, B. & L. R. R. Co. vs. N. Y., L. E. & W. R. R. Co.*, 72 Hun, 583; *Port Richmond & P. P. El. R. R. Co. vs. Staten Island R. T. R. R. Co.*, 71 Hun, 179; *affd.*, 144 N. Y., 445.)

It appears to us that the Legislature has clearly empowered the court to order connections such as is sought by the petitioner in these proceedings. The order of the Appellate Division should, therefore, be reversed, and that of the special term affirmed with costs.

The Bill Providing for the Purchase of Street Railway Bonds by Massachusetts Savings Banks

As the contents of the bill passed by the Massachusetts Legislature authorizing savings banks to invest in street railway bonds, which becomes operative on July 16, is of general interest, the text is herewith presented:

Sec. 1.—In addition to the investments authorized by section 26 of chapter 113 of the Revised Laws, savings banks and institutions for savings may invest their deposits and the income derived therefrom in the bonds, approved by the Board of Commissioners of Savings Banks, as hereinafter provided for, of any street railway company incorporated in this commonwealth, the railway of which is situated wholly or partly therein, and which has earned and paid annually for the five years last preceding the certification of the Board of Railroad Commissioners, hereinafter provided for, dividends of not less than 5 per centum per annum upon all of its outstanding capital stock. In any case where two or more companies have been consolidated by purchase or otherwise during the five years prior to the certification hereinbefore named the payment severally from the earnings of each year of dividends equivalent in the aggregate to a dividend of 5 per centum upon the aggregate capital stocks of several companies during the years preceding such consolidation shall be sufficient for the purpose of this act. Dividends paid to the stockholders of the West End Street Railway by way of rental shall be deemed to have been earned and paid by said West End.

Sec. 2.—The Board of Railroad Commissioners shall on or before the fifteenth day of January of each year transmit to the Board of Savings Bank Commissioners a list of all street railway companies that appear from the returns made by these companies to have properly paid the dividends required by the preceding section without impairment of assets of capital stock.

Sec. 3.—The Board of Savings Bank Commissioners shall as soon as may be after the receipt of the lists provided for in the preceding section, prepare a list of such bonds issued by any street railway company certified by the Board of Railroad Commissioners in accordance with the provisions of the preceding section as the Board of Savings Bank Commissioners shall deem good and safe securities for the investments of savings banks and institutions for savings. Such lists shall at all times be kept open to the inspection of the public.

Waltham Locations Granted

The closing scene in one of the most active and protracted street railway contests ever held in Massachusetts was enacted on July 2, when the Waltham Street Railway Company and the city government of Waltham petitioned for approval of a grant of location, the former's petition also including the Newton Street Railway Company. The matter was first brought up two years ago. While there is every reason to believe that the company has paved a way to the building of its line through Waltham, there still remains the securing of location in Newton. The Waltham contest is said to be but a sham battle in comparison with the task ahead of the company in Newton.

The hearing was before the Railroad Commissioners, under the new law requiring the board to approve all locations. At the outset an interesting question arose. The Waltham aldermen petitioned for the approval as well as the street railway company, and it was a problem whether the board should ignore the application of the company. City Solicitor Harvey argued in the negative, while L. E. Chamberlain and H. S. Milton took the opposite ground, as did William H. Coolidge, counsel for the Newton company. Finally the Waltham company withdrew its petition, and as there was no remonstrance the hearing closed.

The petition of the Waltham Street Railway Company to cross the tracks of the Fitchburg division of the Boston & Maine Railroad, at Roberts's Station, was postponed to September 23 at the request of the interested parties.

New England Street Railway Club Outing

The New England Street Railway Club held an out-door meeting, at Whalom Park, Fitchburg, Mass., on July 1, which was attended by 115 members. A special train left the North Station, Boston, at 9:30 a. m., and also a special car of the Worcester Consolidated Street Railway Company left Union Station, Fitchburg, at 9:30 a. m., running direct to the park for the benefit of members from the western and southern parts of the State, Connecticut and Rhode Island. Every attraction at Whalom Park was placed at the disposal of the club through the kindness of Superintendent W. W.

Sargent, and the directors of the Fitchburg & Leominster Street Railway Company.

On arrival at the park, which was described in detail in the STREET RAILWAY JOURNAL of Feb. 1, 1902, the members engaged in boating, swimming, races, bowling, billiards, pool and other games and pastimes. Dinner was served at the park, at which Mr. Dan. L. Prendergast, real estate agent of the Boston Elevated Railway Company, presided as toastmaster. Speeches were made by Hon. Mr. O'Connell, of Fitchburg; Marcus A. Coolidge, of Fitchburg; Mr. Ogden, of the Concord, Maynard & Hudson; Frank Ridlon, of Boston, and others. In the afternoon the company attended a performance of the "Black Hussar" at the Whalom Park Theater, and after a vote of thanks to Superintendent Sargent and Mr. Kirby, for courtesies extended the club, left for home about 8:40 p. m., with a most enjoyable time in its remembrance. This is the last club meeting before fall, when the regular meetings will be resumed.

New York Street Railway Men Enjoy Themselves

The fifth annual outing of the employees of the Broadway, Columbus Avenue, Lexington Avenue, Sixth Avenue, Seventh Avenue and Lenox Avenue divisions of the Metropolitan Street Railway Company, of New York, was held on July 5 at Donnelly's Grove, College Point, Long Island. About 700 motormen, conductors and officials of the several divisions, arrayed in white trousers, negligé shirts of white and black, and white caps with black peak, assembled about 8:45 p. m., and, escorted by a band of twenty-five pieces and the Metropolitan Street Railway Drum and Fife Corps, which is composed of employees of the company, made their way to the steamer "Sylvester," at the foot of Fiftieth Street, New York, which was in waiting to convey the party to College Point.

When the party landed at College Point an excellent lunch was served. A special table was set aside for guests and the committee in charge of the affair, and at the head of this table was seated Mr. Oren Root, Jr., assistant general manager of the company, who presided over the feast. Three hearty cheers were given for Mr. Root after the men had finished their repast. Other officials were also cheered by the men.

A good athletic programme had been arranged for the afternoon, and excepting a heavy shower, which came up when the sport was at its height, there was nothing to mar the afternoon's fun. The programme comprised a 100-yard dash, a 100-yard "dash" for men weighing over 225 lbs., a shoe race, a one-half-mile run, a sack race, a 100-yard consolation dash, and two ball games. The prizes in the ball games were \$10 gold pieces to the winners, and in each of the other events, the shoe race, the sack race and the 100-yard consolation race excepted, two prizes—gold medals for the winners and silver medals for the second men—were awarded. One prize in each event was offered in the shoe race, the sack race and the 100-yard consolation race. The rivalry between the several divisions was most keen, and the winner of each event was applauded vociferously by his division associates.

The 100-dash, open to all, was won by a man of the Broadway division, a Lexington Avenue man being second. The 100-yard dash for fat men, in which each contestant weighed over 225 lbs., was won by a Lexington Avenue man, a member of the Broadway division being second. The shoe race went to Sixth Avenue. In the one-half mile run, the contestants started off at a lively clip, and but three men finished, although a dozen or more started. The honors for this event went to a Broadway man, while a Sixth Avenue man took second prize. When this event was finished shelter from the rain was sought at the hotel, but when the rain ceased the programme was concluded. The sack race was won by a Sixth Avenue man, as was also the 100-yard consolation race. The finish of this event was the most exciting of the day. The ball games, which concluded the athletic programme, were between two scrub teams, each member of which weighed over 200 lbs., Lexington Avenue vs. Broadway. Interest centered in the game between the Lexington Avenue and Broadway divisions, and considering the slippery condition of the field the game was a most creditable one. It was won by the Lexington Avenue men, whose pitcher, considering the conditions under which he labored, had most excellent control of the ball. Dinner was served after the ball game, and the men returned to New York.

Dinner was served after the ball game, and the men returned to New York.

Among the prominent officials of the company present were: Oren Root, Jr., assistant general manager; J. J. Cahill, superintendent of the Broadway, Sixth Avenue and Seventh Avenue divisions, and president of the various divisions of the outing; A. Snyder, superintendent of the Lexington Avenue division; J. N. Nelson, chief clerk.

Topics of the Week

Several attempts have been made lately to wreck electric trains on the Brooklyn system, but fortunately none of them succeeded. Last week a man was discovered in the act of placing obstructions upon the track before a six-car train crowded with excursionists. Fortunately disaster was averted. The man was captured, and it was learned that he was insane.

Rate wars between competing steam and electric railways are now common occurrences, but when competing electric railways begin to sacrifice rates in order to secure traffic more than passing attention is attracted to "the war." Two lines between Jackson and Grass Lake, Mich., twenty miles distant, are engaged in a fierce struggle of this kind, and as a result the residents of the territory through which the lines pass are enjoying a twenty-mile ride for 5 cents.

The Fire Department of New York has had its first experience in fighting fire upon the elevated structure of the Manhattan Railway system while current was carried on the third rail. More than usual care was exercised, but there was no delay in reaching the flames. The fire was not due to any electrical cause, and the men suffered no injury or inconvenience on account of the presence of the third rail.

For New York and such other cities as have in contemplation the passage of an ordinance to prohibit passengers standing between the seats of a street car there is a lesson in a court decision handed down a few days ago at Fall River, Mass. It would seem that persons with ideas as to how a street railway ought to be run succeeded in having passed an ordinance to the effect that passengers could not stand between the car seats. Some one who had to stand brought the case before the court, and the judge before whom the case was heard ruled that any such ordinance was unconstitutional.

Comptroller Grout is making lots of trouble for the Rapid Transit Commission and the contractors engaged upon the subway work. Although the board passed a resolution recognizing the ducts for the carrying of the electric feeders in the Manhattan subway as part of the construction work, the Comptroller refused to pay the contractor for his work until the courts have passed upon the question. The issue involves \$1,500,000. If the ducts are held to be construction work, the city will have to advance the cost, but in case they are adjudged to be part of the equipment of the road the contractor will have to bear the outlay.

Judge Grosseup, in the United States Circuit Court, at Chicago, last week heard arguments upon the Peoria electrolysis case, and has taken the matter under advisement. This action was begun four years ago, and the hearing in Chicago was upon the report of the special motion in chancery. The defendants in the case before Judge Grosseup are the Central and the Peoria & Prospect Heights Railway Companies, of Peoria. The water works company of Peoria is seeking an injunction to restrain the traction companies from using the single overhead trolley wire along their lines, upon the ground that the returning electric current escapes to the complainant's piping system and causes injury to the mains.

Every new industry produces a new crop of experts, who pose as authorities until practical experience develops some actual data to form a groundwork, and then the pioneers are relegated to obscurity, if they have not found some new field in which to exercise their peculiar talents. In the case of the oil fuel industry of Texas it seems that the breed has been unusually prolific, and, as might be expected, the general run is of even a lower order than the average. A prominent engineer, who had occasion to investigate the claims of Texas oil boomers, said: "My experience has been that most of the men in Texas who claim to know all about combustion, the installation and operation of power plants, and the best method of handling crude oil, ought to be shoveling coal, rather than installing oil burners."

The Brooklyn Rapid Transit Company officials have been haled before the Health Department for violation of the smoke ordinance, and have admitted the charges preferred against them, setting up the plea, however, that they "couldn't help it." The Manhattan Company, which made the same excuse until the District Attorney took a hand in the proceedings, is now burning hard coal, and it has promised not to violate the ordinance in the future. The smoke nuisance in Brooklyn is as bad as that which aroused New York

several weeks ago, and the Health Department is daily receiving numerous complaints from the people along the lines upon which the soft coal is burned. The city power plants, which were also violating the ordinance, have been put on the list, and the Mayor has called the officials in charge of this department sharply to account. Naturally, while the city plants offend private interests cannot be compelled to comply with the law.

Readers of the STREET RAILWAY JOURNAL will recall the discussion in these columns of the practicability of introducing a breakfast service upon suburban lines, as proposed by a Chicago real estate boomer, who had city lots for sale on the outskirts of Cook County. Now a New York commuter asks the Sun: "Why wouldn't dining cars, that is to say, breakfast cars, be a good thing on the 'L' roads?" and adds: "If a man knew that he could get a seat and a breakfast for a fair sum on his way to work, he would be pretty sure to stop crowding himself at home for time and gulping down his breakfast, and take it leisurely on the train. It would not be necessary to have tables and ordinary seats, a lunch counter and stools being sufficient, besides affording accommodations for more people." It may be that there is a real demand, after all, for some such service, and the Chicago hustler's proposition was the result of observation and experience. Will some one give it a trial?

It looks now as if the Jim Crow laws recently enacted in Southern States would give the street railway companies trouble, and their enforcement may lead to more serious disturbances than mere controversial argument. In Louisiana, where the new law goes into effect October 1, the negroes are organizing to fight the enforcement of its provisions in the courts, and it is claimed that enough money has already been subscribed to defray the expenses of carrying the case through the Federal courts, if necessary. The law requires the separation of whites and blacks. The street railroad companies may operate separate cars for white and blacks, or separate them in the same car by a wire partition. A colored girl carrying a white child is permitted to enter the white section of the car. It is upon this point that the test case will hinge. Two negro girls, one of them carrying a white child, will board a car together and take seats in the compartments set aside for whites. Under the law the conductor will then be compelled to order the girl unaccompanied by a white child to go to the negro section of the car. Upon her refusal to do so she will be ejected from the car or arrested and locked up for breach of the peace. The question, therefore, that will go before the court is whether a white baby accompanying a negro girl can secure for that girl privileges which have been refused to her companion, also a nurse girl, but not having a white child, and therefore, whether the Wilson law is not class legislation, granting unequal privileges.

There still seems to be considerable doubt as to the attitude of the New York Aldermen toward the Pennsylvania tunnel franchise. The contract between the City of New York and the Pennsylvania Railroad Company for the construction of a tunnel under the North River has been presented to the Board of Aldermen and referred, unread, to the committee on railroads, which in turn fixed Friday, July 11, as the time for the first public hearing on the question. It is not probable that the board will act on the franchise before the summer vacation. There is to be a meeting next Tuesday, but a report from the committee is not expected at that time. It was claimed by friends of the measure that if no vote is taken prior to adjournment the Mayor will soon gain full and final control of it, under the provision of the charter which limits the authority of the aldermen in such cases to a period of six weeks after favorable action by the Board of Estimate and Apportionment, but the aldermen contend that the contract must be advertised in the City Record before the board acts, and that the charter provision requiring the Board of Aldermen to act within six weeks on all public business where the Board of Estimate has joint power was not incorporated in the special act of the Legislature under which this franchise is to be granted. Under the circumstances it is not to be expected that the aldermen will act hastily in this matter. However, it is still hoped that public opinion will finally secure from the aldermen favorable action on this proposed improvement.

Bids for Constructing a Tunnel in Philadelphia

It is the expectation of the Philadelphia Rapid Transit Company to be in a position to advertise for bids for the construction of the Market Street subway, between Broad Street and Twenty-Third Street, within the next sixty days.

Turbo-Generators for Subway Plant

Contracts have been given by the Rapid Transit Subway Construction Company, of New York, for three Westinghouse turbo-generators, to be installed in the main power station at Fifty-Eighth Street and Ninth Avenue. The sets will consist of steam turbines of the Westinghouse type, directly connected to 1250-kw Westinghouse alternators. This equipment will be used for lighting purposes only, and will supply the power for illuminating both the tunnel itself and the stations and stairways.

A Large Brake Order

The United States Steel Company, of Boston, has closed a contract for supplying 170 brake equipments to the North Jersey Street Railway Company, and the Jersey City, Hoboken & Paterson Street Railway Company. The brakes are of the improved "Neal Duplex" type, made by the United States Steel Company, and are the same kind that are being tried on a large number of roads throughout the country. The closing of the 170-equipment order was the result of a several months' test, made under the severest conditions on the Jersey roads.

New Transfer System at Providence

The Union Traction Company, of Providence, R. I., is perfecting a new transfer system, which it expects to be able to put into effect very soon. Like the spokes of a wheel from a hub the street railway lines of Providence project from the City Hall in various directions, and the city, irregularly formed, presents difficulties that make the selection of a system that will be beneficial to the city and prevent abuse of the privilege by patrons a difficult task. A careful study of the transfer system as operated in many of the large cities has been made by the officials of the company, and they feel confident that the system, as finally evolved by them, will meet the demands of the most exacting.

Americans Secure Electric Railway Franchise at Havana

Park & Hamilton, of Youngstown, Ohio, have secured all required franchises for an electric railway in Havana, Cuba. Some time ago this syndicate received a grant for a line from the city limits of Havana to a pleasure resort six miles from the city. They at once commenced construction work, and by demonstrating that they meant business they have been enabled to secure a more important grant into the center of the city. Mr. Hamilton states that the franchise will permit the building of a line through the city, starting at the steamer landings, also for a loop which will traverse other parts of the city. The intention is to begin construction work at once. Associated with Park & Hamilton are Devitt, Trimble & Co., of Chicago; G. F. Penhale & Co., of New York; W. H. Whipple, of New York; W. H. McDonald & Co., of Chicago, and W. J. Hayes & Sons, of Cleveland.

Street Railway Patents

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

UNITED STATES PATENTS ISSUED JUNE 24, 1902

- 702,938. Trolley for Electric Railways; F. W. Garrett, Johnstown, Pa. App. filed Sept. 10, 1901. An expanding bushing takes up wear.
- 702,981. Control of Electric Motors; F. A. Merrick and E. W. Stull, Johnstown, Pa. App. filed Sept. 10, 1901. The object is to dispense with master controllers and pilot motors and to control the train by manually operated controllers on the platforms. The motors are connected to a number of train wires, and one or both controllers on each car is connected to each wire, the corresponding contacts of the several controllers being connected to different wires.
- 702,986. Electric Third Rail; P. E. McIntosh, New York, N. Y. App. filed Dec. 22, 1900. An improved chair for third rails.
- 703,022. Circuit Controller; E. W. Vogel, Chicago, Ill. App. filed July 23, 1901. A pivoted lever arranged above the sagging portion of the trolley wire is moved to close a circuit when the wire is lifted by the passing trolley.

703,037. Street Railway Switch; W. J. Bell, Los Angeles, Cal. App. filed March 25, 1902. Yielding devices which ordinarily permit the car wheel to move the switch point, are made rigid when desired by closing a circuit through a magnet to carry the car onto a branch.

703,040. Car Fender; W. Bonham, Philadelphia, Pa. App. filed Nov. 8, 1900. Details.

703,106. Brake Operating Device; M. O. Wicks, Babylon, N. Y. App. filed Sept. 24, 1901. The pawl which holds the brake staff is beneath the platform and controlled by a push-pin, passing through the floor.

703,108. Car Truck; W. S. G. Baker, Baltimore, Md. App. filed Jan. 16, 1902. The side frames of a center-bearing truck are formed with axle box pedestals and provided with springs for the boxes below the same; the lookout beams are secured to the body and extend over the axle boxes to the rear thereof and terminate close to the car bolster.

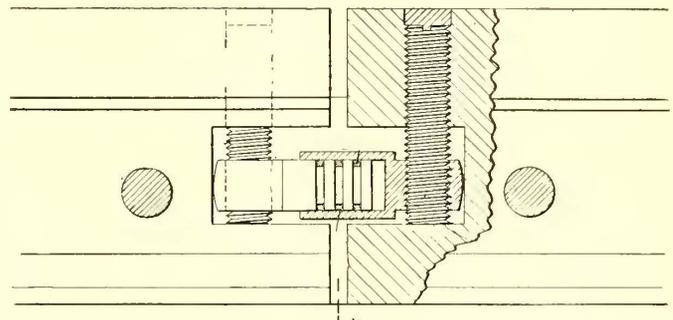
703,112. Sand Box; J. L. Chedell, Providence, and E. V. Scott, Arlington, R. I. App. filed Oct. 21, 1901. Inclined rods which extend upward through the sand box, are flexibly connected with a sliding bottom so that when the latter is moved the rods will stir up the sand.

703,117. Car Truck Bolster; D. C. Courtney, Elkins, W. Va. App. filed June 4, 1901. Details.

703,143. Plate Metal Car Wheel; H. F. Mann, Allegheny, Pa. App. filed April 19, 1902. One-fourth of the thickness of the plate metal is composed of high carbon steel, while the remainder is of low carbon steel, and the wheel is so shaped as to bring the high carbon portion into the tread and flange.

703,148. Roller Side Bearing for Railway Cars; S. W. McMunn and E. S. Woods, Chicago, Ill. App. filed Nov. 4, 1901. The roller trunnions travel in grooves in the casting.

703,274. Rail Bond; J. E. Jones, Hazleton, Pa. App. filed May 1, 1902. The webs of the rail ends are cut away to form a chamber for the bond, which is attached by means of screws and is covered by the fish plates.



PATENT NO. 703,274

703,297. Auxiliary Trolley Contact and Sleet and Ice Cutting Device; W. H. Oliphant, Mount Holly, N. J. App. filed Sept. 13, 1901. Two wheels supported on a single pole run in tandem, their treads being formed to remove the ice.

703,311. Street Railway Switch; G. Shoemaker, Philadelphia, Pa. App. filed Nov. 15, 1901. The switch tongue is a wide plate having the proper grooves and flanges, and it slides under overhanging plates on each side, which protect it.

703,337. Car Mover; J. W. Dear, Dayton, Ohio. App. filed March 15, 1902. A prying lever is pivoted to a frame which also carries a wedge adapted to close up against the wheel after it is moved with the lever, to prevent its return.

703,361. Third Rail System or Magnetic Electric Railway; W. H. Wright, Buffalo, N. Y. App. filed Aug. 19, 1901. Pivoted levers in a conduit are moved by the attraction of a magnet on the car to close the circuit between a bare conductor and a third rail.

UNITED STATES PATENTS ISSUED JULY 1, 1902

703,379. Car Bolster; H. C. Buhoup, Chicago, Ill. App. filed March 14, 1902. The body bolster carries a projecting central knob which enters a socket in the truck bolster.

703,476. Overhead Trolley; G. H. Russell, Pittsfield, Mass. App. filed Jan. 27, 1902. The wheel bearings are in sliding blocks, which enter the harp and are secured therein by spring latches.

703,503. Bolster Guide Block; N. H. Tunks, Toledo, Ohio. App. filed Oct. 24, 1901. A movable guide for a truck bolster provided with flanges to embrace the edges of a guide bar; and also having means for uniting the same to the end of a bolster in such a manner that the said guide can move relative to the bolster.

703,536. Street Car Fender; E. F. Cannon, Chicago, Ill. App. filed Sept. 21, 1901. Details.

703,561. Automatic Switch; H. H. Doll and M. H. Bostian, Camden, N. J. App. filed March 27, 1901. A projection can be thrown downward from the car to operate a switch ahead through mechanical connections.

703,563. Guard for Third Rail Systems; J. Elliott, Boston, Mass. App. filed April 3, 1902. Two guards rest upon the foot flange on each side of the rail and are held in an upright position by bolts passing through the web of the rail.

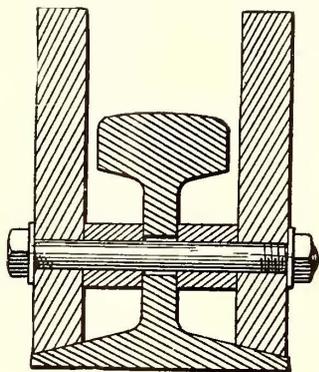
703,565. Car Wheel; G. B. Farrell, Wilkesbarre, Pa. App. filed Jan. 20, 1902. A wheel comprising a rim having integral spokes and a hub having sockets to receive the spokes, the sockets being box-like arms projecting from the hub.

703,589. Trolley for Electric Cars; C. J. Johnson and C. W. Benedict, St. Louis, Mo. App. filed Sept. 23, 1901. An attachment for dropping the pole when it rises above the overhead wire.

703,609. Car Bolsters; G. P. Ritters, Chicago, Ill. App. filed April 24, 1902. In this invention the strut and end sections of a trussed bolster are combined with interposed spanners for the support of the car sills, whereby the tension members are relieved of the direct load, which is thus divided up between the strut and the compression members of the structure.

703,700. Trolley Wheel; W. F. Hall, Boston, Mass. App. filed April 29, 1902. The tread and side flanges are held in place on a sleeve by spring rings which enter grooves in the end of the sleeve.

703,701. Trolley Wheel; W. F. Hall, Boston, Mass. App. filed April 30, 1902. A modification of the preceding patent.



PATENT NO 703,563

703,782. Trolley Fork; E. L. Gentis, Newport News, Va. App. filed Feb. 21, 1902. Provision is made for allowing the bearings to tip laterally.

703,786. Apparatus for Preventing Trolley Wheels from Leaving the Feed Wire; G. W. Hammond, Philadelphia, Pa. App. filed March 3, 1902. The jaws which prevent the wheel from leaving the wire are designed to easily pass a cross wire.

703,818. Car Brake; J. Plattenburg, McKeesport, Pa. App. filed Feb. 21, 1902. A center rail having inclined surfaces is adapted to be engaged by a shoe carried by the car and having corresponding inclined surfaces. The purpose is to provide an emergency brake.

703,921. Trolley Pole; J. D. Hickman, Anderson, Ind. App. filed Oct. 11, 1901. The trolley harp is pivoted to the upper end of the pole and can be tilted downward to release the wheel from the wire without lowering the pole itself.

PERSONAL MENTION

MR. B. H. RANNELS, general manager of the Dayton & Kenton Traction Company, has resigned his position with that company, but has not announced his plans for the future.

MR. A. E. WALDEN, formerly superintendent of the Blackstone Electric Light Company, of Blackstone, Mass., has accepted the position of general manager of the Mobile Light & Railroad Company, of Mobile, Ala.

MR. THOMAS L. HACKETT has been appointed soliciting freight and passenger agent of the Grand Rapids, Grand Haven & Muskegon Railway Company, with headquarters at Grand Rapids, Mich. Mr. Hackett assumed his new duties on July 1.

COLONEL ALLAN C. BAKEWELL, second vice-president and general manager of the Sprague Electric Company, was recently elected Department Commander at the New York State Encampment of the G. A. R., held at Saratoga Springs. There was a strong opposition ticket in the field, but Colonel Bakewell, in recognition of his services in both the State and national work of the organization, was elected by a handsome majority.

MR. GEORGE B. FRANCIS recently read an interesting paper before the Boston Society of Civil Engineers, on "Light Mountain Railways," which has since been published in the journal of the Association of Engineering Societies. The paper contains a very complete index to the literature on this subject as well as much data regarding the gage and weight of rail on roads in operation.

MR. W. H. WILLIAMS, who has been superintendent and electrical engineer of the Eads Bridge Electric Road, of St. Louis, for thirteen years, has resigned from the company, his resignation to take effect in August. General Manager J. Bramlette will take charge of the bridge line as soon as the cars run over the road, and manage it in connection with other East Side electric railways, of East St. Louis.

MR. G. W. EDWARDS has been appointed superintendent of the elevated division of the Brooklyn Rapid Transit Company, vice Mr. B. W. Folger resigned. Mr. Edwards has served the road well for many years, and enjoys the respect and friendship of his men as well as the confidence of his superiors. His promotion to his present position has thus been most satisfactory to all concerned. Mr. Edwards will be assisted in his general work by Mr. F. L. Morse, while Mr. E. F. Rives will be in charge particularly of the Bridge Division. Mr. Rives combines with these duties the management of the surface cars on the bridge, as was recently mentioned in this column. Mr. Morse takes the place of Mr. Reginald Fay, who resigned with Mr. Folger.

MR. EDWARD H. JENKINS, the president of the Southwestern Gas, Electric & Street Railway Association, and late president of the San Antonio Gas & Electric Company, and San Antonio Traction Company, of San Antonio, Tex., died a few days ago. Mr. Jenkins, in promoting the interests of the association, in harmonizing and reconciling the business to the necessities and demands of the public, won for himself the cordial support and sympathy of all with whom he came in contact. He was recognized as possessing exceptional executive talent, and his thoughtful consideration of the necessities of the employees of the companies under his management and his careful attention to matters involving their comfort, welfare and happiness won for him their lasting affection.

MR. A. C. RALPH, superintendent of the Marlboro Street Railway Company, of Marlboro, Mass., has been selected as superintendent of the Boston & Worcester Street Railway, now building between Boston and Worcester, and will assume his duties with that company when its lines are completed. Both the Marlboro Street Railway and the Boston & Worcester Railway are controlled by the same interests, and the selection of Mr. Ralph as superintendent of so important a road as the Boston & Worcester Railway is a testimonial of his fitness to deal with the most important questions to be solved in electric railroading. Mr. Ralph was born in Warren, Vt., and entered the street railway field about fourteen years ago, becoming connected with the West End Street Railway, of Boston. Mr. Ralph later became connected with the Thomson-Houston Company, and passed several years in the South while in the employ of this company, working in Nashville and Atlanta. Mr. Ralph then went to Paterson, N. J., and from there he went to Bridgewater, Mass., where he assumed the supervision of five roads under construction by J. F. Shaw & Co.

MR. HOWARD P. QUICK, member of the American Society of Mechanical Engineers and for thirteen years chief draughtsman and mechanical engineer for the West End Company and the Boston Elevated Railway Company, of Boston, has entered the employ of Ford, Bacon & Davis, of New York, and will be connected with their Kansas City office, in the design of the new power house construction for the Metropolitan Street Railway Company of that city. Mr. Quick's ability and designs are represented in Boston by most of the surface railway power stations, overhead construction and car houses. The design of the late "West End" power stations, in Boston, has crystallized into a standard station layout, with provision for expansion along regular lines, largely resulting from Mr. Quick's work in collaboration with Mr. C. F. Baker, superintendent of motive power and machinery. Mr. Quick is a member of the Boston Society of Arts, the New England Railroad Club and the University Club, and although he is only thirty-six years of age he already has executed important works, investigations and designs which required extensive traveling in this country and Canada. A few years ago he compiled data and made designs for an arch suspension bridge for Boston harbor, accompanying his report with photographs and drawings of all the important bridges in the world. He has also collected descriptions and views of all kinds of railway equipment. Prior to his connection with the Boston Elevated Railway Company he worked with Mr. Howard A. Carson, the present chief engineer of the Boston Transit Commission, for the Metropolitan Sewer Commission,

LEGAL DEPARTMENT

CONDUCTED BY WILBUR LARREMORE OF THE NEW YORK BAR

Testimony of Physicians as to Declarations by Patients

The New York Code of Civil Procedure provides (Sec. 834) that "A person, duly authorized to practice physic or surgery, shall not be allowed to disclose any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity." Such statute may be taken as substantially typical of the law throughout the Union. Each State has some provision rendering communications made by a patient to his physician privileged from disclosure against the patient in an action to which he is a party. The particular limitations of the application of such principle will depend upon the terms of the statute in force in any State.

Interpreting and applying the New York statute, the New York Court of Appeals has recently, in the case of *Griffiths vs. Metropolitan St. Ry. Co.* (171 N. Y., 106), held that the testimony of a person, who was a physician, as to declarations made by a plaintiff in an action for personal injuries ought to have been admitted, and was improperly excluded. It appeared that the witness was at the scene of an accident when the ambulance arrived and rendered first aid to the plaintiff, who had been seriously injured. He rode with plaintiff in the ambulance part of the way to the hospital, at which he was an attending physician; but had no other relations with the plaintiff until ten days thereafter, when he called upon plaintiff, at the instance of the defendant, and had a conversation with him about the details of the accident. This, he testified, was distinct from any treatment as a physician. In rendering the decision the Court of Appeals emphasizes the principle that where the testimony of a physician is sought to be excluded, the burden is upon the objecting party to bring the case within the terms of the law quoted: "He must make it appear not only that the information which he seeks to exclude was acquired by the witness while attending him in a professional capacity, but also that it was necessary to enable him to perform some professional act."

In another case decided on the same day (*Green vs. Metropolitan St. Ry. Co.*, 171 N. Y., 201), the same court went further in strict construction of a physician's disqualification. It appeared that the witness was the physician in charge of the ambulance that responded to a call, and conveyed plaintiff to a hospital after his injury. The witness stated that the hospital rules required him to ask questions to find out how an accident occurred, and further "distinctly asserted that whatever information he acquired from the patient was in reference to his condition, and for the purpose of prescribing for him." The Court of Appeals, nevertheless, held that the physician should have been permitted to disclose what, if anything, the plaintiff had said as to how the accident happened. It is remarked in the prevailing opinion: "We may, readily, admit that Dr. M. acquired the information, which the question called for, while attending the plaintiff in a professional capacity, and, still, we would be far from the point of the legislative purpose in enacting the section of the code. That was, that the information should be of a character necessary to enable Dr. M., or the hospital staff, to act professionally upon the case."

The decision of the Court of Appeals in the *Green* case was made by a bare majority of the court, three of its members dissenting, and in both the *Griffiths* case and the *Green* case the judgment of the courts below, holding that the doctor's testimony was not admissible, was reversed. These decisions would seem to represent a modification of the policy on the subject which has heretofore prevailed in the New York courts. (*Edington vs. Mut. Life Ins. Co.*, 67 N. Y., 185-194; *Grattan vs. Met. Life Ins. Co.*, 80 N. Y., 281, 297; *Feeney vs. L. I. R. R. Co.*, 116 N. Y., 375, 381.) In that State the present attitude is one of great liberality towards the introduction of testimony of physicians as to information derived from—including declarations made by—their patients. It is of very considerable advantage to street railway companies to have such testimony presumably admissible instead of presumably incompetent, so that they may prove a plaintiff's declarations against him unless it clearly and affirmatively appears that the information derived by the physician was necessary for professional treatment.

It will not do, however, to rely upon these recent New York decisions in litigations in other jurisdictions. As before pointed out the extent of the disqualification in any forum will depend upon the phraseology of the local statute. Moreover, even if the words of a statute are the same, or substantially the same, as that of New York, a different policy of interpretation may be adopted by the courts, as indeed was entertained by the Appellate Division of the New York Supreme Court in the *Griffiths* case and the *Green* case. The obtaining of information as to how an injury occurred is often an important factor for rendering medical assistance, especially first aid to the injured. The previous history of the patient, including how he received injuries that may or may not have caused abnormal conditions found to exist, is of greatest consequence upon questions of diagnosis and prognosis. It is remarked in the opinion of the New York Court of Appeals in the *Green* case that "the object of the statute, as we are bound to presume, was the accomplishment of a just and salutary purpose; which was that the relations between physician and patient should be protected against public disclosure, so that the patient might unbosom himself, freely, to his medical adviser, and thus receive the full benefit of his professional skill." Accepting this general conception of the purpose of disqualifying physicians from testifying against their patients, it is not unlikely that some courts would construe a similar statute more liberally than did that court, in aid of the remedy in view. It might be held in other jurisdictions that any information relating to a patient's injuries or physical condition, derived from the patient himself by a physician while attending him in a professional capacity, would presumably be privileged from disclosure, and that, in order to render testimony of such character by a physician competent, the burden would be upon the party seeking to introduce it to show that the information was not necessary to enable the physician to act in his professional capacity, rather than upon the patient to show affirmatively that it was necessary.

LIABILITY FOR NEGLIGENCE.

ILLINOIS.—Instructions—Questions of Fact.

The words "how they should find any question of fact" in instruction that the jury are judges of the questions of fact, and the court does not intend to instruct how they should find any question of fact, plainly mean at what conclusion they should arrive and do not refer to the manner of finding a fact. (*South Chicago City Ry. Co. vs. McDonald*, 63 N. E. Rep., 654.)

ILLINOIS.—Master and Servant—Personal Injuries—Car Repairer—Unexpected Movement of Car—Foreman's Failure to Give Warning—Contributory Negligence—Fellow Servant—Assumption of Risk.

1. Defendant furnished a certain variety of cars to various lines of railroad, the railroad companies having charge of the arrangement and movement of the cars. Defendant repaired its cars in the switch yards of the companies using them. Cars which required extensive repairs were sent to a closed track, where no switching was done, while those needing only slight repairs were repaired on open tracks, where they were liable at any time to be moved by switching. Plaintiff was a car repairer for defendant, and was directed by its foreman to make slight repairs between two cars on an open track. The foreman then directed the train crew to take a car out of the string in which plaintiff was working to the closed track, giving plaintiff no notice of such order. The car was taken out of the string by the switching crew, and the other cars which it was necessary to move to get the one required were kicked back against those among which plaintiff was working, injuring him. The foreman stood on an adjoining string of cars and saw the whole proceeding, but gave plaintiff no warning. Held, to require the submission to the jury of the issue as to defendant's negligence.

2. Plaintiff worked in company with another repairer, and it was customary to have one of the men keep watch in such cases when work was being done under a car, but not when the men were merely required to go between the cars. Held, that plaintiff's failure to have his companion keep watch was not contributory negligence as a matter of law.

3. The companion's failure to keep watch was not negligence of a fellow servant defeating recovery.

NOTE.—Communications relating to this department should be addressed to Mr. Larremore, 32 Nassau Street, New York City.

4. While plaintiff assumed the risk incident to the usual method of doing the work he did not assume the increased hazard arising from the foreman's negligence. (*Street's Western Stable Car Line vs. Bonander*, 63 N. E. Rep., 688.)

ILLINOIS.—Street Railroads—Injuries to Person on Track—Instructions—Presumption of Negligence from Injury—Regulation of Speed.

1. In an action against a street railway company for injuries to a traveler on its track an instruction that no presumption of negligence against defendant arose from the fact of injury was properly refused as misleading.

2. In an action for personal injuries it was not error to refuse an instruction that no presumption of negligence against defendant arose from the fact of the injury itself where the jury were charged that plaintiff could not recover unless plaintiff was in the exercise of ordinary care and the defendant guilty of negligence which was the direct cause of the injury.

3. In an action for personal injuries caused by defendant's street car colliding with a sleigh being driven across its tracks near a street crossing an instruction that the defendant was not bound to be on guard against the unusual and extraordinary and "not reasonably to be expected," and was not bound to stop its car until defendant had notice of the crossing of the track by the sleigh, if the same was unusual, was properly refused, where there was no evidence that the crossing of the track by a sleigh at the place was unusual and extraordinary.

4. The instruction was also properly refused, as it ignored the duty of the defendant in approaching crossings to so regulate the speed of its cars that collisions with persons crossing the street could be avoided.

5. It was not error to refuse such instruction where the jury were charged that if the sleigh was driven in front of the car so suddenly that the motorman had no notice of the danger, so as to give him an opportunity to avoid the same by exercise of ordinary care under the circumstances, and that the car was being operated with ordinary care, plaintiff could not recover.

6. An instruction authorizing a recovery if plaintiff was in the exercise of ordinary care and was injured "by reason of the alleged negligence of defendant" is not erroneous in using the word "alleged," as it did not authorize a recovery if negligence was merely alleged. (*West Chicago St. R. Co. vs. Petters*, 63 N. E. Rep., 662.)

INDIANA.—Street Railroads—Injuries at Crossing—Pleading—Negligence—Wilful Conduct—Instructions—Evidence—Contributory Negligence—Defense—Statute—Constitutionality.

1. In an action for personal injuries sustained in a collision with a street car, an instruction that if defendant's motorman knew that plaintiff was under the car fender, and knew that he could stop the car and thereby prevent the injury, and did not do so, defendant was liable for the injury inflicted after the car could have been stopped, was erroneous, where the complaint merely charged that defendant negligently ran into plaintiff and caught him by and under the fender and dragged him.

2. In an action for personal injuries sustained in a collision with a street car through the alleged wilful act of defendant's motorman, an instruction that if the motorman knew that he could stop the car fender, and knew that he could stop the car and prevent the injury, and did not do so, defendant was liable for the injury inflicted after the car could have been stopped, was erroneous, for, upon the facts stated in the instruction, it could not be said, as a matter of law, that the motorman was guilty of intentionally injuring plaintiff after he fell under the fender.

3. The instruction was erroneous where the evidence not only did not show that the motorman knew he could stop the car before inflicting any injury, but showed that the car could not have been so stopped, and that the motorman reversed the power, applied the brake, and sanded the track immediately upon learning that plaintiff was under the fender.

4. In an action for personal injuries sustained in a collision with a street car, an instruction that the burden of proving contributory negligence rested on defendant was misleading, as causing the jury to believe that contributory negligence could only be proven by defendant's own witness, instead of by the whole evidence.

5. Acts 1899, p. 58 (*Burns' Rev. St. 1901*, section 359), providing that contributory negligence in actions for personal injuries shall be a matter of defense, and may be proved under a general denial, is constitutional.—(*Indianapolis St. Ry. Co. vs. Taylor*, 63 N. E. Rep., 456.)

INDIANA.—Street Railway—Negligence—Complaint—Contributory Negligence—Assumption of Risk—Judgment Non Obstante Veredicto—Motion.

1. Where, after judgment had been entered on the general verdict in favor of plaintiff, defendant moved for judgment on the

special findings notwithstanding the general verdict, such motion should be denied.

2. The complaint, in an action against an electric street railway company, alleged that it had double tracks, with poles between, which, where the accident occurred, were only three inches from the cars, and that the track was there very rough; that it was the duty of the company to, and on most of its cars it did, have gates at the sides of the front platform to protect the employees thereon, and such gates were required by its rules; that deceased was an employee of the company, and when riding on the cars it was his duty to ride on the front platform; that in the line of his duty he boarded a car at night and passed through to the front platform; that the car had no gate, and he was thrown against one of such poles and killed; that he did not know that there was no gate at the side of such platform, and was free from fault or negligence contributing to the accident. Held, that the complaint does not show contributory negligence on the part of the deceased.

3. The complaint did not show that the decedent had assumed the risk created by the absence of a safety gate.—(*Citizens' St. R. Co. vs. Reed*, 63 N. E. Rep., 770.)

MICHIGAN.—Corporations—Street Railways—Consolidation—Validity—Estoppel—Creditors—Assumption of Debts.

1. Where a street railway company was composed of an actual consolidation of other companies, and has received and retains all their properties, it cannot deny its liability on a debt due by one of such former companies, on the ground that such consolidation was illegal.

2. Where a street railway company transfers all its property and business to another company, in consideration of stock and bonds of the latter issued to the stockholders and bondholders of the former to replace its stock and bonds which were surrendered and canceled, no money being paid, such transaction, as to the creditors of the former company, should be considered a consolidation of the companies, by which the latter becomes liable for the debts of the former.

3. Where a street railway company is composed of a consolidation of former companies, it assumes the debts of such companies, and in an action against it to recover a debt due by one of such companies, it cannot contend that the original debtor was insolvent, and that therefore plaintiff was not injured by the consolidation.—(*Shadford vs. Detroit, Y. & A. A. Railway*, 89 N. W. Rep., 960.)

MICHIGAN.—Carriers—Assault by Conductor on Passenger—Costs.

1. The rule relieving the master from liability for a malicious injury inflicted by a servant when not acting within the scope of his employment does not apply between carriers and passengers, so as to relieve a carrier from liability to a passenger for assault of the conductor.

2. 3 Comp. Laws 1897, section 11,258, finding that in an action for assault and battery, if the recovery is less than \$50, plaintiff shall recover no more costs than damages, applies where the action is against the master of the servant committing the assault.—(*Johnson vs. Detroit, Y. & A. A. Ry.*, 90 N. W. Rep., 274.)

MICHIGAN.—Carriers—Mistake of Conductor—Ejecting Passenger—Refusal to Pay Fare—Damages.

Plaintiff purchased a return-trip ticket of defendant railway. The ticket was in eight coupons, four for the outward and four for the return trip, each containing a notice that it was void if detached from the signature coupon. On the outward trip the first two conductors tore off coupons from the wrong end of the ticket. The third conductor told plaintiff of the mistake, and delivered to him the coupons which should have been first taken, stating that he could use them in place of those taken. On the return trip the conductor refused to take the detached coupons, and on plaintiff's refusal to pay fare put him off the car. Plaintiff boarded the next car, paid the fare, 40 cents, and rode to his destination, and sued for breach of contract, with aggravated damages. Held, that he was entitled to recover only the 40 cents which he was compelled to pay for the extra fare.—(*Brown vs. Rapid Ry. Co.*, 90 N. W. Rep., 290.)

NEW HAMPSHIRE.—Courts—Jurisdiction—Question of Fact.

Where it is within the discretion of the superior court whether it will take jurisdiction of a cause, the question is one of fact, to be determined by the Superior Court.—(*Driscoll vs. Portsmouth, K. & Y. St. Ry.*, 51 Atlantic Rep., 898.)

NEW YORK.—Electric Street Railways—Abutting Owners—Compensation—Additional Burden—Injunction—Eminent Domain—Appeal—Review.

1. The use of a city street for a surface railway operated by

electricity is an additional burden on the property rights of the owners of the fee, subject to the easement of the highway.

2. The question whether an injunction restraining the construction of an electric street railway on a street, the fee of which is in abutting owners, shall restrict the construction of the railway until the payment of compensation, and denying a perpetual injunction if such damages are paid, or whether the injunction shall be made perpetual, leaving the railway company to its proceedings to condemn, is in the discretion of the court; and an order of the special term granting a perpetual injunction, affirmed by the appellate division, is not reviewable, as a question of law, by the court of appeals.

3. The trial court granted an injunction perpetually restraining an electric street railway from constructing its road on a street the fee of which was in the abutting owners. The judgment was affirmed by the appellate division. Held, that the court of appeals could modify such judgment so as to provide that it should not prevent the railway company from bringing condemnation proceedings, and that if the rights of the abutting owners were acquired, and compensation paid, it should not be prevented from entering on the premises for operating its road.—(Peck et al. vs. Schenectady Ry. Co., 63 N. E. Rep., 358.)

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

Where, in an action against a street railway for injuries received while attempting to cross the track, it appeared that plaintiff stepped on the track when the car was but a short distance from him, and that the driver shouted, and attempted to stop the car, and the negligence was principally predicated on the failure to equip the car with a suitable brake, it was error to instruct that notwithstanding negligence on plaintiff's part he could recover if the company, by exercising care, could have avoided the accident.—(Csatlos vs. Metropolitan St. Ry. Co., 75 N. Y. Rep., 583.)

NEW YORK.—Opinion Evidence—Harmless Error.

Allowing a physician to testify, "This asthmatic condition, in my opinion, could have been the result of some violence," in answer to question whether the asthma which plaintiff had after the accident "could have been caused" by such an injury as she received, is harmless; another physician having given substantially the same answer to a question substantially the same, except that it included the words "reasonable certainty," and it appearing that plaintiff never before had asthma, and did have it immediately after the injury to her chest.—(Hedges vs. Metropolitan St. Ry. Co., 75 N. Y. Supp., 532.)

NEW YORK.—Personal Injuries—Trial—Conduct of Plaintiff.

On the first day of a trial for personal injuries, after adjournment, and in the presence of one or more of the jurors, the plaintiff became prostrated in the court room, and was attended by physicians, and after about twenty minutes was removed from the room. There was evidence that his physical condition at the trial was the result of the injuries alleged. It was not alleged that the attack was simulated, or symptoms intentionally manifested before the jury, and the court asked any of the jury so affected by the event that they could not decide the case as if it had not occurred to rise, but no one rose, and a juror who saw the occurrence stated that it would not affect his decision. Held, that the court's refusal to grant a new trial would not be disturbed.—(McGloin vs. Metropolitan St. Ry. Co., 75 N. Y. Supp., 593.)

NEW YORK.—Privileged Communication—Waiver—Admission of Evidence—Prejudicial Error.

1. Statement of plaintiff to physician, who treated him after an accident, as to physical trouble he had years before, being privileged, admission of it over objection, notwithstanding plaintiff had been treated by such physician for such trouble some years before, and the physician had written an article as to such trouble, which was published in a magazine, is error; Code Civ. Proc. section 836, requiring the waiver of privilege to be on or at the time of the trial.

2. There being a sharp conflict in the evidence as to how the accident occurred, erroneous admission of statement by plaintiff as to his condition before the accident is prejudicial, as affecting his credibility.—(Scher vs. Metropolitan St. Ry. Co., 75 N. Y. Supp., 625.)

NEW YORK.—Corporations—Liability of Directors—Failure to File Reports—Action—Defenses.

1. It is no defense to an action under the stock corporation law (Laws 1899, c. 354, section 34), declaring that no director shall be liable to a corporate creditor for failure to file an annual report unless notice of an intent to hold him responsible is given within three years of the default, but providing that any such

liability because of default "now existing" may be enforced by action within the year 1899, or thereafter, if within such year written notice of intent is given, that no notice was given the director of a corporation within the year 1899 of an intent to hold him liable for defaults in not filing annual reports, the first of which occurred in the preceding year, and less than three years before action brought.

2. Laws 1899, c. 354, relating to liability of director of company for failure to file annual report, is applicable to foreign as well as domestic corporations.

3. In an action against the director of a corporation to enforce his personal liability for failure to file an annual report as provided by statute, a defense alleging that the debts were paid by a third party, and, if paid by plaintiff, were paid by him as agent therefor, is sufficient.—(Staten Island Midland R. Co. vs. Hinchliffe, 63 N. E. Rep., 545.)

NEW YORK.—Street Railroads—Assault by Employee—Company's Liability—Punitive Damages—Rules as to Employees—Evidence—Reasonableness.

1. In an action against a street railway company by a passenger to recover for an assault by one of its employees, it did not appear that defendant had employed an improper servant, or ever authorized him directly or indirectly to assault plaintiff, or participated in the act, or ratified or approved it. Held, that it was error to allow the jury to award punitive damages, and that it required a reversal of the judgment, where the award much exceeded the actual damages incurred.

2. On the trial of an action by an employee of a street railroad for an assault by an inspector in compelling him to leave the front seat of a car on which he was riding when off duty clad in uniform, the court refused to hold the trial to permit the defendant to send for its book of rules, and thereupon plaintiff's counsel stated that he was ready to consent that the rules "forbade motormen or conductors in uniform from riding on the front seats of these open cars to the exclusion of passengers." Defendant's counsel, though objecting that it was incorrectly stated, finally said he would accept the offer, so that he might comment on the rule. Held sufficient to establish the existence of the rule in the terms stated.

3. A rule of a street railroad company that no employee when off duty in uniform shall sit on the front seat of an open car in operation is reasonable, even when applied to an employee paying fare as a passenger, as promoting the safety of passengers by preventing the motorman's attention from being diverted from his work by the opportunity for conversation which might otherwise be occasioned.—(Rowe vs. Brooklyn Heights R. Co., 75 N. Y. Supp., 893.)

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

Where, in an action against a street car company for injuries, defendant's evidence clearly shows that plaintiff received her injuries in attempting to alight from a moving car, and plaintiff's case rests on her unsupported testimony, partially contradicted by her own witnesses and by the circumstances of the case, a verdict in her favor cannot be sustained.—(Hogan vs. Metropolitan St. Ry. Co., 75 N. Y. Supp., 845.)

NEW YORK.—Street Railroads—Excessive Fares—Refusal to Accept Transfer—Penalty—Defense—Construction of Statutes—Statutory Defense—Sufficiency of Evidence.

1. Laws 1890, c. 565, section 39, provided that any railroad company which shall charge more than the lawful rate of fares shall forfeit a penalty, unless such overcharge was made through inadvertence or mistake, not amounting to gross negligence; and section 105 prescribes the same penalty for refusal by a street railway to give a passenger a continuous trip over its various lines to any point thereon for a single fare, by means of transfers furnished without extra charge. Held that, the two sections being in pari materia as to excessive fares, the defense provided for by section 39 for violation thereof was available in an action under section 105 for requiring a passenger who had a valid transfer to pay additional fare.

2. Under Laws 1890, c. 565, sections 39, 105, imposing a penalty upon street railways for charging excessive fares or for refusing to furnish passengers with a continuous trip, by means of transfers, for one fare, where a street car conductor wrongfully refused to accept a valid transfer tendered by a passenger some minutes after he boarded the car, and required him to pay additional fare, but before he left the car offered to return the fare and accept the transfer, the circumstances were sufficient to show that the overcharge was due to "mistake not amounting to gross negligence," which, as provided by section 39, relieved the company from liability.—(Tullis vs. Brooklyn Heights R. Co., 75 N. Y. Supp., 863.)

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

WALL STREET, July 12, 1902.

The development of conditions favorable again to gold exports is due to three distinct causes—the decline in commodity exports, the selling of American securities by foreign speculative holders, and the urgent need for a large cash surplus in Paris, where conversion of a large section of the French Government debt from a 3½ per cent to a 3 per cent bond, is about to be financed. Of these three influences the last-named is of most immediate consequence. The deficiency in our agricultural shipments may be easily made up if this summer's crops turn out well. The foreign security liquidation cannot be taken very seriously where the supply of American stocks in speculative hands abroad is known to be exceedingly small. But the French requirements are something which have had to be met at once by actual remittances of capital. Paris money-lenders have called for the part return of their credits both in this country and in England. London, with its own resources pretty low, is utilizing its own American credit balance to help meet the call. Consequently the chief pressure of the French demands falls upon the local market. It is not likely, however, that we shall see any very heavy outflow of gold at this time. When the special operations at Paris are over, the sterling rate at that center will doubtless recover far enough to render export engagements at New York no longer profitable. The more pertinent questions for the present are how far the "Treasury drain" will be relieved by the recent abolition of internal revenue taxes, how soon the interior will begin to draw upon the East for the crop-moving currency, and in which way, whether for gain or loss in surplus reserve, will the immediate movement of loans be directed. No visible relief from the tax reduction has yet appeared in the Treasury operations. The local banks have gained something, and will gain considerably more, by arrivals of new gold from the Klondike, but they have already begun to feel the first demands from the interior. Finally the loan account was expanded last week by over \$17,000,000. These incidents of the recent money market are not encouraging; still, they by no means indicate that the rise in surplus reserve which usually occurs in July and the early part of August will not take place this year. The principal hope of avoiding a pinch later on is to build up the reserve now and depend upon our crop surplus to draw gold from abroad in the autumn.

Call money is showing the usual stiffness at the semi-annual settlement period, ranging between 4 per cent and 6 per cent. Time money is firmer at 4½ per cent for all dates.

The Stock Market

The stock market during the last fortnight has moved leisurely upward, without any real outburst of activity or any other decided change from the characteristics which have been displayed for some time past. Genuine investment buying is at a minimum, and the speculative public seems no more inclined than ever to renew their ventures. The dealings originate mainly with the pools and cliques which are working for higher prices, partly because they have stocks for sale, and partly because they have found that a market where holdings are so concentrated as in the present instance, can be put up easier than it can be put down. Professional Wall Street is "bullish," because the larger operators are working on the long side. If it were a matter of deciding between the extremely high level of prices and the generally favorable conditions underlying values, sentiment would no doubt be greatly divided. But in this case sentiment takes its cue from the fact that all the important leadership is directed toward a rise. The various outside influences seem to have resolved themselves pretty well into two—the outcome of the crops and the future position of bank reserves. Upon the first depends to a very large extent the future of railway traffic, and of general business. Upon the second depends more directly the future of the market's speculative position. The progress of the corn crop, which is of the first concern this season, has been exceptionally good. Cotton and wheat, on the other hand, have deteriorated considerably during the last month. But as a whole the promising agricultural outlook is a logical incentive to operations for an advance at this time. The money situation, as already described, is still quite uncertain, and with the approach of the period when currency is in active demand from the crop centers, there is naturally some misgivings as to whether the time is fitting for a revival of active speculation. It certainly looks, however, as if the speculative interests which have lately taken hold of the market so vigorously will, for the present, continue their efforts irrespective of whether from a future standpoint their operations may seem ill advised.

The trading of the past two weeks has been confined almost wholly to the railroad list, and to one or two of the favorite industrials. The local traction shares have played an inconspicuous part in the dealings. Whatever there has been to the market in Manhattan has indicated further accumulation of the stock from excellent sources. The pool in Brooklyn Rapid Transit has manifested some activity at times, but is evidently biding its time before seeking to draw speculative attention more energetically to its specialty. Metropolitan, meanwhile, has been almost entirely neglected.

Philadelphia

With the opening of the new fiscal year the lease of Union Traction to the new Philadelphia Rapid Transit Company formally went into effect. It is expected now that Union Traction will be gradually removed from the speculative field, and the prominent place it has heretofore held in the dealings, taken by the Rapid Transit stock. This shifting of interest has in fact already begun to be noticed during the last two weeks. Trading in Union Traction has fallen off substantially, yet in spite of this the stock has slowly risen to 45, which, taking the value of the rights at 1½ per cent on a fifty-share par, would be equal to 46½. This is the highest price for the shares on record. The dealings in the new Philadelphia Rapid Transit, while fairly large in volume, have resulted in no noteworthy change in quotation. All the sales recorded have been made at 9 and 9½. In sympathy with the movement in Union Traction, Philadelphia Traction advanced a half point to 98¾. A little fresh buying in American Railways resulted in some business around 45¾. The bidding-in of the scant outstanding supply of Indianapolis Street Railway continued, a few scattered lots bringing as high as 87, and the rest 85. Other transactions during the fortnight comprised Easton Electric at 19½, Reading Traction at 32½ and Consolidated of New Jersey at 68¾. Bond sales included United Railways 4s at 87½ up to 88¾, Electric People's Traction 4s at 99¼ and 99½, Consolidated of New Jersey 5s at 110, and Indianapolis 4s at 87 down to 86¾.

Chicago

The feature of the Chicago traction share dealings during the last two weeks has been the heavy liquidation in Lake Street Elevated, which has sunk to the exceptionally low figure of 9½. Talk of a receivership has, of course, been renewed, but as yet lacks authoritative confirmation. It is said, however, that the so-called Allerton pool in the stock would be willing to stand an assessment, and it is probable that a meeting of the principal interests will be called at an early date to consider plans for rehabilitating the property. Union Traction issues have shown considerable weakness, the common falling as low as 14½, and the preferred to 51. Scattering sales of City Railway are reported at a decline to 205. The reaction in these stocks is obviously connected with the threatened strike of the street car employees who demand an increase of from 35 per cent to 40 per cent in wages. West Chicago, on light transactions, held relatively steady around 98. A few odd sales have occurred in Northwestern Elevated common at 37¼ and 37, and in Metropolitan common at 38 and 38¼. Business of the latter road is expected to gain a good deal from the Garfield Park extension, and its connection with the Aurora-Wheaton electric line. The new arrangement went into effect on the first of the month.

Other Traction Securities

The Boston market of the past two weeks has been singularly devoid of interest so far as the traction stocks were concerned. Dealings in Massachusetts Electric have been very much the lightest of the season, the common ranging between 42½ and 42¾, and the preferred selling at 97½. Odd lots of Boston Elevated sold at 164. West End common at 85¼ and the preferred at 113¼. In Baltimore the United Railway issues have been duller than usual, but firm at 70 for the income bonds, 96¾ for the general 4s, and 16 to 16¼ for the stock. On encouraging advices of improvement in its local investment position Nashville Railway bonds advanced sharply from 63 to 71. Anacostia and Potomac 5s have also been exceptionally strong at an advance from 99½ to 102. Other Baltimore transactions included Lexington Railway 5s at 103½, City and Suburban (Washington) 5s at 101, Atlanta Street Railways 5s at 105½, City and Suburban (Baltimore) 5s at 114½, North Baltimore Traction 5s at 120¾, Norfolk Railway 5s at 113, Norfolk Railway & Lighting 5s at 96, Charleston Consolidated 5s at 94½ and Nashville Railway stock at 3. The accumulation of North Jersey Traction, noted for some time past, has again been a conspicuous feature. The stock, which sold at 28½ three weeks ago, is now up to 31, and the bonds have risen a half point from 83½ to 84. The

sequel to the spurious corner in San Francisco bonds on the New York curb was very tame. Apparently efforts to enforce delivery were relaxed, and the price fell between sales from 102½ to the normal quotation of 91½. The new stock of the New Orleans Railways Company is attracting some interest on the New York curb, a few odd lots of the common selling yesterday at 10, and of the preferred at 52. A fractional lot of Washington Traction at 15½ was also reported. St. Louis securities are inactive, and lower, the bonds selling at 87, while the preferred stock is quoted at 82. Columbus common fell a point to 51, and the bid was subsequently lowered to 50. Nothing of importance has been done in Louisville Street Railway issues.

The traction stocks were fairly active in Cleveland last week, the total sales numbering 2038 shares. Toledo Railways & Light sold early at 30¾, and ended at 30¼. Western Ohio opened at 25¼ and closed at 26, 320 shares selling. Detroit United improved late in the week, 110 shares selling at 75¼ to 76. Northern Ohio Traction preferred sold at 98½, Elgin, Aurora & Southern sold at 43 for 160 shares. Monday 200 Western Ohio sold at 25½, 200 Toledo Railways & Light at 30¼; 15 Elgin, Aurora & Southern at 43, and 65 Northern Ohio Traction common at 41. Several bids of 10 and 10½ were made on Lake Shore Electric stock, but 20 was the best it was offered at. A few days ago Henry Everett and a party of Cleveland capitalists made an inspection of this property, with a view of financing it and taking it out of the receiver's hands. The plans call for the issue of \$5,000,000 bonds, \$2,670,000 of which will go to retire the underlying bonds on the four companies consolidated to form the road. The through service on this road will shortly be instituted, when it is figured the net earnings will increase to a basis of \$300,000 per year.

Security Quotations

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

	Closing	Bid
	June 24	July 8
American Railways Company.....	45¼	45½
Boston Elevated	166	164
Brooklyn R. T.	66½	67½
Chicago City	205	205
Chicago Union Tr. (common)	17½	15
Chicago Union Tr. (preferred).....	53	50½
Cleveland & Eastern.....	31	..
Cleveland Electric	85	..
Columbus (common)	52½	50½
Columbus (preferred)	107¼	107
Consolidated Traction of N. J.....	69½	68½
Consolidated Traction of N. J. 5s.....	112½	*110
Detroit United	79½	76¼
Electric People's Traction (Philadelphia) 4s.....	99¼	99¼
Elgin, Aurora & Southern.....	43	41
Indianapolis Street Railway 4s.....	88½	86¾
Lake Street Elevated	10½	9½
Manhattan Railway	130½	132
Massachusetts Elec. Cos. (common).....	43	42¾
Massachusetts Elec. Cos. (preferred).....	a98	97½
Metropolitan Elevated, Chicago (common).....	38	38
Metropolitan Elevated, Chicago.....	89½	89
Metropolitan Street	148	148¾
New Orleans (common)	34¼	34
New Orleans (preferred)	112½	112½
North American	121	121½
Northern Ohio Traction (common).....	43	41
Northern Ohio Traction (preferred).....	86	89¼
North Jersey	28½	30¾
Northwestern Elevated, Chicago (common).....	34	35½
Northwestern Elevated, Chicago (preferred).....	80	80
Philadelphia Rapid Transit.....	..	9
Philadelphia Traction	98½	98½
St. Louis Transit Co. (common).....	30¾	30¾
South Side Elevated (Chicago)	109	108
Southern Ohio Traction	67¼	64
Syracuse Rapid Transit.....	..	26
Syracuse Rapid Transit (preferred)	270
Third Avenue	130	131
Toledo Railway & Light.....	30	30¼
Twin City, Minneapolis (common).....	119	119¼
United Railways, St. Louis (preferred)	83½	82
United Railways, St. Louis, 4s.....	87¼	87
Union Traction (Philadelphia).....	43¼	44½
Western Ohio Railway.....	22¾	25

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

Iron and Steel

The position of the iron market, with reference to deficient supplies, continues to be rendered increasingly difficult by the stacking of furnaces resulting from the coal strike. Reports are constantly

coming in of more furnaces shutting down. The exigency of the situation is naturally being met by increased imports of iron from abroad, and contracts with English and German firms are being considered for quite large amounts. The finished branches of the industry do not seem to have been bothered much so far by the shortage of raw material. The striking feature in this quarter continues to be the taking of larger orders for structural material and steel rails, for delivery in 1903. Quotations are unchanged, as follows. Bessemer pig iron, \$21.50; steel billets, \$33; steel rails, \$28.

Metal

Quotations for the leading metals are as follows: Copper, 12¼ cents; tin, 28 cents; lead, 4¼ cents, and spelter, 5¼ cents.

WILLIMANTIC, CONN.—The Willimantic & Southbridge Electric Railway, which is to build between Willimantic, Chaplin and Southbridge, will apply for permission to increase its capital stock from \$50,000 to \$250,000.

FORT DODGE, IA.—The controlling interest in the Fort Dodge Light & Power Company, including the Fort Dodge Street Railway, has been sold by A. F. Meservey and S. T. Meservey to Healy Bros. & Kelleher, a prominent legal firm of this city. The transaction involves the transfer of \$67,000 of stock in a total issue of \$125,000. The new management announces that important improvements are contemplated in the way of extensions of street railway lines.

NEW ORLEANS, LA.—The New Orleans Railway Company has acquired the rights of the New Orleans & Pontchartrain Railway, which was incorporated in July, 1901, with \$350,000 capital stock, to build a 10-mile electric railway between New Orleans, West End and Lake City.

NEW ORLEANS, LA.—The New Orleans Railways Company has amended its charter by filing with the Secretary of State of New Jersey notice of an increase in its capital from \$5,000,000 to \$40,000,000. Of the 400,000 shares of stock, 300,000 are common or general stock, and 100,000 are preferred, drawing 4 per cent cumulative dividends. There is already outstanding 50,000 shares of the stock.

SPRINGFIELD, MASS.—A \$500,000 mortgage given by the Springfield & Eastern Street Railway Company to the Hampden Trust Company, of Springfield, was filed for record a few days ago with the Register of Deeds of Hampden County.

HUDSON, MASS.—The Concord, Maynard & Hudson Street Railway Company has asked approval of an issue of \$175,000 bonds.

HAVERTHILL, MASS.—The Haverhill & Southern New Hampshire Street Railway Company has asked approval of an issue of original stock to the amount of \$30,000.

LAWRENCE, MASS.—The Lawrence & Methuen Street Railway Company has asked the Railroad Commissioners to approve an issue of \$270,000 original stock.

MILFORD, MASS.—The Railroad Commissioners have issued an order approving the purchase of the Upton Street Railway by the Grafton & Upton Railroad, a steam road, under the provisions of a special act passed by the last Legislature. This is the first case in the State of the absorption of a street railway by a steam road. The act also permitted the purchase of the Milford & Uxbridge and the Milford, Holliston & Framingham roads, but no petition for approval of this action has yet been filed. The board has, however, issued an order, under an old petition, approving the purchase of the latter road by the former, and the issue of \$252,000 for payment in exchange, share for share.

CLAREMONT, N. H.—The Railroad Commissioners have granted the application of the Claremont Electric Light & Railway Company for permission to issue \$100,000 of stock and \$25,000 of bonds.

JERSEY CITY, N. J.—The directors of the Consolidated Traction Company have declared a dividend of 1¼ per cent, payable July 15.

MINEOLA, N. Y.—The Mineola, Hempstead & Freeport Traction Company has applied to the Railroad Commissioners for permission to issue \$1,000,000 bonds and increase its capital stock from \$125,000 to \$1,000,000. The increases are asked to provide means for carrying out the extensive extensions planned by the company, which were noted in the STREET RAILWAY JOURNAL for June 28, 1902.

NEWARK, OHIO.—It is reported that the Newark & Granville Railway will be formally transferred to Tucker, Anthony & Company, of Boston, some time this month.

HUNTINGTON, W. VA.—The Camden Interstate Railway Company is reported to have sold to a Pennsylvania syndicate all its electric lines in this city, Central City, Ceredo and Kenova, W. Va., Catlettsburg and Ashland, Ky., and Ironton, Ohio. The deal also will embrace electric-light plants in Ironton, Ashland and Huntington. The consideration is said to be about \$2,000,000. John Graham and Edmund McCandish, of Newville, and John J. Henry and William North, of Philadelphia, are reported to be the leaders in the syndicate.

OTTAWA, ONT.—The Ottawa Electric Railway Company is about to lease the Hull Electric Railway, which runs from Hull to Aylmer, Quebec. This road came into the possession of the Canadian Pacific Railway through its purchase of the Ottawa, Northern & Western Railway, which company had an option of purchase on the Hull Electric Railway. Although the Canadian Pacific Railway took advantage of the option on the Hull Electric Railway, it deems it advantageous to lease it to the Ottawa Electric Company.

TABLE OF OPERATING STATISTICS

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

COMPANY	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Avail-able for Dividends	COMPANY	Period	Total Gross Earnings	Operating Expenses	Net Earnings	Deductions From Income	Net Income, Amount Avail-able for Dividends
AKRON, O.							DULUTH, MINN.						
Northern Ohio Tr. Co.	1 m., May '02	60,747	33,911	26,836	12,957	13,879	Duluth-Superior Tr.	1 m., May '02	41,475	20,288	24,187	9,745	14,442
	1 " " '01	48,575	28,301	20,204	11,382	8,821		1 " " '01	37,205	19,628	17,576	9,158	8,418
	5 " " '02	251,306	148,773	102,533	-----	-----		5 " " '02	196,910	110,278	86,632	48,189	38,443
	5 " " '01	210,776	132,335	78,441	-----	-----		5 " " '01	169,074	99,527	69,547	45,577	23,969
	12 " Dec. '01	617,011	* 350,845	266,166	136,162	130,004	ELGIN, ILL.						
	12 " " '00	513,725	* 317,475	196,249	141,133	55,117	Elgin, Aurora & Southern Tr.	1 m., May '02	35,115	20,343	14,773	8,333	6,439
ALBANY, N. Y.								1 " " '01	29,616	16,067	13,519	8,333	5,186
United Traction Co.	1 m., May '02	131,371	90,393	40,977	23,476	17,501		12 " " '02	379,252	216,017	163,235	100,000	63,235
	1 " " '01	73,725	60,993	12,730	19,901	17,170		13 " " '01	330,578	208,823	121,755	100,000	21,755
	11 " " '02	1,347,142	928,159	418,983	239,239	179,684	HAMILTON, O.						
	11 " " '01	1,214,749	836,460	378,289	219,334	158,955	Southern Ohio Tr. Co.	1 m., Apl. '02	27,774	15,245	12,529	7,500	5,029
BINGHAMTON, N. Y.								1 " " '01	23,530	14,405	9,125	7,500	1,625
Binghamton St. Ry. Co.	1 m., May '02	17,194	9,118	8,075	-----	-----		12 " " '02	353,144	186,365	166,779	90,000	76,779
	1 " " '01	15,678	9,341	6,337	-----	-----		12 " " '01	303,704	166,757	136,946	90,000	46,946
	10 " " '02	187,658	103,986	83,672	-----	-----	LONDON, ONT.						
	10 " " '01	169,756	94,355	75,401	-----	-----	London St. Ry. Co.	1 m., May '02	12,234	7,886	4,348	2,410	1,938
BOSTON, MASS.								1 " " '01	10,003	6,818	3,185	2,079	1,107
Boston Elev. Ry. Co.	12 m., Sept. '01	10,869,496	7,336,597	3,532,899	2,896,359	636,539		5 " " '02	51,421	34,609	16,812	11,306	5,507
	12 " " '00	10,236,994	6,823,110	3,403,884	2,932,839	476,044		5 " " '01	46,195	31,954	14,241	9,886	4,355
Massachusetts Elec. Cos	12 m., Sept. '01	5,778,133	3,915,486	1,862,648	937,206	925,442	MILWAUKEE, WIS.						
	12 " " '00	5,518,837	3,659,337	1,859,500	994,294	865,206	Milwaukee El. Ry. & Lt. Co.	1 m., May '02	218,633	103,835	114,797	65,638	49,159
BROOKLYN, N. Y.								1 " " '01	192,667	94,593	98,163	61,380	36,783
Brooklyn R. T. Co.	1 m., May '02	1,156,345	* 730,152	426,192	-----	-----		1 " " '02	1,032,179	505,111	547,068	323,533	223,539
	1 " " '01	1,075,576	* 715,161	360,415	-----	-----		5 " " '01	921,349	492,033	429,316	302,544	126,772
	11 " " '02	11,624,417	* 8230,662	3,404,355	-----	-----		12 " Dec. '01	2,442,342	1,185,534	1,256,808	755,139	501,669
	11 " " '01	10,920,174	* 7237,894	3,682,280	-----	-----		12 " " '00	2,220,698	1,129,787	1,090,911	824,665	266,347
	12 " June '01	12,135,559	* 7216,008	4,919,551	4,341,748	577,803	MINNEAPOLIS, MINN.						
	12 " " '00	11,768,550	* 7106,373	4,662,177	4,135,405	526,772	Twin City R. T. Co.	1 m., May '02	296,991	136,964	160,028	58,733	101,294
BUFFALO, N. Y.								1 " " '01	251,946	114,340	137,605	56,633	30,971
International Tr. Co.	1 m., May '02	264,184	146,787	117,398	97,330	20,068		1 " " '02	1,356,556	649,003	707,553	292,800	414,752
	1 " " '01	291,666	161,077	130,589	92,020	38,569		5 " " '01	1,178,257	563,664	614,593	273,093	341,498
	1 " " '00	209,309	115,487	93,823	78,250	15,572	MONTREAL, CAN.						
CHICAGO, ILL.							Montreal St. Ry. Co.	1 m., May '02	178,408	86,780	91,628	18,672	72,955
Chicago & Milwaukee Elec. Ry. Co.	1 m., May '02	16,441	7,353	9,088	-----	-----		1 " " '01	161,283	90,766	70,518	11,633	58,885
	1 " " '01	14,167	5,594	8,573	-----	-----		8 " " '02	1,357,518	766,238	491,280	124,907	366,373
	5 " " '02	61,189	30,956	30,234	-----	-----		8 " " '01	1,174,039	743,687	430,412	75,995	354,417
	5 " " '01	48,309	28,207	20,001	-----	-----	NEW YORK CITY.						
Lake Street Elevated	12 m., Dec. '01	786,462	388,799	397,663	-----	-----	Manhattan Ry. Co.	3 m., Dec. '01	3,038,435	1,404,971	1,633,465	753,135	880,329
	12 " " '00	757,954	378,661	379,293	-----	-----		3 " " '00	2,728,538	1,340,696	1,387,842	749,857	638,045
CLEVELAND, O.								12 " Sept. '01	10,455,872	5,328,649	5,127,223	2,682,132	2,444,091
Cleveland & Chagrin Falls	1 m., Feb. '02	3,454	2,255	1,199	-----	-----		12 " " '00	9,950,735	5,195,312	4,755,423	2,688,644	2,066,779
	1 " " '01	2,435	3,016	+ 581	-----	-----	Metropolitan St. Ry.	3 m., Dec. '01	3,887,936	1,723,972	2,143,964	1,151,140	992,824
	12 " Dec. '01	47,976	* 32,002	15,974	13,023	2,951		3 " " '00	3,786,030	1,699,649	2,086,381	1,138,467	947,914
	12 " " '00	49,646	* 33,272	16,374	13,294	3,080		12 " June '01	14,720,767	6,755,131	7,965,636	4,534,068	3,431,567
								12 " " '00	14,437,134	6,631,254	7,805,880	4,445,720	3,360,160
Cleveland & Eastern	1 m., Feb. '02	4,916	3,616	1,300	-----	-----	OLEAN, N. Y.						
	1 " " '01	3,525	4,037	+ 512	-----	-----	Olean St. Ry. Co.	1 m., Mar. '02	3,994	2,411	1,584	1,146	438
	12 " Dec. '01	90,390	52,022	38,368	43,678	+ 4,310		9 " " '01	3,835	2,043	1,792	1,187	604
	12 " " '00	62,893	36,672	26,221	36,148	+ 9,927		9 " " '02	41,735	21,611	20,124	12,343	7,781
Cleveland El. Ry. Co.	1 m., May '02	217,563	-----	-----	-----	-----		9 " " '01	39,270	19,276	19,994	11,068	8,925
	1 " " '01	187,049	-----	-----	-----	-----	PHILADELPHIA, PA.						
	5 " " '02	962,890	-----	-----	-----	-----	American Railways	1 m., May '02	97,701	-----	-----	-----	-----
	5 " " '01	854,594	-----	-----	-----	-----		1 " " '01	73,406	-----	-----	-----	-----
	12 " Dec. '01	2,296,898	1,265,953	1,030,945	244,231	786,714		11 " " '02	908,356	-----	-----	-----	-----
	12 " " '00	2,061,505	1,121,037	940,467	258,483	681,984		11 " " '01	764,560	-----	-----	-----	-----
Cleveland, Elyria & Western	1 m., May '02	25,045	13,311	11,735	-----	-----	RICHMOND, VA.						
	1 " " '01	20,707	11,141	9,566	-----	-----	Richmond Trac. Co.	1 m., Sept. '01	20,991	15,669	5,322	3,196	2,126
	5 " " '02	103,194	64,702	38,492	-----	-----		1 " " '00	20,727	10,770	9,957	3,849	6,115
	5 " " '01	84,721	54,533	30,267	-----	-----		12 " " '01	218,569	139,542	79,027	38,618	40,410
	12 " Dec. '01	249,260	136,865	112,394	57,023	55,371		12 " " '00	203,057	108,198	94,859	37,608	57,250
	12 " " '00	179,698	102,393	77,304	34,562	42,742	ROCHESTER, N. Y.						
Cleveland, Painesville & Eastern	1 m., May '02	17,128	9,039	8,088	-----	-----	Rochester Ry.	1 m., May '02	88,164	47,772	40,391	24,749	15,642
	1 " " '01	13,498	6,583	6,915	-----	-----		1 " " '01	81,016	47,471	33,545	24,185	9,360
	5 " " '02	61,810	35,180	26,630	-----	-----		5 " " '02	438,506	241,196	197,311	123,854	73,457
	5 " " '01	49,700	28,193	21,507	-----	-----		5 " " '01	409,848	261,259	148,590	120,453	28,137
	12 " Dec. '01	164,971	* 87,102	77,869	72,500	5,369	SCHENECTADY, N. Y.						
	12 " " '00	141,112	* 89,592	71,520	72,500	+ 980	Schenectady Ry. Co.	3 m., Dec. '01	84,061	46,949	37,112	13,454	23,658
DENVER, COL.								3 " " '00	30,876	14,517	16,359	6,087	10,272
Denver City Tramway Co.	1 m., Apl. '02	124,516	66,533	57,983	32,865	26,119	SYRACUSE, N. Y.						
	1 " " '01	116,357	62,866	53,490	31,304	22,186	Syracuse R. T. Co.	1 m., May '02	57,769	32,558	25,211	19,025	6,186
	4 " " '02	481,348	261,118	220,230	131,259	88,972		1 " " '01	51,958	28,982	22,976	18,683	4,293
	4 " " '01	435,297	236,915	198,382	125,622	72,759		11 " " '02	632,420	349,466	282,955	209,221	73,734
	12 " Dec. '01	1,507,293	818,321	688,965	383,180	305,785		11 " " '01	564,347	309,889	254,458	204,971	49,487
	12 " " '00	1,302,296	722,458	579,839	374,291	205,548	TOLEDO, O.						
DETROIT, MICH.							Toledo Ry. & Lt. Co.	1 m., May '02	117,005	* 60,246	56,759	-----	-----
Detroit United Ry.	1 m., May '02	292,415	161,336	131,079	67,752	63,327		1 " " '01	101,255	* 53,037	48,218	-----	-----
	1 " " '01	243,447	138,304	105,142	57,360	47,782							